

2012 Annual Report Strategic Habitat Plan Accomplishments



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

Wyoming Game & Fish Department

April 2013

*Conserving Wildlife
Serving People*



Wyoming Game and Fish Commission 2012 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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LIST OF ACRONYMS

AHAB – Aquatic Habitat Biologist
AIPA – Area Improvement Project Agreement
AMA – Agricultural Management Assistance
AMP – Allotment management plan
AUM – Animal Unit Month
BPS – Budget Planning System
BEHI – Bank Erosion Hazard Index
BLM – Bureau of Land Management
BNF – Bighorn National Forest
BOR – Bureau of Reclamation
BOW – Bowhunters of Wyoming
BTNF – Bridger-Teton National Forest
CCRP – Continuous Conservation Reserve Program
CE – Conservation Easement
CMR – Cokeville Meadows Refuge
CRM – Coordinated Resource Management
CPR – Conservation Reserve Program
EA – Environmental Assessment
EIS – Environmental Impact Statement
EQIP – Environmental Quality Incentive Program
FSA – Farm Services Agency
GIS – Geographic Information System
GPS – Global Positioning System
GVID – Greybull Valley Irrigation District
HEB – Habitat Extension Biologist
I&E – Information and Education
JIO – Jonah Interagency Office
JCWPD - Johnson County Weed and Pest District
L-D – Live-Dead
LCWP – Lincoln County Weed and Pest
LD CD – Lake DeSmet Conservation District
LSRCD – Little Snake River Conservation District
MDF – Mule Deer Foundation
MIM – Multiple Indicator Monitoring
NEPA – National Environmental Policy Act
NHD – National Hydrography Dataset
NRCS – Natural Resources Conservation Service
NWR – National Wildlife Refuge
OSLI – Office of State Lands and Investments
PAA – Public Access Area
PAPA – Pinedale Anticline Project Area
PAPO – Pinedale Anticline Project Office
PIT – Passive inductive transducer
RMEF – Rocky Mountain Elk Foundation
RMP – Resource Management Plan
ROD – Record of Decision
SAFE – State Acres for Wildlife Enhancement
SCCD – Sublette County Conservation District
SCWPD – Sublette County Weed and Pest District

SEO – State Engineers Office
SERCD – Saratoga-Encampment-Rawlins Conservation District
SGI – Sage Grouse Initiative
SHP – Strategic Habitat Plan
THB – Terrestrial Habitat Biologist
TNC – The Nature Conservancy
TSS – Teton Science School
TU – Trout Unlimited
UCC – Utah Conservation Corps
UCWP – Uinta County Weed and Pest District
USFS – US Forest Service
USFWS – US Fish and Wildlife Service
USGS – US Geological Survey
UW – University of Wyoming
VIT – Vaginal Implant Transmitter
WFARP – Wyoming Front Aspen Restoration Project
WGBGLC – Wyoming Governor’s Big Game License Coalition
WGFC – Wyoming Game & Fish Commission
WGFD – Wyoming Game & Fish Department
WHAM – Watershed Habitat Assessment Methodology
WHMA – Wildlife Habitat Management Area
WIA – Walk-in Area
WID – Watershed Improvement District
WLCI – Wyoming Landscape Conservation Initiative
WMA – Wildlife Management Area
WRP – Wetland Reserve Program
WSA – Wilderness Study Area
WSGALT – Wyoming Stock Growers Agricultural Land Trust
WWDC – Wyoming Water Development Commission
WWNRT – Wyoming Wildlife and Natural Resource Trust
WWSF – Wyoming Wild Sheep Foundation

PERSONNEL DIRECTLY IMPLEMENTING THE STRATEGIC HABITAT PLAN

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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 direct 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 WGFD 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 subsequently updated, 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.” 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 a myriad of partners (goal 5). An important component of this SHP and WGFD 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. The priority areas also include WGFC managed lands.

This is the eleventh annual report for the WGFC, 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 2012 activities and SHP accomplishments of the Terrestrial Habitat, Aquatic Habitat, and Habitat and Access programs of the WGFD, as well as associated portions of the Lands Administration, Water Management, Information, Education and Publications 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. Many other WGFD personnel from all Division and Sections were involved in many aspects of the habitat program. Their involvement is critical to accomplishments reported herein.

The entire SHP along with priority areas and objectives can be viewed on the WGFD website at <http://wgfd.wyo.gov/web2011/wildlife-1000651.aspx>. This will guide our efforts and direct funds over the next several years. For additional information, please contact any of the personnel listed. Also, please share this report with anyone interested in the Department and Commission’s habitat efforts.

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 directed at implementation of SHP goals and management of WGFC managed lands during calendar year 2012 (these figures **do not** include personnel salaries, supplies, materials, equipment used for routine WGFD maintenance and operation and WGFC property tax and lease payments):

Department Funds Expended on SHP Goals:

\$ 3,145,000.00

II. Non-department funds expended for implementation of SHP goals for calendar year 2012 from or in collaboration with various sources including: a) Wyoming Wildlife and Natural Resources Trust Fund (WWNRT), 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 Governors Big Game License Coalition (WGBGLC), g) private landowner contributions (including in-kind), h) corporations and businesses, i) private donors, and Wyoming State Legislative Capitol Construction funds:

Non-Department Funds Expended on SHP Goals:

\$ 6,774,000.00

Grand Total for SHP Goals:

\$ 9,919,000.00

The WGFD applied funding from outside sources amounting to approximately **\$2.15** for each WGFD dollar expended for on-the-ground fish and wildlife habitat activities. This outside funding is critical for implementing the Strategic Habitat Plan and conserving our wildlife resources. Overall, personnel directly involved in implementing SHP goals oversaw spending of approximately **\$7,551,000** of WGFD regular maintenance and operating funds, State Wildlife Grants from U.S. Fish and Wildlife Service and WGFD Trust Fund monies. This figure includes wages, benefits, equipment operation expenses, supplies and on-the-ground improvement material expenses allocated as follows: approximately **54%** 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 **42%** for materials and supplies. Personnel overseeing the WGFD Education, Information and Publications Programs spent approximately **12.5%** of their time in 2012 on SHP goal 4 "habitat" activities totaling approximately **\$271,000** of regular WGFD maintenance and operating funds. Information and education are critical for maintaining current and long-term future, social, political and financial support for wildlife habitat program related efforts. Lastly, personnel within the Lands Administration Branch conduct annual WGFC property rights monitoring, property right acquisition and disposal, oversee payment of WGFC property taxes in each county and lease payments to the Office of State Lands and Investments (OSLI) among others. Property taxes paid to counties by the WGFD in 2012 totaled approximately **\$103,350**. These taxes included WGFC owned state offices, fish hatcheries, bird farms, houses, Wildlife Habitat Management Areas (WHMA), and Public Access Areas (PAA). During 2012, WGFD costs for leases totaled approximately **\$415,550**. The majority of lease payments were made to the OSLI involving State Land leases associated with WHMAs and PAAs.

HABITAT PROGRAM ACCOMPLISHMENTS: THE NUMBERS

Those activities resulting in on-the-ground accomplishments, promotion of collaborative habitat efforts, and information and education efforts directed toward the habitat program during calendar year 2012 are summarized below:

Activity	2012 Accomplishments	* Average Accomplishments
Detailed stream assessments	8 streams totaling 11,107 ft	7 streams totaling 13,479 ft
Riparian habitat assessments	26 on over 33 miles of streams or wetlands	11 on 65 miles of stream or wetlands
Watershed stream assessments	34 on 155 miles	23 assessments on 91 miles
Stream bank enhancements	12 totaling 5,860 ft	8 totaling 7,012 ft
Instream structures	24 installed	70 installed
Instream flow segments	14 on 61 stream miles	6 on 23 stream miles
Fish screens installed	6	3
Fish passage structures installed	8	7
Fish passage upstream miles	65 miles connected	166 miles connected
Fish passage structures monitored, maintained	15 monitored, 12 maintained	10 monitored, 7 maintained
Project monitoring - detailed stream channel	1 totaling 1,850 ft	3 totaling 10,630 ft
Management monitoring - detailed riparian	19 totaling 4,194 ft	25 totaling 10,534 ft
Project monitoring - photo, other	39 streams or sites	27 streams or sites
Aspen/cottonwood browse monitoring	41 sites	34 sites
Stream habitat monitoring	57 sites	57 sites
Fish tracking or entrainment investigations	6	5
Beaver transplanted	1	18
Riparian habitat protection, enhancement, management	13 projects on 174 acres	18 projects on 484 acres
Private landowner contacts	281 contacts yielding 101 projects	290 contacts yielding 128 projects
Technical assistance requests	213	292
Conservation easements being worked on and coordinated with partners	11 easements totaling 12,189 acres	12 easements totaling 53,553 acres
Public Fishing Access Projects	24 totaling 24 miles	14 totaling 14 miles
Public Hunting Access Projects	8 totaling 4922 acres	5 totaling 2,496 acres
BLM RMP or USFS Cooperator Status	12 projects	5 projects
Trees or shrubs planted	6,081	8,765
Herbicide treatments to control noxious or invasive weeds primarily including cheatgrass, prickly pear, Russian olive and salt cedar	80,259 acres	24,843 acres
Upland grass, forb and food plot seeding	2,104 acres	2,490 acres
Mechanical tree removal mainly conifers from aspen stands; juniper, Russian olive and salt cedar	3,691 acres	5,821 acres
Mowing, chopping, and Lawson aerator treatments mainly in sagebrush and grassland communities and on meadows	385 acres	1,943 acres
Water wells drilled	2	4
Water guzzlers or water tanks installed	18	15

Activity	2012 Accomplishments	* Average Accomplishments
Water pipelines installed	61,600 ft	61,244 ft
Spring developments	6	4
Fences installed or modified to manage treatment areas, facilitate livestock grazing management, and address wildlife movements	40 miles	39 miles
Wetland development or major renovation	5 projects totaling 75 acres	7 projects totaling 129 acres
Prescribed burns	3,395 acres	14,454 acres
USDA Farm Bill Program contract involvement	207 contracts	185 contracts
Livestock Grazing Management Plans	13 plans, 178,475 acres	18 plans, 255,181 acres
Upland habitat inventory on a landscape evaluation scale	336,724 acres	2,718,663 acres
Upland and rangeland inventories on an intensive scale	69,757 acres	337,200 acres
Upland vegetation/habitat treatment monitoring sites	167	183
Annual vegetation production/utilization sites	158	133
Field cooperative research projects	11	9
WGFC managed lands intensive livestock/forage reserve/meadow rejuvenation and grazing administered	84,563 acres on 19 areas	112,153 acres on 10 areas
WGFC managed lands fence maintained	644 miles	612 miles
WGFC managed lands irrigated	5,838 acres	3,814 acres
WGFC managed lands noxious weed control	2,746 acres	1,201 acres
WGFC managed lands water control structures	127 installed	44 installed
WGFC managed lands meadow mowing	560 acres	232 acres
WGFC managed lands farming contracts	2,643 acres	2,128 acres
WGFC property right monitoring	94,451 acres	81,291 acres
Number of funding sources/contracts/grants administered	136	137
Major information and education efforts	54	110
Funding applications prepared for other entities	64	39
Unique items include monitoring 850 acres of weed treatments, installing a Baggs Highway deer underpass, helicopter dropping 75,000 lbs of aspen for beaver, collaborating in Pinedale Region for post-Fontenelle fire management, monitoring 136 reclaimed wells for compliance, and participating in the Rock Creek noxious weed CRM.	6	

*Averages calculated over a two to six year period between calendar years 2007 and 2012.

A Huge Thank You to Our Partners!

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

The following lists major funding partners and approximate amounts the WGFD received and/or that WGFD personnel were heavily involved with in the oversight or verification of expenditures during 2012. This is not a complete list, nor does it reflect all partner contributions and we apologize for anyone who may have been inadvertently missed.

Funding Partner	Approximate amount for 2012 (rounded to nearest \$100)
Federal USDA Farm Bill Program Funds (NRCS and FSA)	\$3,212,200.00
Wyoming Wildlife and Natural Resources Trust Board	\$1,808,600.00
Bureau of Land Management	\$324,700.00
Private Landowners	\$308,500.00
Wyoming State Legislative Capital Facilities Funds to WGFC	\$220,400.00
Bureau of Reclamation	\$109,000.00
Peabody Energy	\$88,900.00
Wyoming Governor's Big Game License Coalition	\$79,900.00
Sage Grouse Local Working Group – State of Wyoming Funds	\$54,600.00
Wyoming Governor's Sensitive Species Fund	\$47,600.00
Pheasants Forever	\$44,000.00
U.S. Fish and Wildlife Service – Private Lands Program	\$42,500.00
Rocky Mountain Elk Foundation	\$41,000.00
The Nature Conservancy	\$40,500.00
U.S. Forest Service	\$40,000.00
Washakie County Weed and Pest District	\$27,000.00
Converse County Conservation District	\$22,500.00
Hot Springs County Weed and Pest District	\$22,300.00
Wyoming Department of Environmental Quality 319 Funds from EPA	\$22,000.00
Park County Weed and Pest District	\$21,500.00
U.S. Fish and Wildlife Service - Fish Passage	\$19,200.00
Wyoming Landscape Conservation Initiative	\$17,000.00
National Park Service	\$12,900.00
Devon Energy	\$12,000.00
Water for Wildlife Foundation	\$11,500.00
Mule Deer Foundation	\$10,800.00
Converse County Weed and Pest District	\$10,000.00
Ducks Unlimited	\$10,000.00
Pinedale Anticline Project Office (BLM)	\$10,000.00
Trout Unlimited	\$10,000.00
Muley Fanatics of Wyoming	\$9,500.00
Teton County Conservation District	\$8,100.00
Wyoming Wild Sheep Foundation	\$7,500.00
Wyoming Office of State Lands and Investments	\$7,400.00
Bighorn County Weed and Pest District	\$5,000.00

Funding Partner	Approximate amount for 2012 (rounded to nearest \$100)
National Wild Turkey Federation	\$5,000.00
Platte County Weed and Pest District	\$5,000.00
Shoshone Conservation District	\$5,000.00
Rocky Mountain Bird Observatory	\$4,000.00
Lake DeSmet Conservation District	\$3,100.00
Thunder Basin Prairie Grassland Ecosystem Association	\$2,900.00
Wyoming Department of Agriculture	\$2,500.00
Northern Plains River Restoration Initiative	\$2,100.00
Laramie Rivers Conservation District	\$2,000.00
Platte County Resource District	\$1,500.00
Teton Science School	\$1,400.00
Bighorn County Conservation District	\$1,000.00
Grand Total	\$6,774,100.00

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

This report can be viewed on the WGFD website at: <http://wgfd.wyo.gov/web2011/wildlife-1000708.aspx>

AQUATIC HABITAT PROGRAM

Staffing for the aquatic habitat program was unchanged in 2012. It consisted of 12 permanent full time employees: six regional aquatic habitat biologists (AHABs), a statewide fish passage coordinator, a Wyoming Landscape Conservation Initiative (WLCI) coordinator, an aquatic habitat supervisor, an aquatic habitat program manager, a water management supervisor and a water management instream flow biologist. Two at-will contract employees worked for the section: one in Cody assisted the fish passage coordinator primarily collecting and compiling information about passage obstructions; and one in Casper, determining monitoring needs for Bates Creek watershed vegetation treatments and developing projects to remedy channel head cuts in the Bates Hole area southwest of Casper. Finally, seasonal biologist technicians assisted in the Lander, Laramie, and Jackson Regions.

During calendar year 2012, the aquatic habitat section was involved in **50 projects** involving funding from the Game and Fish trust fund, Department fish passage, Director's planning funds, the WWNRT, the USFWS, or Landowner Incentive Program funding. These sources provided over **\$1.2 million** toward on-the-ground expenditures for aquatic projects. WGFD aquatic habitat dollars spent on contracts or grants in calendar year 2012 totaled **nearly \$500,000**. The various partners and their contributions toward these projects are highlighted in the regional sections of this report.

Regional AHABs and statewide personnel also 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 tremendous time planning, coordinating and developing habitat project funding applications throughout the year. These projects and the funding oversight may be led by the WGFD or a partner.

Fish passage efforts are highlighted in the statewide section of this report. Of additional note, Trout Unlimited (TU) received a grant for installation of the Upper Sunshine Diversion fish ladder on the Greybull River, and a new grant agreement for the North Fork Canal fish screen on the North Fork of the Shoshone River. WGFD obtained two vertical traveling screens from the Bureau of Reclamation (BOR) Hydraulics Lab in Denver, CO. Screen efficiency and durability were tested in the lab under various conditions and will now include actual field use. The screens are scheduled to be a permanent part of the Timber Creek screening project within the Greybull River watershed. This is a cooperative project with TU and private landowners.

A challenge for the aquatic habitat section is lack of personnel capacity in the Casper and Cody Regions even before the current budgetary concerns. The Casper aquatic habitat biologist position was lost to the agency during the state government hiring freeze of 2009-2010. The Cody AHAB position was lost due to being reclassified into a fish passage coordinator in recognition of the importance of this work statewide. While the establishment of an annual contract employee in Casper has provided project help, the ability to establish long-term relationships with landowners and managers and develop long-range projects is hampered without a permanent aquatic position. There are numerous opportunities and needs to benefit the fishery resources of the Casper and Cody Regions that we remain unable to achieve due to lack of permanent biologists.

In-Stream Flow Fishing Articles (Goal 4) - Tom Annear

Four educational articles were written and appeared in the WGFD's *Wyoming Wildlife News* publication. These articles 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 introductions to the X-Stream angling program (2 articles), Sand Creek, and Roaring Fork Little Snake.

Bear Creek Diversion Fish Passage (Goal 2) – Lewis Stahl

Bear Creek is a tributary to the East Fork Wind River and located on the Spence and Moriarity Wildlife Management Area (WMA) near Dubois in Fremont County. In 2010 and 2011, the Bear Creek Diversion fish passage project consisting of two instream structures, new water control headgates, and a fish screen with bypass was completed. The 2012 irrigation season demonstrated that irrigators needed to divert more water into the irrigation ditch than previously anticipated due to percolation loss and the head needed to meet irrigation needs at the end of the ditch. This resulted in the fish screen being too small and the screen could not operate properly when overtopped by water. In late 2012, the 22 inch diameter by 60 inch long fish screen was replaced with a new 30 inch diameter by 60 inch long screen (Figure 1). The new screen is rated to freely pass up to 13.3 cfs compared to the 8.4 cfs rating of the previous screen. The smaller screen was removed and stored for use at an appropriately sized site in the future.



Figure 1. The Bear Creek fish screen was replaced with a larger screen of the same type when it was discovered that the ditch required more water than anticipated due to percolation and needed head to reach the end of the ditch.

Clear Creek Watershed Fish Passage Inventory (Goal 2) – Erin Sobel, Tim Paul, Patrick Geraghty, and Lewis Stahl

To aid in prioritizing statewide fish passage efforts, a database was developed in the mid-2000's to house information on various obstructions and diversion in waterways throughout the state. Field verification of potential obstructions has constituted an ongoing effort in developing the inventory. In 2012, efforts focused on the Clear Creek and the Paintrock Creek watersheds.

The Clear Creek watershed is located in northwest Johnson County and southeast Sheridan County stretching from Buffalo to the Montana border, and includes federal, state, and private land ownership. This watershed was prioritized for fish passage inventory because it is home to a diverse community of cool and cold water fish species and there is much potential to expand connectivity over many stream miles given the many irrigation diversions. The stream was identified as both a crucial and enhancement priority area in the WGFD Strategic Habitat Plan (SHP) and over the last several years block grants have been provided to the NRCS and landowners for multiple cooperative fish passage projects in the Clear Creek watershed. The Kendrick Dam fish bypass channel was completed in 2010, reconnecting 36 miles of Clear Creek. Points of diversion, primarily along Clear Creek's main channel, were identified during initial compilation of diversion information from various sources. In 2012, data were collected on 13 diversions bringing the total inventoried to 72 (Figure 2). Additional diversions were identified using improved geographic information system (GIS) mapping processes and assistance from local landowners. A GIS layer of canals and ditches, developed from the National Hydrography Dataset (NHD), was cross referenced with the Wyoming State Engineers Office (SEO) data to identify an additional 109 irrigation diversions to be inventoried (Figure 3).

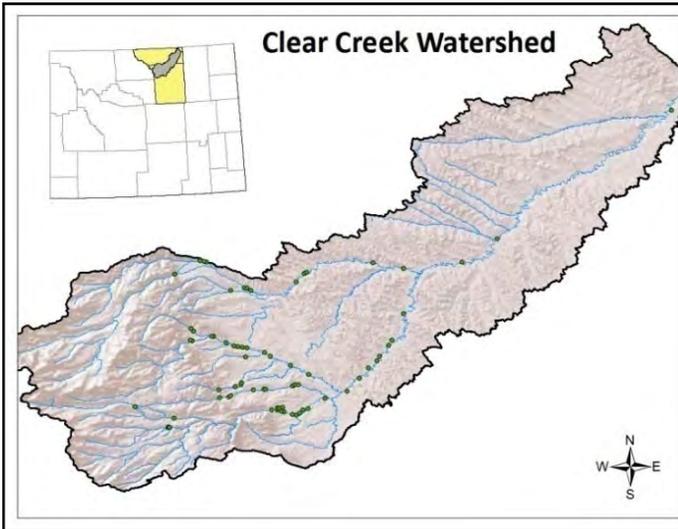


Figure 2. Green dots represent 72 diversions within the Clear Creek watershed where fish passage and screening data were collected.

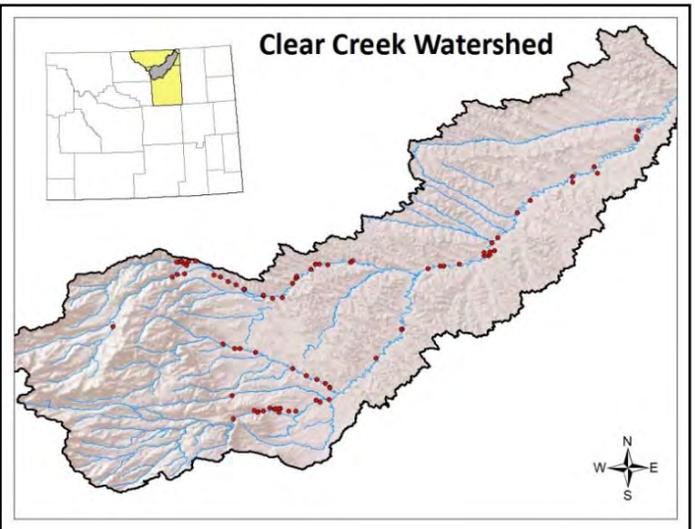


Figure 3. Red dots represent 109 additional diversions within the Clear Creek Drainage needing inventory, according to data from the National Hydrography Dataset and the Wyoming State Engineer's Office.

Water Management (Goal 1) - Tom Annear

Final actions were taken to purchase 25 shares and lease 80 shares of storage water in Bump Sullivan Reservoir near Yoder. Negotiations continued toward developing a long-term lease for water in DeSmet Reservoir. The Water Rights Management team met several times to identify a viable resolution for dealing with the commission's water right in Douglas Fishing Lake. At year's end this matter remained unresolved though a list of realistic solutions was developed.

Paintrock Creek Watershed Fish Passage Inventory (Goal 2) - Erin Sobel and Lewis Stahl

The Paintrock Creek Watershed is in the southeast portion of Bighorn County near Hyattville and includes federal, state, and private land ownership. Paintrock Creek, Medicine Lodge Creek, and Alkali Creek are the main waterways making up this sub-watershed of the Nowood River. Cross checking known diversions with the NHD and the Wyoming State Engineer's office points of diversion indicated at least 33 irrigation diversions within the Paint Rock watershed (Figure 4). Most diversions are located on private land at lower elevations. In 2012, data were collected on 12 diversions bringing the total inventoried to 21. A twenty-second site could not be completed because of denied access. Geographic and landownership maps were utilized to

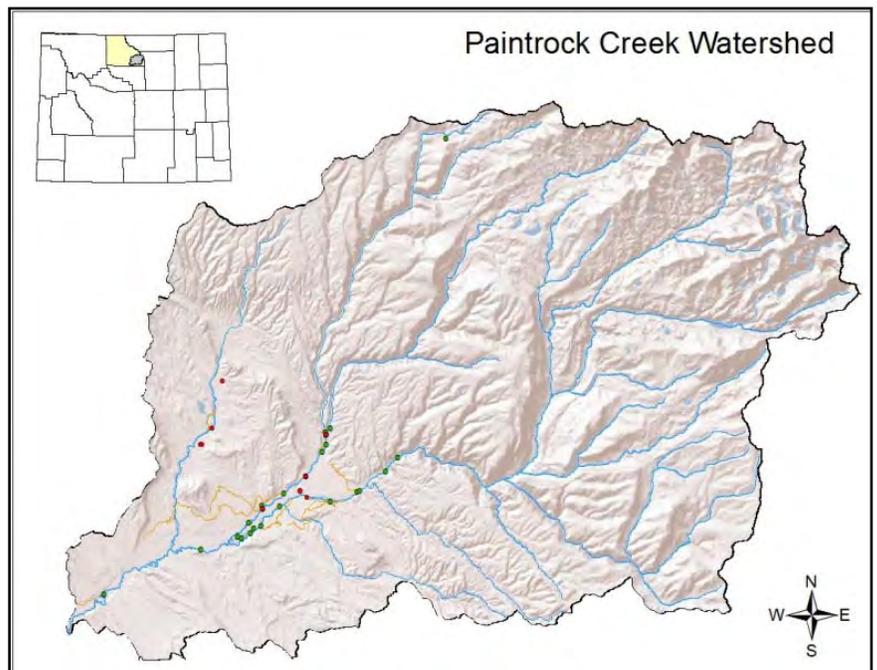


Figure 4. Green dots represent 21 diversions within the Paintrock Creek watershed where fish passage and screening data were collected, and the red dots represent 12 known diversions still needing inventory.

identify landownership for the remaining diversions in preparation for continued access requests and inventory efforts.

Upper Sunshine Diversion Fish Passage (Goal 2) – Lewis Stahl

The Upper Sunshine Diversion is located on the Greybull River near Meeteetse in Park County. The Greybull Valley Irrigation District (GVID) and the Wyoming Water Development Commission (WWDC) replaced this large, concrete irrigation diversion, and TU, WGFD, WWNRT, and nearly a dozen total funding partners cooperated with GVID to add a step pool fish ladder (Figure 5).



Figure 5. The upper Sunshine Diversion fish ladder during post-construction testing in 2012.

The project was completed in spring 2012, except for a few items such as a small bypass gate and a working electronics system to run all the gates automatically. A low water year resulted in a call on the river so the diversion and ladder were not used during the 2012 irrigation season except to test the system. Everything is expected to be operational and running during the 2013 irrigation season.

Design and Development of Fish Passage (Goal 2) – Lewis Stahl

The Thunderhead Diversion is located on Bear Creek downstream of the Bear Creek Diversion but still within the Spence and Moriarity WMA near Dubois in Fremont County. This upstream passage and canal screening project is intended to benefit Yellowstone cutthroat trout while also improving irrigation water delivery to wildlife forage areas on the WMA. It is located several miles downstream of the previous diversion rehabilitation and screening project at the Bear Creek Diversion. In fall 2012, a consultant engineering firm was selected and toured the site to discuss issues and goals. Preliminary design options with associated costs and benefits were provided in December 2012. Final designs are scheduled for completion in January 2013.

The Harmony Ditch upstream fish passage and canal screening project is located on the Nowood River near the town of Manderson in Bighorn County. Studies completed in 2006 and 2007, found 16 species of fish being entrained at an estimated rate of 55,415 fish annually. Entrained fish included four species of greatest conservation need: burbot, flathead chub, mountain sucker, and sauger. Preliminary designs were nearly complete in March 2011 when the contracted engineering firm reorganized and no longer worked on fish passage. The project was put on hold until products produced during the original contract were obtained, the remaining contract was cancelled, and new consultant engineers could be contracted. The new design engineers were finally selected and toured the site to discuss issues and goals. At the end of December, WGFD was processing the consultant's contract and final designs are expected in 2013.

The Encampment / Platte Valley Diversion on the Encampment River, is approximately 1/2 mile upstream of its confluence with the Platte River, near the town of Encampment in Albany County.

Fish movement studies proved the diversion is a barrier to large numbers of Platte River brown and rainbow trout migrating upstream to headwater habitats. Large numbers of fish are also entrained into the irrigation canal. Preliminary design options developed by consultant engineers were discussed with the landowner board and irrigation cooperative members in March 2012, but final agreements have not been reached.

Instream Flow Water Rights (Goal 1) - Mike Robertson and Tom Annear

Fourteen new filings for instream flow water rights were made in early 2012 on four streams in the Snake River drainage. Applications were prepared using data collected from study sites on Little Muddy Creek (2.0 miles), Littlefield Creek (7.0 miles), McKinney Creek (1.9 miles), Muddy Creek (5.4 miles), Dell Creek (0.25 miles), Granite Creek (8.5 miles), Lower Hoback River (6.3 miles), Upper Hoback River (1.8 miles), Willow Creek (8.3 miles), Lower Cliff Creek (2.3 miles), Upper Cliff Creek (6.2 miles), North Fork Fisherman Creek (4.7 miles), and Shoal Creek (6.4 miles).

Four new instream flow studies were initiated that focused on native Yellowstone cutthroat trout habitat in the Bighorn River drainage including Soldier, Buckskin Ed, Cedar, and Trout creeks (Figure 6).

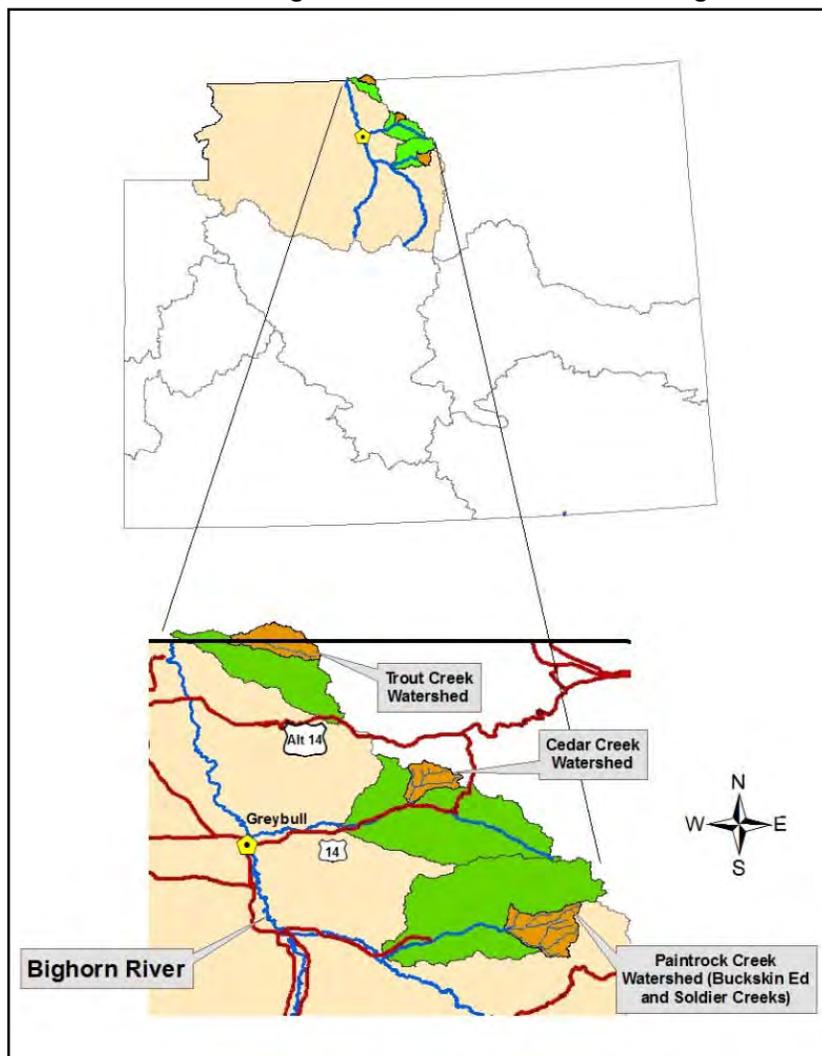


Figure 6. Instream flow studies were initiated on native Yellowstone cutthroat trout streams in the Bighorn River drainage.

HABITAT AND ACCESS MAINTENANCE BRANCH

The habitat and access maintenance program in 2012 consisted of four regional supervisors, three coordinators, one statewide supervisor, six crew leaders, three specialists, branch chief, assistant branch chief, and seven temporary positions stationed across the state.

The branch is responsible for the management of WGF D managed lands that include 37 WHMA, 192 PAA, and 22 feedgrounds. In addition, there is a statewide crew that 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, 5,100 acres of irrigated meadows, 2,400 acres of farmland, 250 acres of food plots, and more than 1,000 miles of fence for wildlife habitat purposes. To assist hunters and fisherman, another 1,100 miles of road, 390 parking areas, 67 boat ramps, 25 docks, 198 outhouses, and more than 6,000 signs are maintained.

During 2012, the branch also worked on other habitat development projects, including sagebrush rejuvenation, guzzler developments, meadow improvements, wetland developments and riparian projects. Included in this were the involvement and administration of one project involving the WGFD Trust Fund, two projects involving capitol facilities, and four projects involving the WWNRT and five other funding sources. These projects provided \$347,288 in on-the-ground project expenditures. The habitat development projects are highlighted in the regional sections of this report.

INFORMATION, EDUCATION AND PUBLICATIONS BRANCHES

Wyoming Wildlife Magazine

Wyoming Wildlife magazine is one of the department's oldest and most important communications tools. This monthly, four-color publication has a subscription of approximately 35,000 with a pass-along rate much higher. The publication focuses on natural history, habitat, and other wildlife issues in Wyoming. The following feature and news articles dealt with habitat in 2012:

- *January* - Mighty mite: pronghorns and their habitat needs; Travels of trout: aquatic habitat.
- *February* - Arctic snows: lesser snow geese and habitat relation; Conservation easement (CE) protects migration bottleneck; Kleenburn mine recognized for reclamation.
- *March* - Striking the new balance: mule deer and habitat; Cooperative project provides water for sage grouse; Habitat and research for sage grouse.
- *May* - A warm welcome: climate, bark beetles, and Wyoming forests; Biologists investigate declining desert minnow; Gray Reef releases water to clean trout habitat; New Conservation Reserve Program (CRP) initiative focuses on grasslands and wetlands.
- *June* - Another dry run: drought and habitat; The long trail: pronghorn migration; Biologists gauge impact of pine beetles.
- *July* - Rednecks: red-necked grebe ecology and habitat; Waves of grain: cereal grains and prairie ducks; Plans for Platte Valley mule deer habitat; X-stream anglers and Wyoming's instream flows.
- *August* - Water in the desert: Muddy Creek wetlands; Return of the Mile: Miracle Mile recovers from drought; Leave waterholes for wildlife.
- *September* - On little cat's feet: bobcat ecology and habitat; Tall cotton: cottonwood gallery forests; The lethal days of summer: summer cover for game birds; Farm Bill programs help ranchers through drought; Survey shows farmer support for conservation programs.
- *October* - On the ragged edge: winter and wildlife habitat; Going with the flow: Instream flow; How do beetle-killed pines affect elk and hunters?
- *November* - The beginning of the end: elk habitat.
- *December* - Irresistible force: bison in winter; Like cats and dogs: interaction between wolves and lions; Ocean Lake ponds drained to improve habitat; Federal funds expand protection for 100,000 acres of wetlands.

Wyoming Wildlife News

The WGFD also produces a bimonthly newsprint publication—*Wyoming Wildlife News*—available free at license selling agents and other outlets across the state. This publication is primarily directed at Wyoming’s hunters and anglers. The following features and news articles dealt with habitat issues in 2012:

- *January-February* - Director’s Opinion on Mule Deer; WGFD addresses declines in Black Hills deer herds; X-Stream Fishing on Pine Creek; Ocean Lake HMA Ponds Drained.
- *March-April* - Study to determine success of highway underpasses: Adventures at Ocean Lake WHMA; Sage grouse projects receive funding; X-Stream Fishing on Roaring Fork Little Snake.
- *May-June* - Director’s Opinion on Fish Passage: Hoback moose research expanded; Elk movement monitored in beetle-killed forests.
- *July-August* - Habitat partnership plan to benefit mule deer; Red Shirt Journal: Think Habitat; X-Stream Angling on Sand Creek.
- *September-October* - How has the drought affected your wildlife?; Drought conditions affecting pronghorn.
- *November-December* - Keep mule deer wild; X-Stream Angling on Bear Creek.

Regional Information and Education Specialists

The WGFD has an Information and Education (I&E) Specialist assigned to each of the eight regional offices around the state. Each Regional I&E Specialist is responsible for communicating with the public in his or her respective region about important wildlife issues, much of which includes habitat-related messages. These activities are reported in the Regional narrative report section of this document.

Video and Television

The WGFD has two in-house videographers who work on a variety of projects designed to educate and inform audiences about wildlife issues in Wyoming, including a weekly news spot broadcast on two TV stations. New internet outlets are making these videos available more widely than ever before.

- X-Stream Angler (3 videos: Sand Creek, East Fork Wind River, Middle Fork Powder River).
- Uinta Mule Deer: Study Update.
- Bat Survey.
- Platte Valley Draft Plan.
- “Commitment to Habitat” - Announcing WGFD money for Platte Valley habitat work.
- “Habitat in Trouble” - Platte Valley Habitat Tour.
- “Fighting Cheatgrass” - Cheatgrass Spraying at Squaw Mountain near Wheatland.

Habitat-Related Radio Shows

The WGFD also produces a weekly radio show heard on stations across the state.

- *January* - 3rd round of public meetings on Platte Valley Mule Deer Initiative; Sage Grouse projects receive funding.
- *February* - Draft Platte Valley Mule Deer plan now on website.
- *March* - WGFD works on Platte Valley Mule Deer plan following meetings.
- *June* - WGFD announces habitat partnership plan to benefit Platte Valley Mule Deer.
- *August* - Drought conditions affecting pronghorn; Drought hard on wildlife; Natural resource mapping tool to be launched in Wyoming; X-Stream Angler program.
- *December* - Closures noted for WGFD WHMAs.

LANDS ADMINISTRATION BRANCH

During 2012, Lands Administration personnel continued to focus on addressing WGFC objectives involving property rights functions for habitat conservation, public access, and property rights monitoring. Branch personnel worked on a variety of habitat related projects around the state pursuant to the goals and objectives of department regulations, WGFC policies, SHP priority areas, and other administrative directives. Branch performance was greatly enhanced with the addition of a third permanent employee to the staff. Lands Branch personnel continued to work on CEs, special use permits, land exchanges, public access easements, OSLI access acquisitions, and other projects. The Branch continues to receive outstanding support and assistance from local biologists and game wardens in pursuit of all lands projects. Personnel participated on Habitat Technical Advisory Group, Water Rights Team, Wyoming Association of Land Trusts, federal aid property rights audit, and the Snake River Task Force.

Badwater Ranch (Goal 3) – Kerry Olson

Permanent public recreational access was acquired on a portion of the Badwater Ranch in western Natrona County. More than 4,500 acres of private lands along Badwater Creek will be available for public hunting, fishing, hiking and other recreational pursuits following development activities in the spring (Figure 7). The easement, donated by landowner Ace Spratt, will also enhance public access to approximately 5,000 acres of adjacent state and federal lands.



Figure 7. Badwater Ranch Public Access Area.

Conservation Easement Funding (Goal 1) – Butch Parks

WGFD funds were granted to help fund CE and lands acquisitions projects throughout the state. A total of \$388,929 helped fund CEs on eight CE projects sponsored by The Nature Conservancy (TNC), Jackson Hole Land Trust, Wyoming Stock Growers Agricultural Land Trust (WSGALT), and the Wyoming Land Trust. The grants helped to acquire easements on the Double A Ranch, 3 Bar X Ranch, Diamond G Ranch, HF Bar Ranch, Thornock Place, V Ranch, Wunder Ranch, and the 67 Ranch. In addition, \$300,000 was granted to help The Conservation Fund acquire more than 300 acres along the North Platte River near Gray Reef.

Bear Trap Access Easement (Goal 3) – Brian Rognon

Public access to 80 acres on the Beartrap Ranch in Johnson County was acquired for hunting, fishing, hiking, nature study and other recreational purposes. The Beartrap Ranch public access easement was a companion project to a larger CE coordinated by WSGALT. The easement provides access to a quarter-mile stretch of Beartrap Creek, and enhances access to hundreds of acres of adjacent state and federal lands.

Barnes Ranch (Goal 1) – Kerry Olson

Efforts to acquire a CE on approximately 2,000 acres of private lands along Fontenelle Creek



continued in 2012 (Figure 8). Tours of the Barnes Ranch were held for Wyoming Game and Fish Commissioners Klouda and Price, and for WWNRT Board members. Both tours highlighted the importance of habitat values on the ranch, and the importance of adding Barnes Ranch lands to completed CEs on the Diamond H Ranch and the V Cross Cattle Company.

Figure 8. Barnes Ranch CE on Fontenelle Creek.

Deer Creek Public Access Area (Goal 3) – Butch Parks, Brian Rognon

In 1986, the WWDC obtained a permanent public fishing easement on Deer Creek south of Glenrock as part of the mitigation efforts for the Deer Creek Reservoir. The WWDC never constructed the reservoir, but the fishing, road, and parking area easements still exist. The WWDC agreed to allow the WGFD to develop the site into a public access area. Branch personnel completed necessary requirements to develop and administer the area.

Fall Creek Public Access Area (Goal 3) – Butch Parks

High Meadow Ranch Property Inc., granted an easement to a lot in the Barger Subdivision near Pinedale. Access to the lot provides access to fishing opportunities on an adjacent section of State Trust Land. The state land includes approximately one-half mile of Pole Creek and almost two miles of Fall Creek.

Middle Fork Powder River – Ellis (Goal 3) – Butch Parks

A permanent public fishing easement of approximately one-half mile along the Middle Fork Powder River was acquired from the Ellis Sheep Company with Voluntary Public Access – Wildlife Habitat Incentive Program. The Program administered by the NRCS provided one-time funds to acquire public access throughout the state. The easement also provides connectivity to several miles of stream on public lands.

Ocean Lake (Goal 3) – Kerry Olson, Butch Parks

Utilizing the Voluntary Public Access – Wildlife Habitat Incentive Program administered by the NRCS, public access to 118 acres of private lands adjacent to the Ocean Lake WHMA was acquired in 2012.

Fish Creek Flying W Ranches (Goals 1 and 3) – Kerry Olson, Butch Parks

Lands Administration completed acquisition of two CEs on Fish Creek Flying W Ranches, and a public fishing easement to the Green River near Big Piney in Sublette County (Figure 9). The Fish Creek Place (949 acres) and the Johnson Place (581 acres) CEs will conserve quality moose, deer, elk, and pronghorn habitat in areas under extreme development pressure. The public fishing easement will enhance fishing opportunities on the Green River, and will connect to existing WGFC-owned public access areas.



Figure 9. Fish Creek Place Conservation Easement.

OSLI Inventory (Goal 5) – Brian Rognon, Butch Parks

Pursuant to the Governor's Office requirement for a single inventory of all state owned property rights, Lands Administration assisted in creation of an inventory database and initiated data input with the OSLI. The inventory will eventually become a GIS based system that will enhance access to property rights information for use by WGFD personnel, the public, and state and federal agencies.

OSLI Leases (Goal 3) – Brian Rognon, Butch Parks, Kerry Olson

Permanent public fishing, parking, and vehicle access easements were acquired from the Office of State Lands and Investments throughout Wyoming. These included public access at Sodergreen Lake, Elk Mountain Reservoir, Encampment River at Baggot Rocks, Idaho Lakes, Shoshone River - Big Creek, New Fork River - Airport, and Shoshone River - Cooper Lane.

Richie Ranch (Goals 1 and 3) – Kerry Olson, Butch Parks

Two CEs and a public access easement to the East Fork River were completed on Richie Ranch lands near Boulder. Lands Administration Branch coordinated acquisition of the CEs which are held by the Wyoming Stock Growers Agricultural Land Trust. The public access easement, held by the WGFC, will provide parking, a boat launch site, and access to approximately two miles of the East Fork River.

Other Lands Administration Projects – Butch Parks, Kerry Olson, Brian Rognon

- Easements for construction and maintenance of fish barriers were acquired at Dirtyman Creek and Hell Canyon Creek.
- Check station leases were acquired for Aquatic Invasive Species boat inspection and cleaning sites near Glendo and Keyhole Reservoirs.
- Public access to the Salt River on the Perkes Hereford Ranch was maintained by exchanging parking lot and access road locations.

V Cross Cattle Company (Goals 1 and 3) – Kerry Olson

The V Cross Cattle Company conservation and public access project was completed during the summer of 2012. Approximately 2,128 acres of high quality wildlife habitat located along Fontenelle Creek are permanently conserved. A crucial link between US Forest Service (USFS) roads was also connected for public travel, and a trail head to access several thousand acres of federal lands were also acquired (Figures 10 and 11).



Figure 10. V Cross Cattle Company Public Access Road.

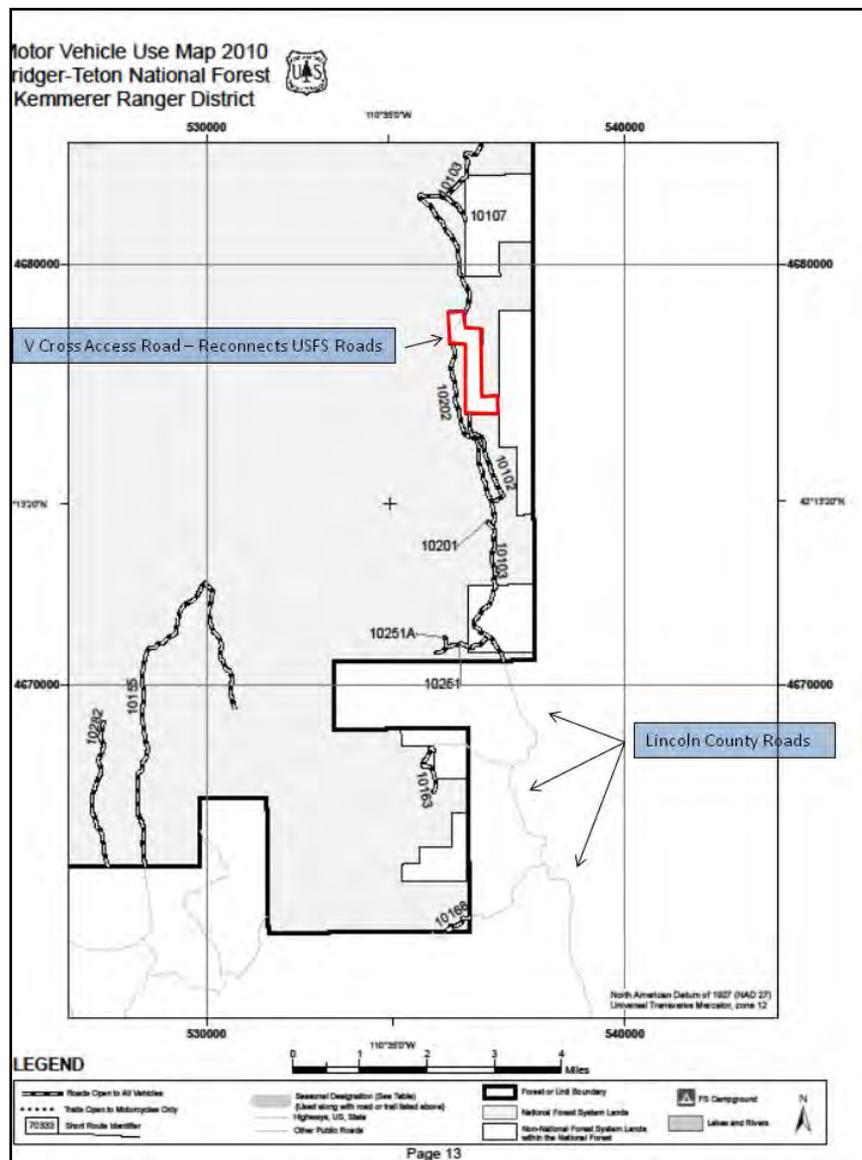


Figure 11. V Cross Cattle Company Public Access Road Map – From USFS.

TERRESTRIAL HABITAT PROGRAM

In November 2011 the terrestrial habitat program was restructured to enhance Department Regional collaboration and cooperation. Supervision of the eight regional terrestrial habitat biologists (THBs) was transferred to Regional Wildlife Management Coordinators. Throughout 2012 coordination occurred between the section and WGFD Regional personnel to ensure success of the re-structure. Terrestrial Habitat Section personnel include; three habitat extension biologists (HEBs) working in Natural Resource Conservation Service (NRCS) District Offices as well as one working from his home office, the terrestrial habitat program manager, and the terrestrial habitat assistant program manager, located in Cheyenne. The terrestrial habitat program administrative assistant position was not refilled but was absorbed by the Wildlife Division administrative assistant. Tracking grants, agreements and expenditures for all terrestrial habitat projects remained with the Terrestrial Habitat Program managers in Cheyenne. One temporary position, approximately six months total time, assisted THBs with projects in western Wyoming associated with the Wyoming Range Mule Deer Initiative. The Laramie Region THB position was filled in September after being vacant for several months and duty location was transferred from Laramie to Saratoga. This position will be deeply involved in the Platte Valley Mule Deer Initiative and with the Platte Valley Habitat Partnership addressing mule deer habitat issues over the next few years. The Gillette HEB position was vacant for a few months before being filled and moved to the NRCS Office in Sundance.

During calendar year 2012, Terrestrial Habitat Section personnel were heavily involved with on-the-ground implementation, oversight or verification of expenditures on **85 projects** involving Game and Fish trust funds and funds granted to the Department from sources such as; WWNRT, various conservation organizations, USDA Farm Bill Programs, local, county, state and federal agencies, conservation districts, weed and pest districts and private landowners, among others. These sources provided over **\$2.5 million** toward on-the-ground expenditures for terrestrial projects. The various partners and their contributions toward these projects are highlighted in the regional sections of this report. In addition, regional THBs and HEBs worked on other SHP actions that are not directly related to funded projects or are funded through the standard maintenance and operational budgets. These actions included; habitat protection, inventory and assessment work, monitoring previous project function and habitat response, habitat related education efforts, training and addressing habitat related opportunities that arise during the year. Lastly, and most importantly, section personnel spent a considerable amount of time planning, coordinating and developing future projects with a multitude of partners and preparing funding applications throughout the year for future implementation.

Statewide, THBs closely coordinated with Wildlife Division personnel to address habitat portions of the season setting meetings. They also conducted, coordinated with and collated information collected by all Wildlife Division personnel from 138 established annual vegetation production and utilization transects. Another important task performed by section personnel was collecting vegetation and habitat monitoring data on 165 permanent transects associated with past habitat enhancements. HEBs attend area Conservation District and NRCS meetings to promote wildlife habitat management and enhancement projects and US Department of Agriculture Farm Bill programs. Section personnel are also responsible for coordinating annual meetings with federal land management agencies relative to wildlife habitat enhancement projects and larger federal projects that may affect wildlife habitat. They provided needed 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 WGFD species working groups (moose, bighorn sheep, sage grouse, pronghorn and mule deer) and routinely serve on various committees.

WYOMING LANDSCAPE CONSERVATION INITIATIVE

In 2012, the WLCI, working with partners, was instrumental in continuing development of long-term science-based efforts to assess and enhance aquatic and terrestrial habitats at a landscape scale in Southwest Wyoming, while facilitating responsible development through local collaboration and partnerships. These activities were accomplished through numerous coordination meetings, field trips, and work sessions to help develop and implement projects and identify Local Project Development Team priorities.



Figure 12. Attentive participants at the 2012 WLCI Science Workshop.

The coordinator traveled to Jackson Lake Lodge in the fall to present an introduction to WLCI to the Advisory Committee of the Great Northern Landscape Conservation Cooperative and to hold their fall Executive Committee meeting (Figure 13). The WLCI continues to develop the Conservation Action Plan begun in late 2009.

The WLCI hosted its third Science Workshop in May in Rock Springs. The workshop included over 80 presentations within four sessions: 1) Changing Landscapes: Development and Influence of Energy and Mineral Resources, 2) Understanding the Influence of Land Use and Energy Development on Wildlife Populations and Their Habitats, 3) Assessing Landscapes and Monitoring Change (tools, approaches, and methodologies), and 4) Addressing Change through Management and Conservation Actions (Figure 12). Over 200 participants attended the workshop over a three day period.



Figure 13. WLCI presentation to the GNLCC Advisory Committee.

The WLCI financially partnered on 38 projects in 2012; with several projects being multi-year. Projects within a specific WGFD region are described in the regional sections of this report. Overall, the following bullets summarize achievements in connecting fragmented habitats, combating invasive species, and improving water quality and fish passage:

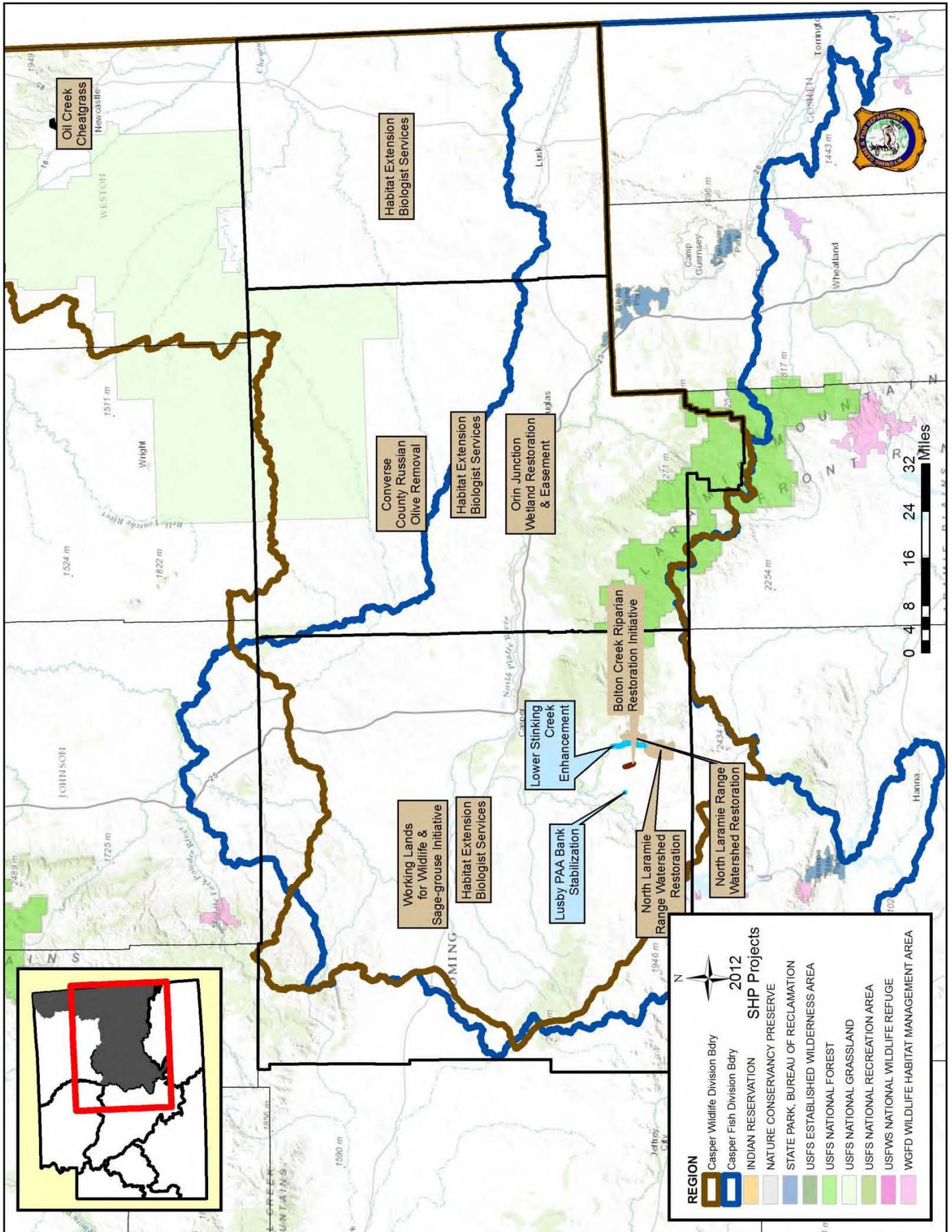
- Over 1,400 acres of prescribed burns and mechanical treatments completed, promoting a more natural vegetative community.
- Over 17 miles of wildlife friendly fencing, enclosures, or modifications were completed.
- Mule deer migration is improved with an additional underpass on Hwy 789, five miles north of Baggs.
- Over 27,000 acres were treated for invasive weed species.

- 850 acres were assessed for treatment effectiveness.
- 20,400 acres were inventoried for presence/absence of invasive weed species.
- Uinta County Weed and Pest District (UCWP) planted 266 native tree and shrub species on Black's Fork.
- Two culverts were replaced in the LaBarge Creek drainage.
- Native fish have an additional 27 miles of stream to complete their life cycles, due to culvert replacements and sheet piling improvements.

Wyoming Native Seed Collection (Goal 2) – WLCI, Jim Wasseen

This project is intended to provide a source of native seed and plant material, vegetative propagules, and native seed reserves to assist in providing native plants for restoration projects. The Chicago Botanical Gardens provided interns to the Bureau of Land Management (BLM) for the Seeds of Success program. Due to drought conditions across much of Southwest Wyoming in 2012, seed collections were drastically reduced this year.

CASPER REGION



CASPER REGION HIGHLIGHTS

- Four grade control structures were installed along Stinking Creek.
- The eroding stream bank at the Lusby PAA was fixed.
- 7,243 acres of cheatgrass were treated with herbicides.
- Nearly 7 acres of Russian olive were removed from PAAs along the North Platte River.
- Over 300 Russian olive trees were removed from the North Platte River riparian areas in Converse County.
- Over 350 children and adults attended various habitat presentations in the area during 2012.
- 75,000 lbs of aspen were air lifted and deposited in Bolton Creek for dam building material use by beavers.

Habitat Extension Services (Goal 2) and Information and Education (Goal 4) – Todd Caltrider



Figure 1. Aspen stand restoration on Miller Creek, Crook County.

Monitoring was conducted on an Environmental Quality Incentives Program (EQIP) project focused on mountain mahogany restoration to evaluate potential effects of conifer removal treatments. Review and comments were made on 25 different farm bill applications including EQIP, Sage Grouse Initiative (SGI), and Wetland Reserve Program (WRP). A grazing seminar focused on grazing and livestock management during drought was held in the Sundance high school auditorium. The seminar featured presentations from Roy Roath, Colorado State University Range Extension Specialist, Dallas Mount, and Brian Sebade, both University of Wyoming (UW) Agricultural Extension Specialists, and Julie Wheeler, USFS Range Specialist (Figure 2).

In 2012, habitat extension services were provided to seven different entities including private landowners, NRCS, and the Crook County Conservation District. Direct technical services provided included recommendations on land management practices for aspen restoration and range plantings among other wildlife habitat consultations (Figure 1).

*Grazing Workshop
in Sundance*

Date: 08/17/2012
Time: 10:00 AM
Sundance High
School Auditorium

Questions?
Call Todd Caltrider at
307-283-2870

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DROUGHT & RANCHING

Economic and Land Management Strategies for Livestock Producers in the Face of Drought

This workshop will include presentations from:

- Dr. Roy Roath, a CSU Range Extension Specialist
- Dallas Mount, Platte County UW Extension Educator
- Brian Sebade, UW Crook County Extension Educator
- Julie Wheeler, USFS Range Conservationist
- Keela Deaton, NRCS District Conservationist
- Todd Caltrider, WGFD Habitat Extension Biologist

Free Lunch!!!
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Figure 2. Flyer for grazing seminar held in Sundance.

Lower Stinking Creek Enhancement (Goal 2) – Colin Tierney

In fall 2012 WGFD implemented the first stage of a seven mile-long enhancement within the Stinking Creek watershed aiming to enhance riparian habitat and reduce the sediment load

coming from Stinking Creek, a tributary to Bates Creek (Figure 3). In cooperation with Garrett Ranch Company a plan was developed for 14 sheet-piling grade control structures, four of which were installed in September and October on State of Wyoming lands. The structures act as sediment and water catchments, thereby encouraging the development of native riparian plant communities. The benefitting riparian plant species will help stabilize the channel and limit sediment transport. The project mimics work performed on nearby Lawn Creek in 2000 by WGFD. WGFD and the BLM are currently coordinating on National Environmental Policy Act (NEPA) permitting for the remaining 10 structures. Likewise, WGFD is coordinating with the SEO to ensure all water rights and the North Platte decrees are honored.

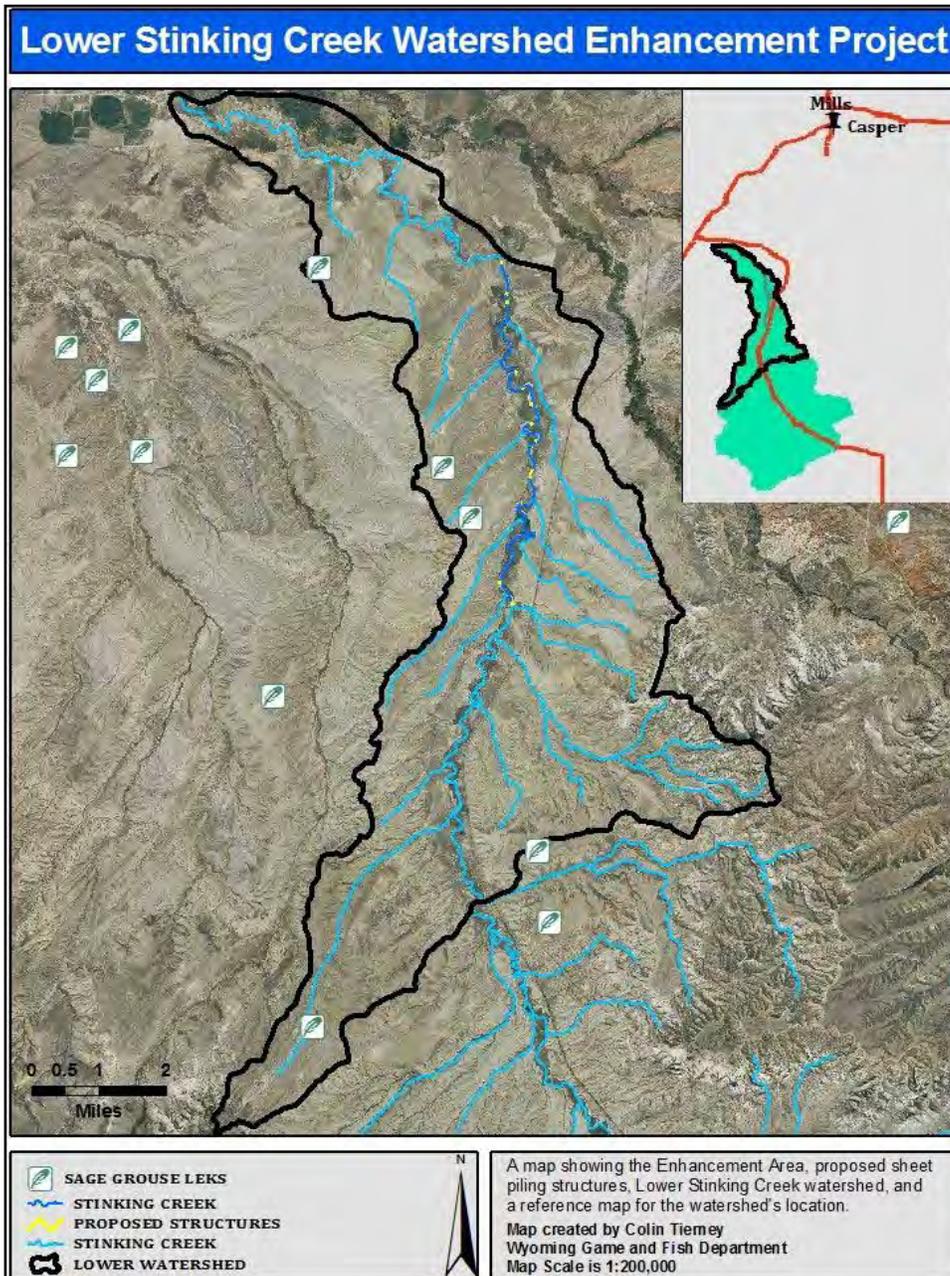


Figure 3. The lower Stinking Creek watershed enhancement area.

piling to complete the four structures. The structures start out between six and ten feet deep in the middle of the channel and gradually taper in depth as they leave the channel and extend onto the banks (Figure 4). Likewise, the above ground portion starts about six inches above the natural streambed, tapering up as they get closer to the bank, where they tie in and are then cut flush with the terrace. The areas surrounding these structures were lined with geotextile fabric, atop which granite riprap was placed. These splash aprons dissipate the flowing water's energy, reducing scour. Riparian woody plants including buffalo berry, cottonwood, and willow will be planted this spring on these four sites. Photographic monitoring will be used to document how water passes over these structures and monitor grazing pressure. If necessary, some or all of these plantings will be fenced.

Five individuals placed approximately 300 cubic yards of riprap and 2,400 square feet of vinyl sheet



Figure 4. A pre-treated site (left) and installed sheet piling (right).

The Bates Hole area was designated as crucial to aquatic habitat because sediment loading from these basins diminishes spawning habitat in the North Platte River, a distinctive, productive, and economically significant fishery resource in the Casper Region. This project is intended to improve habitat for a variety of wildlife species by retaining water in a riparian corridor that has shown the potential for response to grazing species management and other improvements. Funding partners include WWNRT and Mule Deer Foundation (MDF). Remaining structures will be installed in fall 2013, and will be re-vegetated the following spring.

Mule Deer Legume Seeding (Goal 2) - Todd Caltrider

Thirty-two acres of alfalfa are scheduled to be planted on the Hunter Ranch and thirty acres on the Blacktail Canyon Ranch during the spring of 2013. The planting is intended to provide high quality forage for mule deer. This project will be paid for by WGFD Trust Fund dollars dedicated annually toward legume seeding.

North Laramie Range Watershed Restoration – Phase 2012 (Goal 2) - Keith Schoup

During 2012, Wyoming Helicopters applied Plateau® herbicide to control 7,234 acres of cheatgrass within infested big sagebrush communities (Figure 5). Since the fall of 2007, we have treated a total of 23,675 acres of cheatgrass infested big sagebrush communities. Field observations have indicated cheatgrass control will average 90 percent over all treated areas within five years of treatments. These control efforts have reduced cheatgrass density and allowed native grasses, forbs, and shrubs to increase. In addition, overall rangeland health has



Figure 5. Wyoming Helicopters, LLC applying Plateau® herbicide.

improved and there is less risk of large wildfires which contributes to improved habitat conditions for big game, sage grouse and other sagebrush obligates. Grants have been executed with four

landowners and the funding is obligated for this project. This task took 268 hours of coordination with private landowners, federal land management agency personnel, and WGFD personnel.

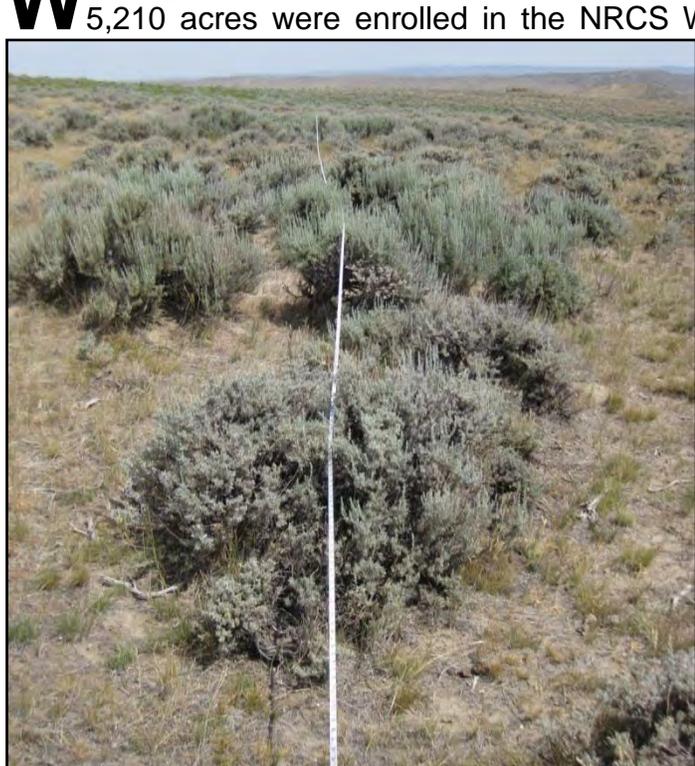
Orin Junction Wetland Restoration and Easement (Goal 2) – Willow Hibbs

The NRCS is funding a 100 acre permanent wetland easement and restoration under its WRP in Converse County, near Orin Junction (Figure 6). The area includes approximately 25 acres of wetland on Shawnee Creek, with the remaining acreage classified as upland. Project work thus far has included ranking, cost-estimation, development of preliminary wetland restoration designs, coordination with NRCS engineers, planning for upland habitat restoration, and overall habitat management. Pending easement closure in 2013, restoration designs and management plans will be finalized for on-the-ground implementation beginning in fall 2013. The easement will protect the area in perpetuity for wildlife and the restoration will provide permanent wetlands and adjacent upland habitat. A host of wildlife species will be benefited including waterfowl, shorebirds, amphibians, and mule and white-tailed deer.



Figure 6. Wetland restoration area near Orin Junction.

Working Lands for Wildlife and Sage Grouse Initiative (Goal 2) – Willow Hibbs



5,210 acres were enrolled in the NRCS Working Lands for Wildlife program with ranking, planning and cost-estimation assistance provided to NRCS and the landowner (Figure 7). Additionally, approximately 37,000 acres were inventoried for grazing and wildlife habitat management plans in 2012 for the program. Planning, follow-up, landowner coordination, and project implementation were conducted on approximately 49,500 acres of existing SGI contracts in Natrona County. Additionally, extensive outreach was implemented to extend the benefits of SGI to landowners who have contracts set to expire. The primary goals are to restore and enhance sagebrush habitats for sage grouse and other species dependent upon sagebrush communities. This should result in quality wildlife projects well into the future.

Figure 7. Sagebrush canopy cover measurement on lands enrolled in SGI.

Habitat Extension Services (Goal 4) - Willow Hibbs

A grazing management workshop was conducted as part of an annual invasive grass workshop for Northeastern Wyoming. Two grazing management on-site workshops were conducted in Natrona County with Dr. Roy Roath. A wildlife habitat workshop was conducted in Glenrock as part of a small acreage landowner workshop put on by UW Extension Services. A stream/riparian habitat learning event was conducted as part of the Converse County Conservation District Conservation Day Camp event for children. Review and commenting occurred on over 60 new NRCS Farm Bill projects and 100 existing management practices.

Shrub Production (Goal 2) - Keith Schoup

Bates Hole big sagebrush production has been measured since 1993 and 2012 was the second least productive year during this timeframe. This level of production is 0.64 inches below the average. We have measured true mountain mahogany since 2001, and the 2012 level was the same as the level in 2002 and 1.06 inches below the average.

South Big Horn curleaf mountain mahogany production has been measured since 2001, and the 2012 level is 0.67 inches below the average. This amount of production is similar to 2002, which was documented at 0.43 inches.

Bolton Creek Riparian Restoration Initiative (Goal 2) – Keith Schoup

In August 2012, we deposited 75,000 pounds of aspen. Field observations in November 2012 showed beaver continue to use the aspen for dam building activities, and the construction of two lodges (Figure 8). Furthermore, we have documented 13 new dams with other dam building activity occurring along the creek. In addition, we live trapped and relocated one beaver into the area where we have focused the aspen drops. This beaver was fitted with a transmitter that will allow us to track its movements (Figure 9). The overall goals of this project are to: 1) restore connectivity between Bolton Creek and its floodplain; 2) attenuate sediment and flood energy following extreme precipitation events; 3) reduce bank erosion and vertical channel adjustment; 4) reduce fine sediment inputs into the North Platte River; and 5) raise the water table allowing for expansion of riparian vegetation. Field observation indicated we are meeting these goals. A presentation on the project and results documented to date was made to the Osher Lifelong Learning Institute. Project planning and coordination with the private landowner and WGFD personnel took 25 hours during 2012.



Figure 8. Beaver lodge constructed using relocated aspen.

Figure 9. Beaver fitted with transmitter.

Oil Creek Cheatgrass Control (Goal 2) – Todd Caltrider

During the summer of 2012, a large wildfire ran through the Oil Creek drainage near Newcastle, and many natural resource agencies and private landowners were concerned about invasion of cheatgrass, especially in the southern part of the burned area. Plans are underway to aerially treat 2,418 acres of cheatgrass during 2013, with Imazapic (Plateau®) herbicide in the Oil Creek drainage. Treatments are scheduled to occur on five different ranches, state, and BLM lands. Following treatment, the landowners have agreed to defer grazing for two growing seasons to allow perennial grass and forb recovery and reduce the risk of future large wildfires. The enhancement of overall rangeland and habitat health will increase forage and browse quantity and quality for big game species as well as livestock. Funding is being sought from participating private landowners, Weston County Weed and Pest, Rocky Mountain Elk Foundation (RMEF), WWNRT, MDF, WGBGLC, and WGFD.

Lusby PAA Bank Stabilization (Goal 2) – Colin Tierney

A cooperative Aquatic Habitat/Habitat and Access project was completed in May 2012. The project aimed to stabilize 210 yards of streambank erosion threatening the access road along the North Platte River at Lusby PAA (Figure 10). In the spring and summer of 2011, a previous attempt (2010) to stabilize the streambank failed, taking with it another 15-20 feet of the stream bank and much of the armoring. The installation of Lusby streambank stabilization enhancement took three people approximately two weeks to complete. The contractor installed 70 concrete “Lego-style” blocks in the North Platte River; topped with 350 cubic yards of 36 inch bank riprap. Non-woven geotextile material was used below the riprap and landscaping fabric was placed above the riprap.



Figure 10. The eroding Lusby Easement in April 2012 (left) and July 2012 (right). Note the difference in slope, even with the high water notable in the right picture.

In one day, 7-8 WGFD personnel planted this area with approximately 500-750 harvested coyote willows cuttings with the use of a waterjet stinger. The landowner agreed to water these weekly using a drip system we provided. The willows within the watered area saw growth success upwards of 95%, while those outside the watering system area saw success levels closer to 50-60%. This project is anticipated to improve migration routes and spawning habitat for fish in the North Platte River by stabilizing and adding stream habitat. These structures will help prevent stream bank erosion, provide habitat for spawning and migrating fish, provide shade to insulate the water, and reduce sediment deposited in the river (Figure 11).



Figure 11. “Lego-block” placement (left) and the subsequent riprap placement (right). These photographs are taken from approximately the same point, giving the viewer a sense of how much material was needed to create the proper slope.

Converse County Russian Olive Removal (Goal 2) – Willow Hibbs

With collaboration and funding from Converse County Weed and Pest District and Converse County Conservation District, over 300 Russian olive trees were removed on over one mile of the North Platte River (Figures 12 and 13). An additional two miles were identified for removal in early 2013, with extensive landowner outreach and coordination conducted to expand the project. Draft plans for the Dave Johnston Power Plant Russian olive removal and native tree plantings were also developed for future implementation.



Figure 12. Russian olive before removal.



Figure 13. Project area post Russian olive removal.

Sechrist and Bixby Public Access Areas (Goal 3) - Matt Pollock

The WGFD contracted with BOSS Reclamation to remove 6.75 acres of Russian olive along riparian areas of the North Platte River at Sechrist and Bixby PAAs. The contractor used a root crown extraction process in which an excavator pulled the Russian olive trees, and their entire tap root systems, out of the ground using an open-backed extraction tool without breaking the tree above ground, or severing the root system away from the tree trunk below ground. The contractor lifted the extracted trees, and their root systems, straight up out of the ground, then shook the extracted tree to remove excess dirt from the root ball, and strategically placed the extracted trees into piles for future burning or grinding. We will treat re-sprouts with herbicide in August 2013 and 2014 (Figures 14 and 15).



Figure 14. Sechrist PPA before treatment.



Figure 15. Sechrist PAA after treatment.

Casper Regional Information and Education (Goal 4) - Robin Kepple

In the Casper Region, I&E Specialist Robin Kepple produced numerous news releases and other media involving habitat. She also conducted educational programs to increase understanding about the importance of habitat to Wyoming's wildlife. These efforts are summarized below:

- Coordinated with Casper College to plan a non-credit community education class on sage-grouse habitat. Wrote a news release on winter habitat conditions and the outlook for big game populations.
- Conducted a media interview on winter impacts on wildlife habitat. Provided Boy Scout Troop 167 with information on wildlife habitat needs.
- Wrote a news release and provided media interviews on the spring flushing flow and its importance to fish habitat.
- Worked with Audubon Wyoming on a script for a video on sagebrush ecosystems. Taught a class on sage grouse habitat at Casper College through the Osher Lifelong Learning Institute (OLLI) program; 14 adults attended. Taught a session on stream health and ecology for 27 3rd and 4th graders.
- Presented a habitat program to 37 third- and fourth-grade students at Oregon Trail Elementary School. Presented a program on WGFD projects and programs for 26 eighth-graders attending Casper Mountain Science School. Provided citizens with information on backyard habitats. Assisted with planting willows along riverbank at Lusby PPA to prevent erosion. Provided media with information on drought and wildlife habitat.
- Taught a session on stream health to 119 children through the Converse County Conservation District's summer day camp.

- Taught a session on forest habitats at a Youth Conservation Camp. Teamed up with the BLM to teach a family program on riparian habitats to seven adults and children. Did a media interview on current drought conditions and impacts to big game animals.
- Presented a program on aquatic habitats to 57 students from Natrona County High School. Did a media interview on fire impacts and benefits on wildlife habitat.
- Coordinated with Casper College to plan a community education class about wetlands and riparian areas for spring 2013. Wrote a news release on removal of Russian olive trees at Sechrist and Bixby PAAs.
- Presented a program on wildlife habitat for 34 seventh-graders.

Habitat Extension Biologist Services (Goal 1) - Willow Hibbs

A rangeland inventory was conducted on an 18,000 acre ranch near Lance Creek to assist a landowner with grazing, habitat management, and monitoring plans (Figure 16). Target wildlife species to benefit are mule deer and turkey. Wildlife use was documented on a 600 acre State Acres for Wildlife Enhancement (SAFE) CRP in Niobrara County as an on-going measure of success of the project (Figure 17). Additionally, vegetative monitoring was conducted on three past projects that occurred in Natrona County which included two 2010 prescribed burns (Figures 18 and 19), and a riparian enclosure (Figure 20).



Figure 16. Rangeland inventory with landowner near Lance Creek.



Figure 17. Pronghorns using SAFE CRP lands in Niobrara County.



Figure 18. Photograph taken in 2012 showing vegetative response to a 2010 prescribed burn.



Figure 19. Photograph taken in 2012 showing vegetative response to a 2010 prescribed burn.

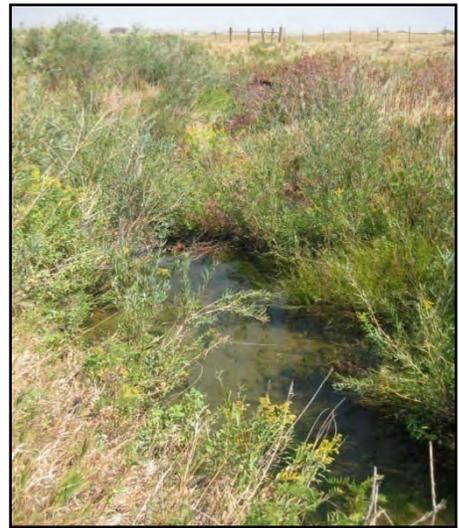
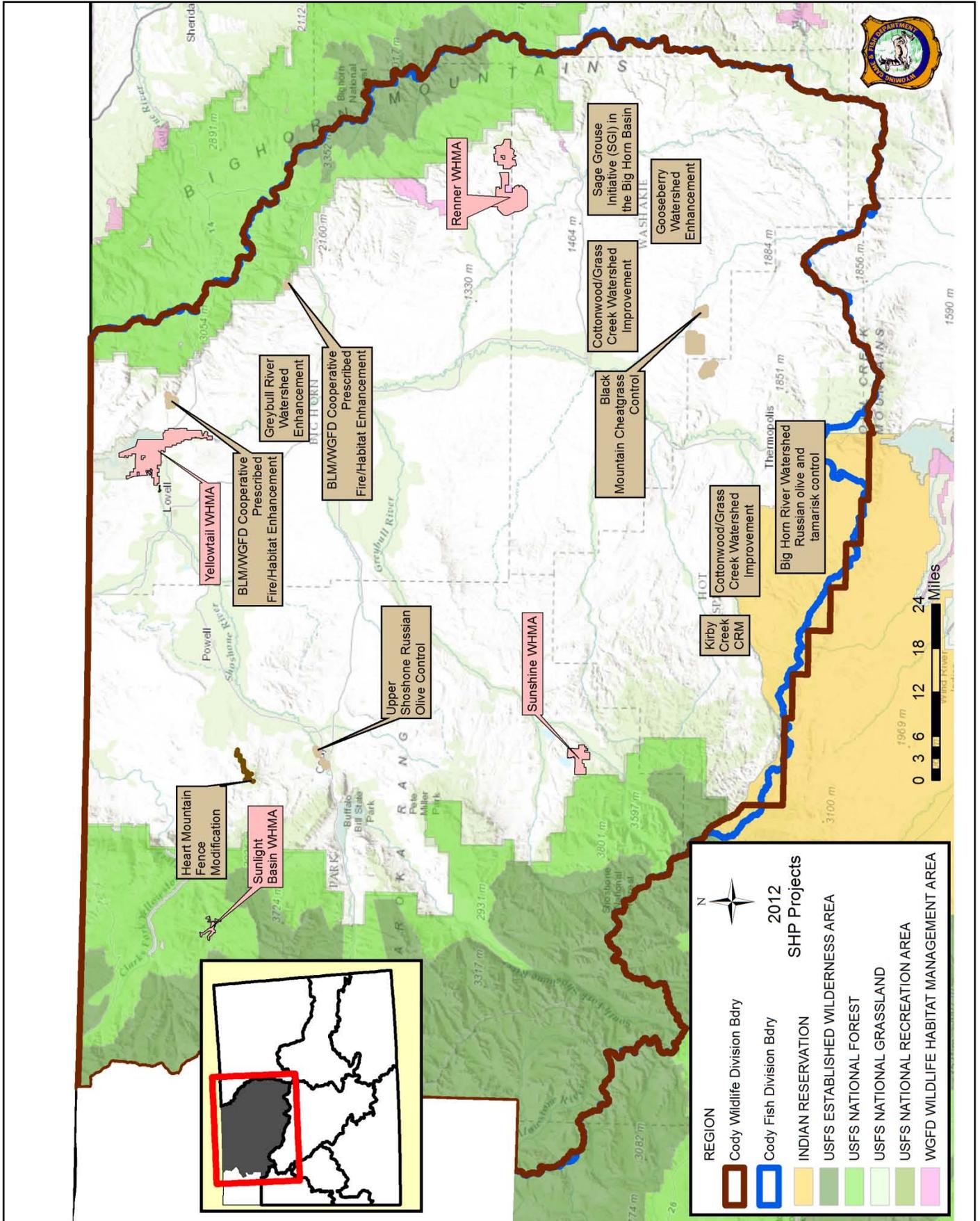


Figure 20. Vegetation response within a riparian enclosure in Natrona County.

CODY REGION



CODY REGION HIGHLIGHTS

- 3,400 acres of cheatgrass treated with herbicide.
- 593 acres of Russian olive mechanically removed and treated with herbicide.
- 8 miles of fence modified to wildlife-friendly design.
- 580 acres of juniper encroachment treated with prescribed fire.
- A Russian olive removal news release was prepared for the Yellowtail WHMA.

Wildlife Habitat Management Areas - Steve Ronne, Craig Swanson, and Eric Shorma Sunlight Basin (Goal 1)

- Forage production and utilization was measured (Figures 1, 2, 3, and 4).
- 240 acres of meadows were irrigated.
- Fifteen miles of crucial winter range fence was maintained.

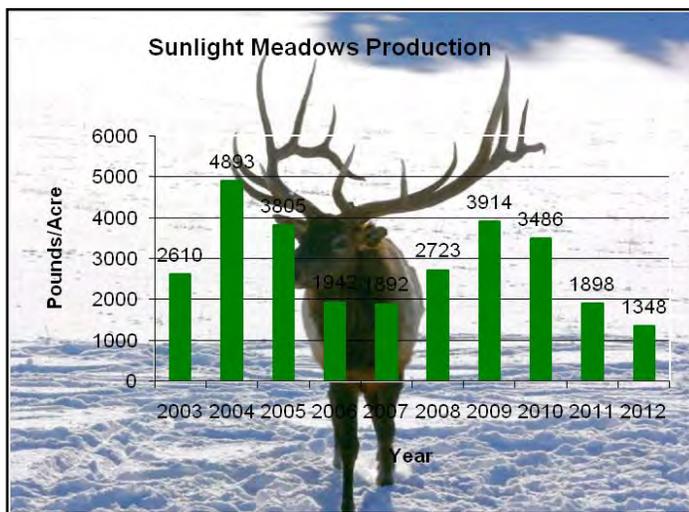


Figure 1. Sunlight Basin WHMA irrigated sites forage production.

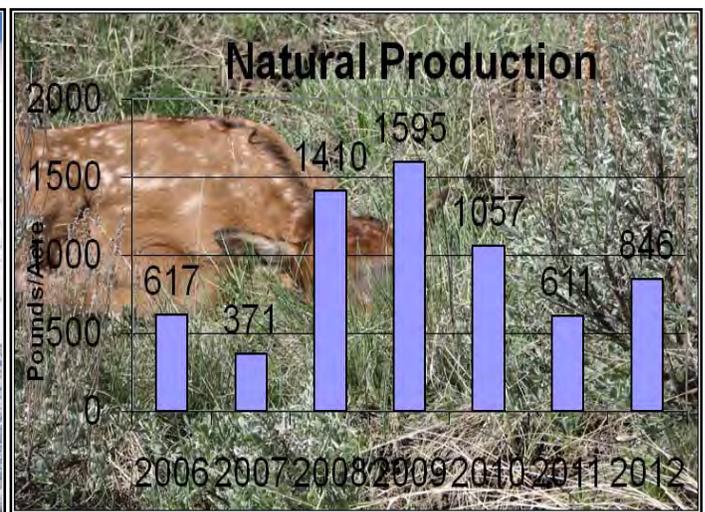


Figure 2. Sunlight Basin WHMA non-irrigated sites forage production.

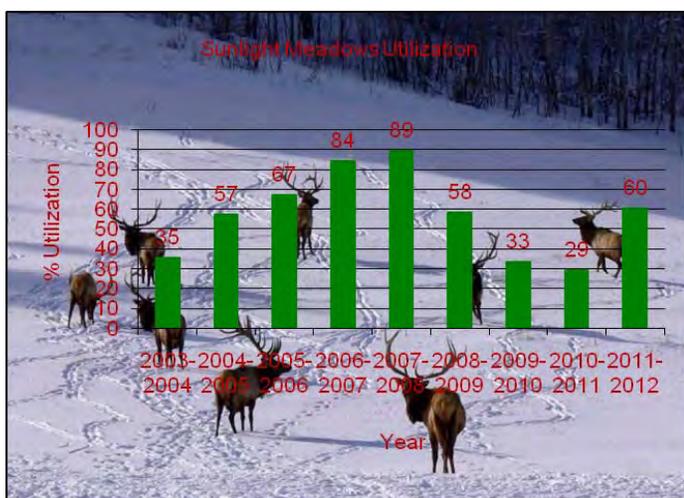


Figure 3. Sunlight Basin WHMA irrigated site forage utilization rates.

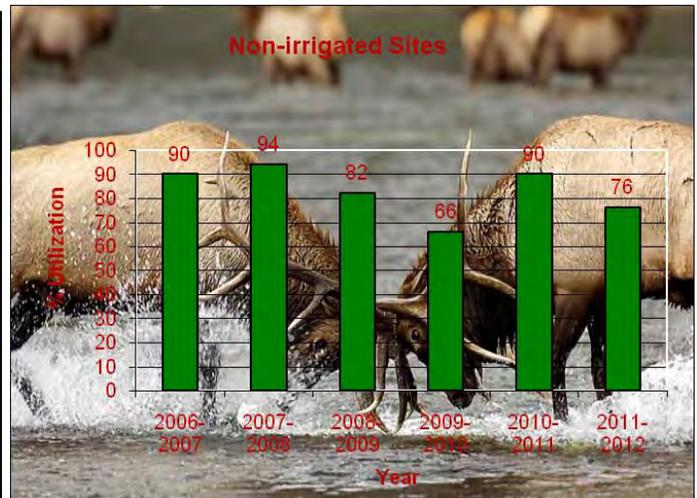


Figure 4. Sunlight Basin WHMA non-irrigated Site forage utilizations rates.

Yellowtail WHMA (Goal 2)

- Approximately 1,200 bare root native trees and shrubs were planted in a coordinated effort with Rocky Mountain Middle School and WGFD. Funding was provided by Bowhunters of Wyoming (BOW) and WWNRT. Students assisted in planting and monitoring survivorship of the trees and shrubs. The objective is to find native berry producing trees and shrubs to plant following Russian olive control (Figure 5).
- Approximately 20 acres were planted in sorghum/sudan grass hybrid, oats and millet (Figure 6).
- Over one hundred and thirty acres of farmland was irrigated for permanent cover fields providing nesting cover and food sources for a variety of game and non-game species.



Figure 5. Planting bare root native trees and shrubs.



Figure 6. Planted field of sorghum/sudan, oats and millet.

Public Access Areas (Goal 3)

- Bighorn River: 12 acres were chemically treated for Russian olive re-sprouts.
- Shoshone River, North Cody access: 70 acres of Russian olive were mechanically removed and chemically treated.
- North Fork Shoshone River: An access area and boat ramp was developed in coordination with the BLM and with assistance from the East Yellowstone Chapter TU.

Gooseberry Watershed Enhancement (Goal 2) – Amy Anderson

This is an ongoing project in the 500,000 acre Gooseberry Creek drainage to restore and enhance 2,000 acres of riparian habitat and stream form and function. No mechanical treatment of Russian olive and tamarisk occurred on Gooseberry Creek in 2012. Follow up chemical treatments were conducted by Washakie County Weed and Pest in the summer of 2012 on approximately 1,500 acres. The total cost for projects implemented in the calendar year 2012 was \$39,430. The total project cost for the entire watershed thus far is \$1,456,562.

There are seven active Continuous Conservation Reserve Program (CCRP) contracts on Gooseberry Creek that require follow-up. Height, structure and dense hiding cover are currently lacking in many areas of Gooseberry Creek, and continued restoration efforts 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.

Upper Shoshone Russian Olive Control (Goal 2) – Jerry Altermatt

The terrestrial habitat biologist and habitat and access supervisor contracted Russian olive removal on 70 acres of the WGFD North Cody Access and on adjoining City of Cody property.



Hydro-bunchers with vertical shaft mulching heads (Figure 7) were used on 30 acres and chainsaw crews on 40 acres. The project is part of a larger effort, the Shoshone/Clark's Fork CRM. This CRM was initiated in 2009 to address invasive plant issues in the Shoshone and Clark's Fork watersheds in Park County. The group's focus is primarily on removing Russian olive and tamarisk on riparian areas and adjacent uplands of these two river systems.

Figure 7. Hydro-buncher with vertical-shaft mastication head.

Bighorn Basin Resource Management Plan (Goal 1) – Jerry Altermatt

The Cody Region terrestrial habitat biologist served as one of the WGFD leads on the BLM 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 BLM reorganization the Wind River/Big Horn Basin District was formed and is comprised of the Cody Field Office, Worland Field Office, and Lander Field Office. The Cody and Worland Field Offices are combining their RMP revision efforts to produce one plan (Bighorn Basin RMP) being analyzed under one Environmental Impact Statement (EIS) but with two NEPA decisions. WGFD personnel provided recommendations to BLM for inclusion in the Final Environmental Impact Statement to be released in late 2013 or early 2014.

Cottonwood/Grass Creek Watershed Improvement (Goal 2) – Amy Anderson

In August of 2007 work began controlling the tamarisk and Russian olive invasion on Cottonwood Creek. A CRM/WID (Watershed Improvement District) has been in place since 2005 on the 270,000 acre watershed. 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.

1,930 acres of Cottonwood Creek have been treated to remove tamarisk and Russian olive. 100% of those acres received follow-up chemical treatments in 2012 using NRCS AMA, WWNRT, BLM, and Weed and Pest funds. There are two active CCRP contracts on Cottonwood Creek, and one CCRP contract on Grass Creek. WWNRT allocated an additional \$200,000 to assist with re-treatment of tamarisk on Cottonwood and Grass Creeks. The treatments that work well on Russian olive do not appear to achieve the same control on tamarisk, therefore additional treatments are necessary.

There are also five active CCRP contracts totaling 50 acres 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.



One new CCRP within this watershed will protect approximately 20 acres of aspen and three riparian acres adjacent to Prospect Spring (Figure 8). The aspen will be thinned and conifers will be removed from the stand with a grant from TNC utilizing a Wyoming Conservation Corps crew during the summer of 2013. The conifers that are cut down will be left on site to protect young aspen seedlings from being over-utilized by wildlife (Figures 9 and 10).

Figure 8. Prospect Spring CCRP- showing Prospect Spring and aspen stand that will be protected from livestock by wildlife friendly 3-wire electric fencing. The aspen stand will be thinned and encroaching conifers removed.



Figure 9. Prospect Spring CCRP- showing use by mule deer.



Figure 10. Prospect Spring CCRP- showing use by elk.

Survival of the 2,000 willows planted since 2009 has been relatively low due to soil salinity, fluctuations in water tables, livestock and wildlife browsing, and hot, dry weather. Several practices will be initiated in the future to hopefully improve willow survival including willow clump plantings.

Currently, the largest funding source is the NRCS AMA Program followed by the WWNRT which has allocated \$425,000. TNC obtained an additional \$40,000 to assist, especially on BLM land bordering the project area. Every landowner with property adjacent to Cottonwood Creek has taken part in the project to control tamarisk and Russian olive.

Greybull River Watershed Enhancement (Goal 2) – Amy Anderson

Greybull River Russian olive and tamarisk control began in 2008. This is a large scale project, with Russian olive, and tamarisk heavily invading the riparian areas from Meeteetse to Greybull. 1,237 acres of Russian olive and tamarisk were treated in 2012, with 4,431 acres treated since 2008 (Figures 11 and 12). 200 willow cuttings were planted in the fall of 2012 on one property to replace the Russian olive and tamarisk. The WWNRT approved a grant of an additional \$150,000 to assist landowners. Total cost for work completed on the Greybull River since 2008 is \$1,253,282. NRCS AMA and WRP have been the major funding sources along with WWNRT.



Figure 11. Greybull River before Russian olive and tamarisk control.



Figure 12. Greybull River after Russian olive and tamarisk control. Notice the presence of native tree and shrub cover that will hopefully fill in with the absence of invasive woody species.

Forest Plan Revision for Shoshone National Forest (Goal 1) – Jerry Altermatt

The terrestrial habitat biologist assisted other regional personnel in reviewing and commenting on the revision of the forest plan for the Shoshone National Forest. A draft Environmental Impact Statement was released to the public in 2012 and a final EIS is scheduled to be released in the fall of 2013. The Shoshone National Forest includes portions of the Cody and Lander WGFD Regions.

Big Horn River Watershed Russian Olive and Tamarisk Control (Goal 2) – Amy Anderson

Russian olive and tamarisk control work started on the Big Horn River and Lower Owl Creek during the winter of 2010-2011 in Hot Springs County. 115 acres of mechanical and chemical treatments were completed on smaller acreages along the Big Horn River in 2012. Approximately 400 additional acres will be completed on the Big Horn River and Owl Creek in 2013. WWNRT has allocated \$330,000 to this effort. This is a cooperative effort between NRCS, Hot Springs County Weed and Pest, WGFD, and private landowners.

Kirby Creek CRM (Goal 2) – Amy Anderson

The Kirby Creek CRM is continuing to work on large scale riparian improvements, rangeland management, and wildlife habitat enhancement. In 2012, the CRM was awarded national recognition by the BLM with a Rangeland Stewardship Award for their work in improving grazing systems and rangelands throughout the Kirby Creek Watershed.

Two new CCRP riparian buffers totaling 60 acres were installed in 2012 connecting other riparian buffers that have been in place for several years. There are over 30 stream miles of Kirby Creek protected under CCRP to stabilize incised stream areas through improved woody and herbaceous vegetation stands and reduced impacts from livestock trampling, and increased willow stands to provide habitat for the existing beaver population. The landowners in this watershed are extremely dedicated to improving the riparian areas along Kirby Creek (Figure 13).



Figure 13. Landowners planting willow pole cuttings. On Kirby Creek we have seen over 90% survival rates of willow cuttings, contrary to other locations in the Big Horn Basin with much lower survival rates.

Yellowtail Area Coordinated Resource Management (Goal 2) – Jerry Altermatt

The Yellowtail Area CRM team continued to manage invasive plants on agency and private lands in the Lower Shoshone and Bighorn River bottom lands near Lovell, Wyoming. The CRM consists of the four landowners on the Yellowtail WHMA (National Park Service, WGFD, BLM, and BOR), neighboring private landowners, the Bighorn County Weed and Pest, NRCS, Shoshone Conservation District, and other interested parties. The terrestrial habitat biologist serves as chairman of the CRM and has been responsible for project planning and implementation as well as writing and submitting grant applications. The project is nearing completion with a major accomplishment of removing Russian olive and salt cedar on over 2,000 acres of riparian area on the Shoshone River.

The following activities were accomplished on the CRM area in 2012:

- Conducted mechanical treatments on 523 acres of well established Russian olive and saltcedar using hydro-bunchers with vertical-shaft mastication heads (Figure 14).
- Conducted herbicide treatments on 767 acres of Russian olive re-sprouts and saltcedar using a spray crew with backpack sprayers and approximately 100 acres of white-top and Russian knapweed using spray trucks.
- Planted 500 buffaloberry shrubs and 90 cottonwood trees (Figure 15).
- Used 750 goats in a targeted grazing program to reduce Russian knapweed.
- Continued bio-control using *diarhobda elongata*, a leaf beetle that targets saltcedar plants.



Figure 14. Hydro-buncher mulching Russian olive.



Figure 15. Buffaloberry planting with browse protection and weed barrier.

Information and Education and Collaborative Habitat Management (Goal 4) – Amy Anderson

Many of the Russian olive and tamarisk control efforts involve CRM and a multitude of partners in a collaborative effort. The WGFD participation with these groups has greatly advanced overall wildlife habitat considerations. During 2012 over eight information and education presentations and opportunities were conducted to promote wildlife habitat. In addition, assistance is on-going with a WGFD - Worth the Watching grant to develop a school backyard wildlife habitat.

Black Mountain Cheatgrass Control (Goal 2) – Jerry Altermatt

Approximately 4,300 acres of cheatgrass-dominated rangeland within the 1996 Black Mountain and 2012 Zimmerman Butte wildfires were treated with an aerial application of Plateau® herbicide (Figure 16). The contractor, Wyoming Helicopters, Inc. of Boulder, conducted the treatment during September using a rate of 8 oz of herbicide per acre on the 1996 burn and 6 oz of herbicide on the 2012 burn. The treatment was part of a multi-year project that targets over 22,000 acres of cheatgrass-impacted mule deer and pronghorn winter range as well as sage grouse core area.



Figure 16. Aerial application of herbicide to cheatgrass on the Zimmerman Butte wildfire.

SGI in the Big Horn Basin (Goal 2) – Amy Anderson

In 2012, assistance was provided in Washakie County with monitoring and inventories for SGI projects. Three ranches were either monitored or inventoried totaling 8,200 acres, including installing permanent transects for future monitoring. Technical assistance was provided for cheatgrass control, juniper removal, spring development and protection, and riparian improvement to benefit sage grouse. In addition a grazing management system will be designed to enhance sage grouse habitat (Figure 17).



Figure 17. Nowater SGI application area where an improved grazing system will be designed to improve habitat for sage grouse.

BLM/WGFD Cooperative Prescribed Fire/Habitat Enhancement Projects (Goal 2) – Jerry Altermatt

Approximately 400 acres of juniper were treated with prescribed fire in the Willow Creek drainage on the west slope of the Bighorn Mountains east of Lovell (Figure 18). Approximately 180 acres were treated with prescribed fire in the Horse Creek drainage on the west slope of the Bighorn Mountains east of Greybull (Figure 19). 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.



Figure 18. Prescribed fire in Willow Creek.



Figure 19. Prescribed fire in Horse Creek.

Heart Mountain Fence Modification (Goal 2) – Jerry Altermatt



A fence modification project on TNC's Heart Mountain Ranch and the E&B Landmark Ranch north of Cody was conducted in 2012. Approximately eight miles of woven and barbed wire fence were removed and replaced with wildlife-friendly three-wire high tensile electric fence to reduce wildlife movement restriction, injury and mortality, and improve landowner relations (Figure 20). The terrestrial habitat biologist planned and secured funding for further fence modification and 40 acres of aspen enhancement on the Heart Mountain Ranch for 2013.

Figure 20. Elk calves attempting to pass through 6-wire fence on the Heart Mountain Ranch.

Production/Utilization Surveys (Goal 2) – Jerry Altermatt

Regional wildlife personnel collected production/utilization data from ten sagebrush transects during 2012. Annual leader production was below the 9-year average, reflecting the extremely dry growing season in 2012 throughout the Bighorn Basin (Figure 21). Utilization at all transects in spring 2012 was slightly above average but generally below the 35% utilization level considered to be the threshold for over-use (Figure 22). 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 relatively mild winters with big game distributed more widely over winter ranges rather than concentrating animals on crucial winter ranges where utilization studies are located.

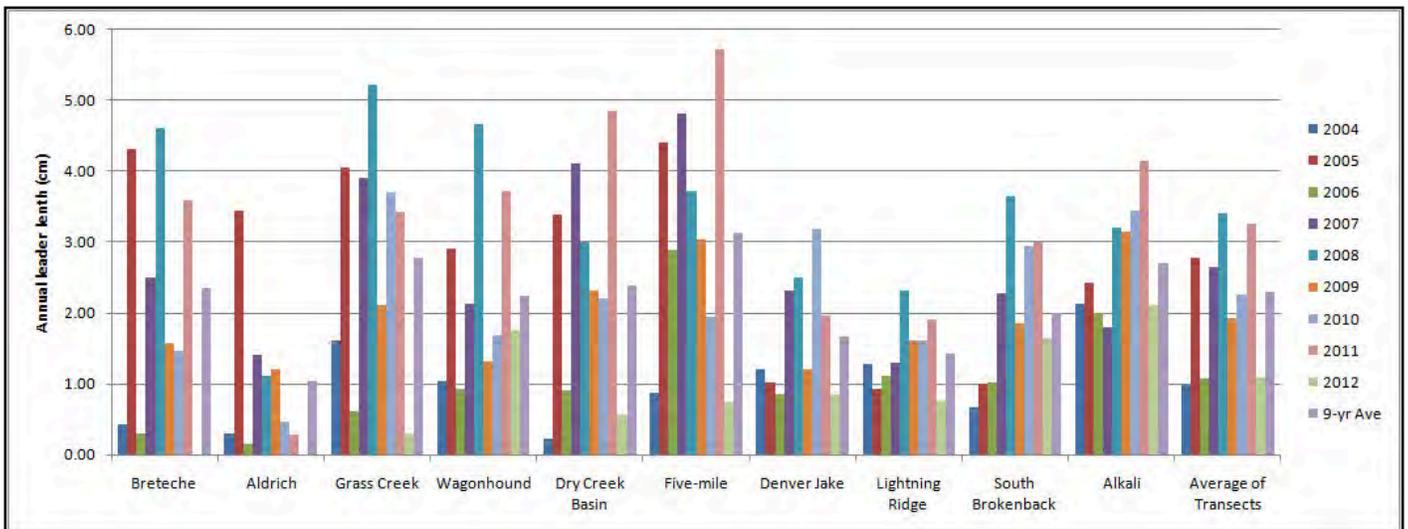


Figure 21. Annual production of sagebrush at ten locations in the Cody Region.

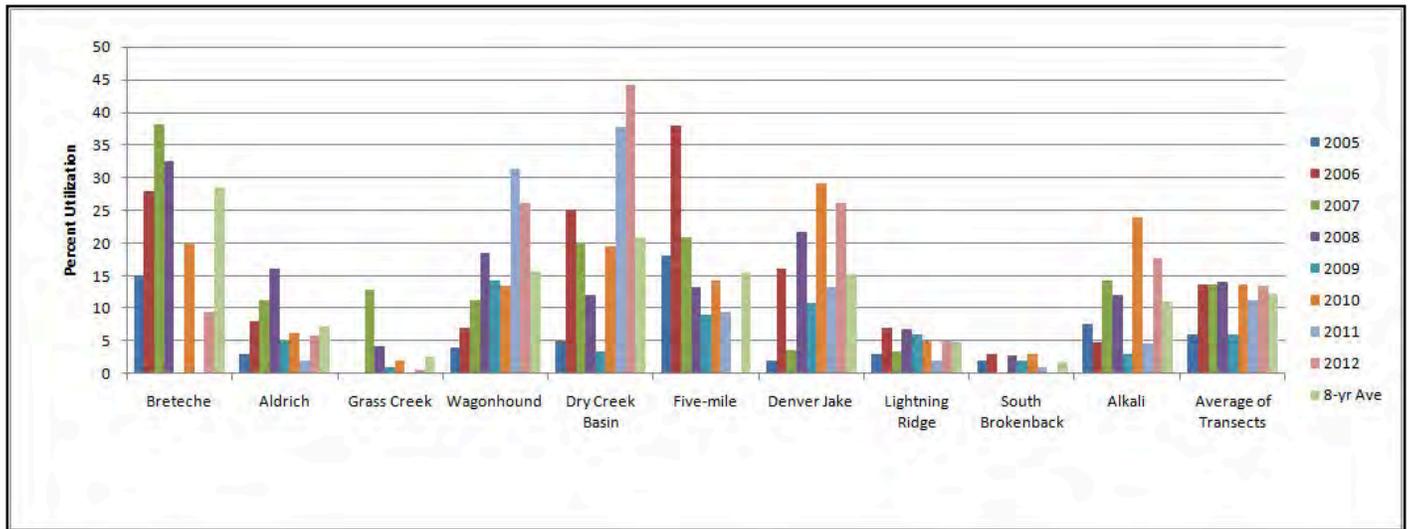


Figure 22. Utilization of sagebrush expressed as percent annual leaders browsed at ten locations in the Cody Region.

Herbaceous production and utilization was measured at seven sites on the Absaroka Front in areas where monitoring winter elk use is a priority. Production was below average on all sites as a result of poor growing season precipitation (Figure 23). Utilization by elk on winter ranges continues to be higher than acceptable in Sunlight Basin, averaging 65% and exceeding 80% at three sites (Figure 24).

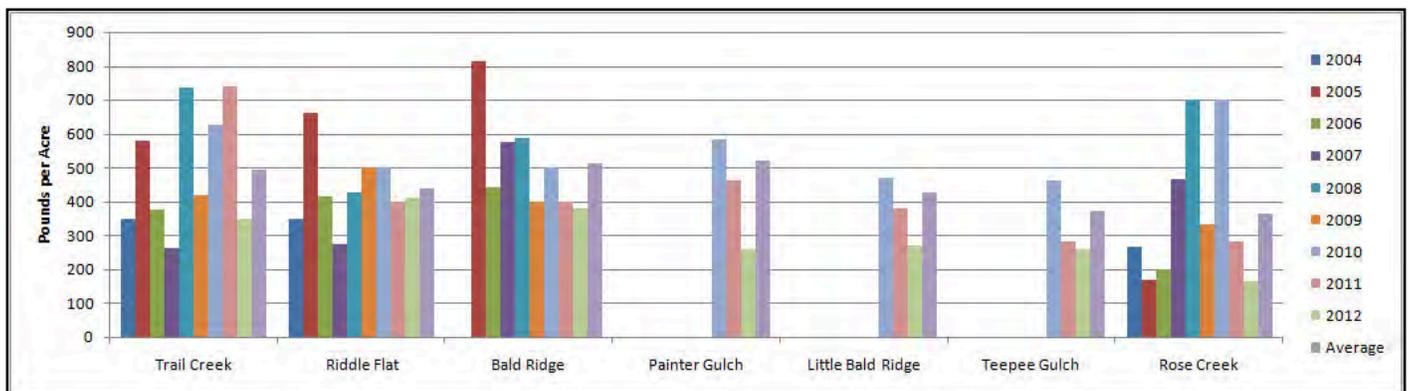


Figure 23. Annual production of herbaceous vegetation at seven locations in the Cody Region.

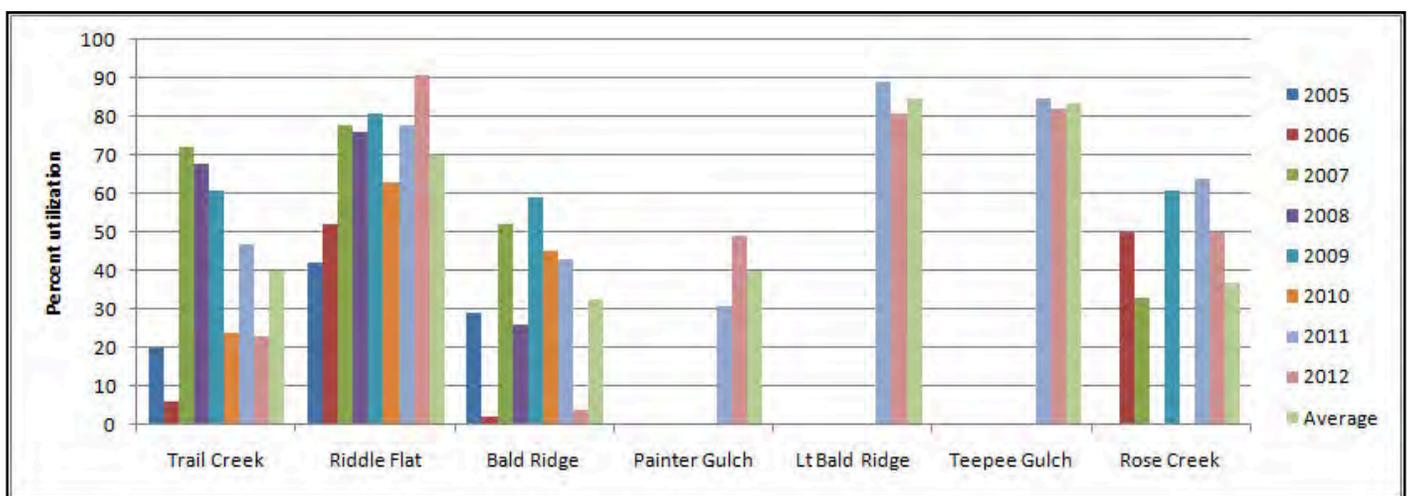


Figure 24. Utilization of herbaceous vegetation at seven locations in the Cody Region.

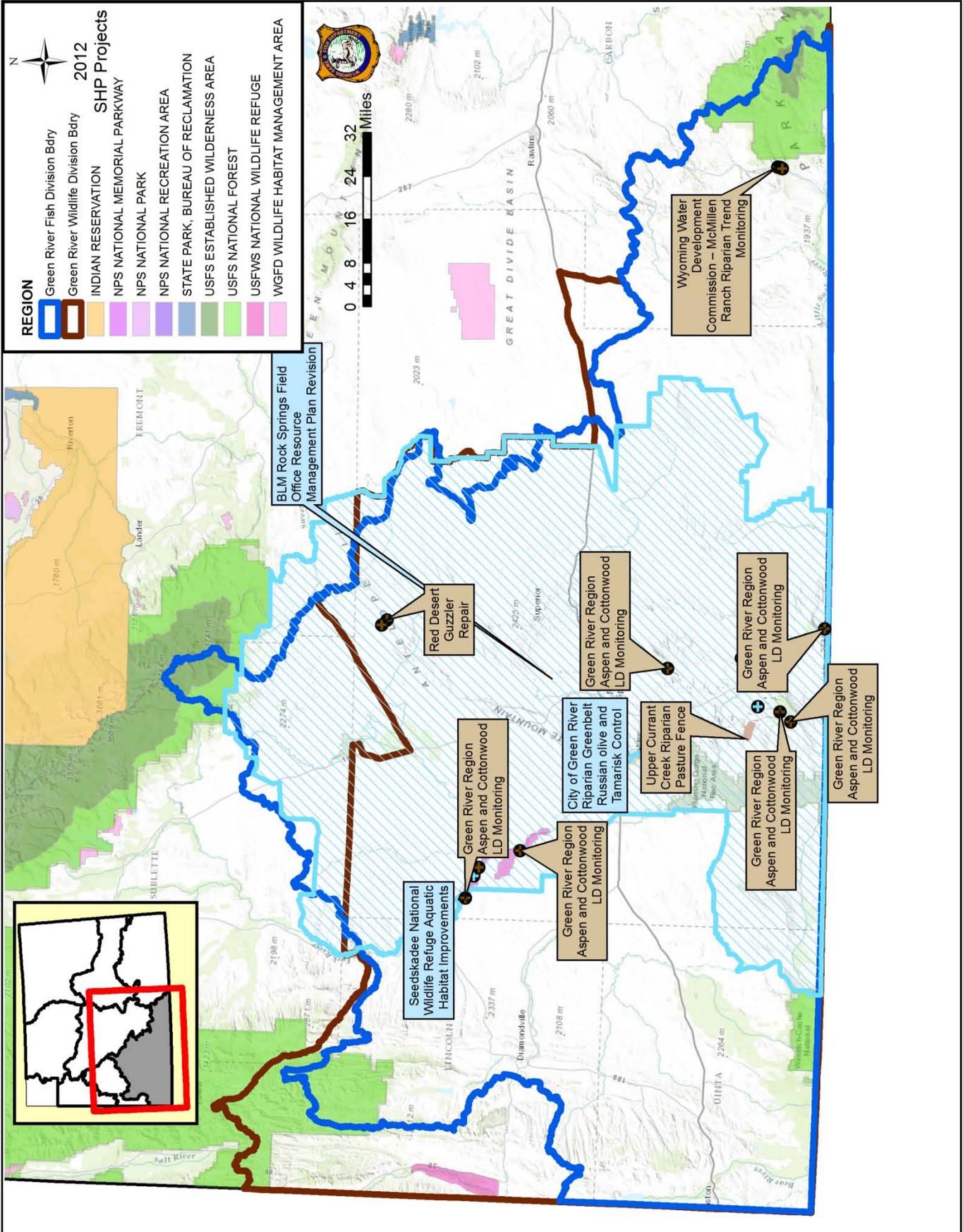
Cody Regional Information and Education (Goal 4) – Tara Teaschner

Cody Region I&E specialist Tara Teaschner prepared three news releases related to habitat on WHMAS and PAAs and a news release titled “Russian Olive Removal on Yellowtail” to promote the conservation benefits of removing Russian olive from riparian areas.

In addition, the Cody I&E specialist was successful in obtaining a Worth the Watching grant for an outdoor classroom featuring native habitat plots at Lovell Elementary School. The habitat plots will teach native plant identification and promote an appreciation and understanding of the role that habitat plays in the student’s world. The project fosters good land stewardship practices, raises awareness of habitat related issues, and stresses the importance of intact native habitats to wildlife and people.

The Cody I&E specialist also worked with Medicine Lodge State Archeological site to redesign two interpretative cabins at the site. The focus of cabin one is to convey the significance and importance of crucial winter range for elk and cabin two will focus on habitat in general and how animals and their habitats are connected.

GREEN RIVER REGION



GREEN RIVER REGION HIGHLIGHTS

- Juvenile fish habitat was improved in two lateral side channels along the lower Green River.
- 586 riparian acres were treated to control Russian olive and tamarisk along five miles of the City of Green River's greenbelt corridor.
- Approximately 275 acres of dense sagebrush was chemically thinned to enhance mountain shrub and herbaceous understory.
- Teton Science School (TSS) completed a Russian olive and tamarisk inventory on an additional 28 miles of the lower Green River riparian corridor.
- 10 water guzzlers were repaired in the Red Desert area of Wyoming.
- Over 500 students, teachers, boy scouts and others were taught about habitat opportunities and issues during the year.

Three Patches BLM Recreation Area Fence Modification (Goal 2) – Ben Wise

Fence modification and wildlife friendly improvements were conducted during the spring of 2012 at the Three Patches BLM Recreation area south of Rock Springs. The WGFD was asked to assist in the fence inventory, project planning and execution of the modifications in conjunction with a spring BLM field work day for the Rock Springs Field Office. Approximately two miles of livestock enclosure fence was converted to wildlife friendly specifications (Figure 1). This project is located on Aspen Mountain, in a highly productive pronghorn and mule deer parturition area (Figure 2).



Figure 1. Post modification photo of improvements made to the Three Patches BLM Recreation Area livestock enclosure fence.



Figure 2. One of the many pronghorn fawns located during the fence inventory.

Aspen Effectiveness Monitoring (Goal 2) – WLCI, Jim Wasseen

Aspen communities in the WLCI area are widely disbursed across numerous mountains and ranges that connect the vast shrub-steppe system separating the northern and southern Rocky Mountains. Because of their wide distribution, the influence and response of aspen communities to change agents is inconsistent. In addition, consistently applied indicators to address change agents and to monitor effectiveness of treatments are lacking. To address the lack or inconsistent application of indicators we propose to establish ecological indicators associated with aspen communities that are sensitive to change caused by invasive species, altered wildland fire cycles, climate change, energy development and other stressors that can be applied across ecoregions. To accomplish this, some indicators will be used in an assessment that evaluates how the

ecological and hydrological settings of aspen communities are affected by different change agents. Funding from the WLCI Program during 2012 was matched by US Geological Survey (USGS) to augment USGS effectiveness monitoring and to support efforts to provide landscape-scale monitoring and GIS support to other WLCI projects. WLCI and USGS funding was used to: 1) cross date previously collected tree cores and develop establishment dates for aspen and conifer trees in the Savory and Little Mountain Project areas; 2) meet with BLM and investigators with the Wyoming Natural Diversity database (WYNDD) to implement common sampling protocols for aspen and cheatgrass in the Little Mountain Ecosystem; and 3) complete Global Positioning System (GPS)-based mapping and effectiveness monitoring of aspen treatments in the Sierra Madre from 2008 to present.

Baggs Underpass (Goal 2) - WLCI, Jim Wasseen

An additional underpass was installed to allow migrating herds of mule deer to safely cross State Highway 789, thereby reducing the number of incidents of deer-vehicle collisions (Figure 3). This second underpass was installed approximately five miles north of Baggs.



Figure 3. Mule deer underpass on Highway 789.

BLM Rock Springs Field Office Resource Management Plan Revision (Goal 1) - Kevin Spence, Mark Zornes, Ben Wise, and Patrick Burke

The Rock Springs BLM Field Office began revising their resource management plan (RMP) during 2011. Once completed, this RMP will guide resource management and land uses on approximately 3.6 million acres of public land during the next ten years, including some of the more important aquatic and terrestrial wildlife habitats in southwest Wyoming. During the first quarter of 2012, WGFD representatives attended several “cooperating agency” meetings with BLM to provide recommendations for formulating a range of resource management alternatives covered by the RMP. Additional BLM meetings were attended in the last quarter of 2012 to discuss development of a travel management plan as a component of the RMP revision, and developing a range of management alternatives for those resources not discussed earlier in the year. The BLM RMP revision process and cooperating agency meetings are expected to continue into 2013.

Bitter Creek Restoration (Goal 2) - WLCI, Jim Wasseen

This project involves replacing a failing in-stream structure, controlling invasive plant species in the riparian corridor, and reestablishing native vegetation in the Bitter Creek watershed. The Pierotto ditch diversion off Bitter Creek is in danger of being rendered dysfunctional as a channel incision moves upstream. Landowner access was granted, allowing the Sweetwater Conservation District’s boring contractor to collect core samples in the vicinity of the structure. These core samples will be analyzed to determine the best location and method for installation of a new structure to benefit the Pierotto Ditch.

Muddy Creek Spike (Goal 3) – Ben Wise and Jill Randall

As part of the Wyoming Range Mule Deer Initiative, habitat treatments in the south LaBarge Common Grazing Allotment have been identified to improve mule deer winter range. These treatments are a collaborative effort between the WGFD, BLM, livestock grazing permittees, Sublette County Conservation District, and the NRCS. Treatments involved the use of an herbicide (Spike) to thin canopy cover of Wyoming big sagebrush 30-50%, allowing increased vigor of understory mountain shrubs (primarily antelope bitterbrush), increase herbaceous production and overall improvement of rangeland diversity, health and watershed function. The herbicide application took place on approximately 275 acres in late October (Figure 4). Post-treatment monitoring will occur in the spring of 2014 to determine the success of the project. Funding was provided by WWNRT and WGBGLC and special thanks to Ed Nikolaus of Wyoming Helicopters Inc., and Sublette County Conservation District for ongoing conservation partnerships. Future projects in this area have been designed and are being actively evaluated.

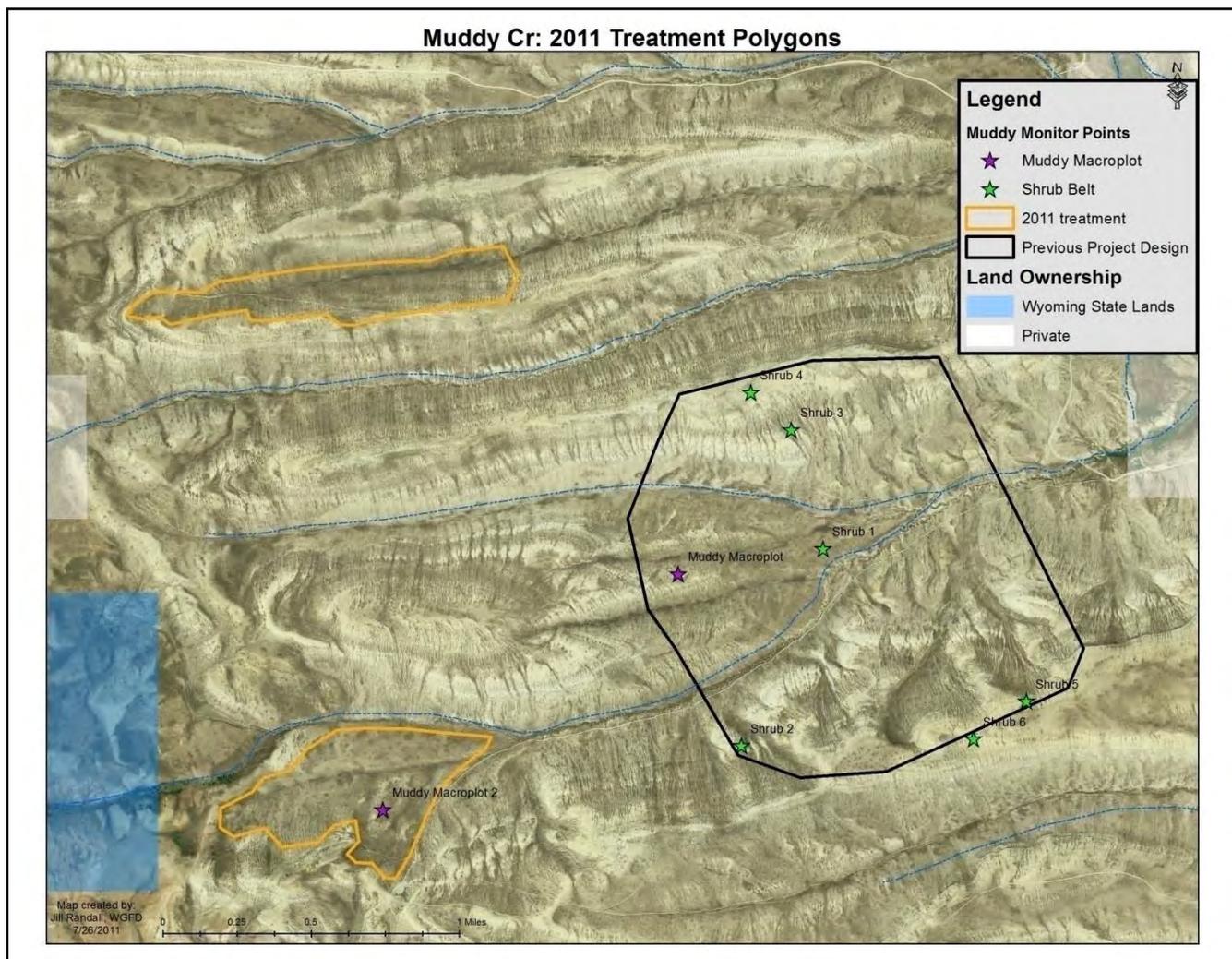


Figure 4. The Muddy Creek Spike area near Big Piney, WY. Following additional data collection the yellow outlines the portion treated whereas black outlines the area originally scheduled for treatment.

Buckhorn Flowing Well (Goal 2) - WLCI, Jim Wasseen

This is a three phase project dependent upon donated materials to enclose approximately 100 acres around a flowing well and associated riparian area southwest of Farson. The well head was protected last year. This year a post pounder was purchased for the High Desert District to be

used by BLM and WLCI on this and future fencing projects. Enough material has been donated to enclose a 40 acre area; posts have been driven, by a contractor, for the second phase of fence construction. During winter 2012-13, time and weather permitting, BLM field staff will weld railings to posts until materials are depleted.

Seedskaadee National Wildlife Refuge Sill Reconstruction (Goal 2) – Anna Senecal

The Double Sills structure, located approximately 17 river miles downstream of Fontenelle Dam on the Seedskaadee National Wildlife Refuge, (NWR) was modified to improve stream channel condition and water delivery to adjacent side channel habitat and provides water delivery to a large wetland complex (Figure 5). Survey and design were completed during the summer of 2011 and 550 cubic yards of rock was purchased for reconstruction of the river-wide sill. Seedskaadee NWR and WGFD maintenance crews began instream work on the structure September 4-7, 2012. The base of the sill was widened to increase stability at high flows, a thalweg notch was included, and the arms of the sill were angled upstream in the horizontal plane and down in the vertical plane towards the thalweg notch. Sill modifications will direct water and sediment down the middle of the channel, increase adjacent stream bank stability and maintain water delivery to the Seedskaadee NWR ditch system and upstream, natural side channel (Figure 6). Additional work will need to be done during the 2013 season to complete sill reconstruction and stabilize side channel stream banks. While the functionality of the sill is vastly improved, finishing touches will be put on the sill and adjacent stream banks in 2013.



Figure 5. Before view of Double Sill. Note natural side channel mouth in top left of photo.



Figure 6. After view of sill reconstruction.

Carbon County Perennial Pepperweed Partnership (Goal 2) – WLCI, Jim Wassen

The Perennial Pepperweed Partnership project involves treating two main stream branches in the Sage Creek watershed for perennial pepperweed, whitetop, saltcedar, leafy spurge, and Russian knapweed. Chemical treatments are used to control weeds in this remote area. In 2012, 600 acres were treated and an additional 200 acres were monitored and 200 acres inventoried. This is a multi-year project with work continuing into 2013. No new infected sites were reported this year. Weed growth has slowed and weed patches were much thinner than found in the previous years.

Seedskaadee National Wildlife Refuge Aquatic Habitat Improvements 2012 (Goal 3) – Kevin Spence

Aquatic habitat was improved at two lateral river side channel sites located on the Green River at Seedskaadee NWR in 2012. A crew of regional WGFD workers, Seedskaadee NWR personnel, and local Trout Unlimited volunteers harvested several 6-12 ft green conifer trees from BLM lands in

the Miller Mountain area (Figure 7) and delivered the trees to McCullen Bluff and Headquarters lateral river side channel sites. The conifers were harvested from an encroached aspen stand delineated by the BLM as one of the sites for the Wyoming Front Aspen Regeneration Project, and the conifer removal served as a treatment to improve this aspen stand on Miller Mountain. Crews later used harvested trees to fashion and construct conifer revetment structures along the streambank at predetermined reaches of each lateral river channel to improve aquatic habitat for juvenile fish at Seedskaadee NWR (Figure 8). Both lateral river side channels are very important juvenile trout and native nongame fish rearing habitat with margin niches and laminar flows needed for small fish survival and recruitment to adult populations in the Seedskaadee reach of the lower Green River. The conifer revetment features are expected to provide juvenile fish escape and hiding cover along 950 ft of channel margin at the McCullen Bluff site and 500 feet along the edge of the Headquarters side channel. The conifer revetment cover also compliments river sill structure improvements completed in 2011 which now provide consistently higher flows to each lateral side channel for the benefit of juvenile fish.



Figure 7. Crews harvest small conifer trees to improve an aspen stand on Miller Mountain, and then haul cut trees to be used to improve fisheries habitat along the Green River at Seedskaadee NWR.



Figure 8. Conifer structures being constructed along the margin of the Headquarters lateral river channel at Seedskaadee NWR to improve juvenile fish rearing habitat.

Fontenelle Area Green River Russian Olive and Tamarisk Control and Native Tree/Shrub Rehabilitation (Goal 2) – WLCl, Jim Wasseen



Figure 9. Monitoring of Russian olive that was originally treated in the fall of 2011.

This project was initiated as part of a larger effort to control Russian olive and tamarisk along the Green River. The Sweetwater County Weed and Pest District monitored and reapplied herbicide on public and private lands above Seedskaadee NWR this year (Figure 9).

Wyoming Range Mule Deer Habitat Management Plan, Kemmerer to Cokeville (Goal 1) – Ben Wise

Pinedale, Green River and Jackson Regional WGFD personnel have been actively involved in the Wyoming Range Mule Deer Initiative since 2008. One action item requested by the public was a Mule Deer Habitat Plan. In 2012, the WGFD hired an employee to focus on delineating treatment polygons based on TSS Mule Deer Habitat Assessment work, and to collect additional site-specific reconnaissance and local expertise information (Figure 10). WGFD personnel and the Kemmerer BLM biologist are currently determining project readiness and ability to conduct habitat work within delineated treatment polygons. NEPA analysis, cultural clearance and grazing management options will be addressed in 2013 with anticipated implementation to start in 2014.

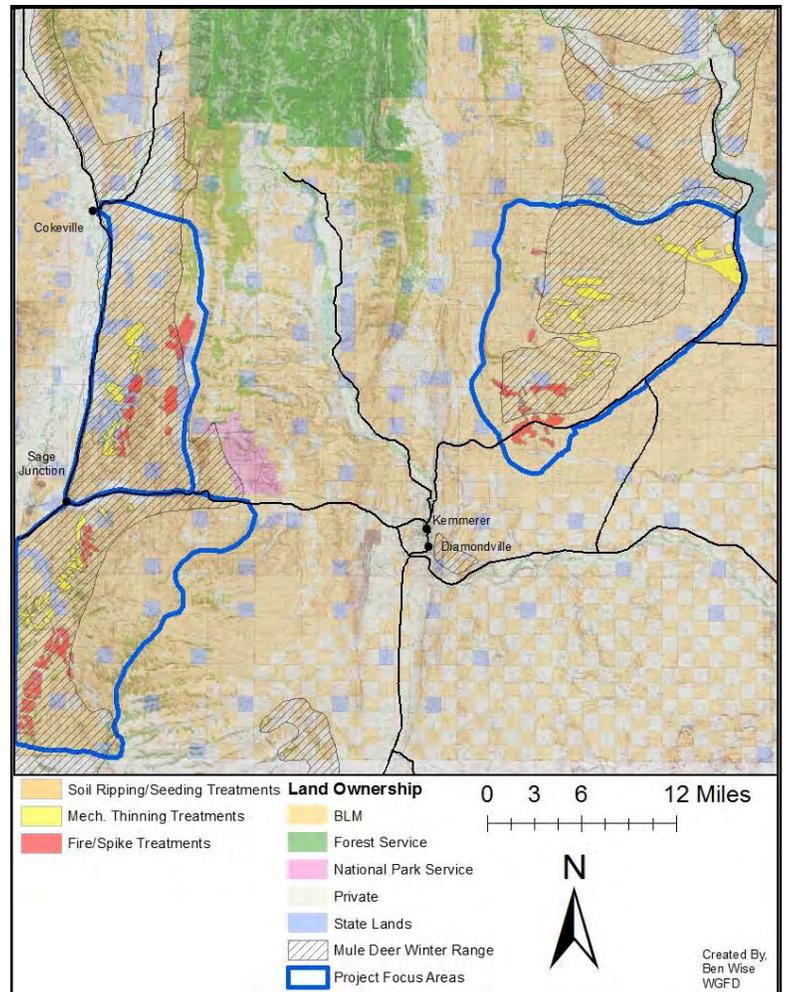


Figure 10. Proposed treatments in the Wyoming Range Mule Deer Habitat Management Plan for Kemmerer BLM field office.

Dirtyman Creek Fish Barrier (Goal 2) – WLCI, Green River Fish Management

This project involved construction of a low water crossing and fish barrier to expand a genetically pure population of Colorado River cutthroat trout in Dirtyman Creek. In 2012, WGFD completed landowner access agreements with two private landowners and construction of the fish barrier during the fall. Changes to the final design required new interdisciplinary clearances (i.e. cultural and wildlife) which were completed prior to construction.

Halogeton Invasion and Restoration in Southwest Wyoming Salt-Desert Shrublands (Goal 2) – WLCI, Jim Wasseen

Treatments were done to improve habitat conditions in two, two-acre exclosures. The native plant communities (i.e. Gardner saltbush) known to exist within these exclosures have been invaded and displaced by halogeton. Treatments to improve habitat conditions have included a variety of soil preparation and seeding techniques as well as introducing different plant materials. Preliminary findings from 2012 include: both the new seed trial and transplant trial appeared to be failures. Very little germination could be seen and many of the transplants appeared to have died – probably from late freezes followed by below average precipitation. In both seeding studies and the spaced-plant study, we observed that although some grasses had germinated and/or become

established, many were dead by late summer. Due to low precipitation, very little growth occurred on established transplants and we were not able to collect biomass yield as a determination of vigor.

Red Desert Guzzler Repair (Goal 2) – Ben Wise

In response to information gathered during an inventory of water guzzler projects in the Red Desert conducted in the summer of 2011, BLM personnel and WGFD prioritized guzzler repairs and began repairing these existing range improvements. Throughout the summer of 2012 guzzlers were repaired, resulting in 10 of the 26 identified guzzlers receiving attention (Figure 11). Two guzzlers were completely redesigned to function properly, requiring substantial infrastructure upgrades and livestock enclosure fencing (Figure 12). An additional eight received maintenance to allow continued operation, including removing sediment from watering troughs, repairing enclosure fences, etc. This is an ongoing project and additional maintenance needs will be addressed.



Figure 11. Rock Springs BLM summer fence repair crew trenching and re-plumbing a guzzler basin in the Red Desert.



Figure 12. Guzzler improvements at this location included re-plumbing and setting the guzzler basin, constructing livestock enclosure fence, filling of the tank with approximately 500 gallons of water to demonstrate success of repairs.

City of Green River Riparian Greenbelt Russian Olive and Tamarisk Control (Goal 2) – Kevin Spence and Jim Wasseen

The City of Green River Parks and Recreation Department received cost share funding to conduct mechanical control of Russian olive/tamarisk and plant native trees along the Green River riparian greenbelt corridor on city property in 2011. The effort was also expanded to two adjacent parcels of private property allowing for most of the riparian corridor to be treated for these invasive species between Expedition Island and the downstream end of Scott's Bottom. Due to delays in approval to treat invasive species on a small parcel of BLM land, the mechanical control effort was postponed until June 2012. BOSS Reclamation LLC. was awarded the treatment contract and performed mechanical removal of Russian olive and tamarisk on 586 acres of riparian habitat along five miles of river between Expedition Island and the Scott's Bottom area.

BOSS Reclamation LLC used a specialized patented track-hoe attachment that surgically extracted the entire invasive plant and intact root crown (Figure 13), which was key to successful control as it severed lateral roots from the root crown allowing for practical follow-up chemical treatment next year to effectively kill any re-sprouts. A large rotary grinder was used behind the track-hoe to chip all Russian olive and tamarisk biomass and was scattered for reclamation mulch on site. Sites that could not be accessed with equipment or supported invasive plants too small for

mechanical control were treated with a combination of stump-cut/chemical and foliar chemical applications. Initial results of the control effort displayed a noticeable reduction in Russian olive/tamarisk densities and biomass (Figure 14). As expected, a large number of young invasive re-sprouts were observed by the end of the growing season. The City of Green River Parks and Recreation Department has pledged to conduct monitoring and follow-up chemical control of invasive re-sprouts for three consecutive years following the original mechanical control effort, and indicated they will conduct chemical control of re-sprouts beginning in the spring and early summer 2013. The city will also be rehabilitating the treated sites with larger sized native riparian tree and shrub plantings during the early summer of 2013. Speedy re-establishment 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 may also encourage other urban river front landowners to participate in future control programs.



Figure 13. Mechanical control of Russian olive using a specialized patented track-hoe attachment that surgically extracts the entire invasive plant and intact root crown.



Figure 14. Pre- and post-mechanical treatment photos demonstrate the resulting reduction of Russian olive biomass at one location along the City of Green River's riparian greenbelt area.

Muddy Creek Fish Passage Improvement (Goal 2) – WLCI, Jim Wasseen

The BLM in cooperation with TU, WGFD and the Little Snake River Conservation District (LSRCD), have undertaken a large conservation effort to protect native Colorado River fish species in the Muddy Creek watershed. This project is an ongoing effort to restore fish passage and connect over 30 miles of headwater streams in the watershed. Efforts include removal of 11 fish barriers (ten on Muddy Creek and one on Littlefield Creek) previously installed as part of non-native fish removal efforts; removal/modification of instream structures installed as stream gradient controls; and construction of fish barriers to protect restored sections of stream. Funding for this project will be used towards engineered design and construction of fish passage structures. During fiscal year 2012, an engineered design for the Littlefield Creek fish barrier was completed. Engineered designs for the modification/construction of two fish barriers were also developed.

These barriers must be constructed to protect the native fish population prior to the removal of any fish barriers upstream. Habitat and population monitoring of past and future project areas also occurred.

Green River Region Spring Enclosures (Goal 5) – Ben Wise

The lack of availability and tendency for over utilization of naturally occurring water sources in the semi-arid areas of southwestern Wyoming has led to an increased interest in protecting these invaluable resources from further degradation. Two projects were developed and materials were purchased to protect approximately ten acres of active spring and associated sub-irrigated riparian areas adjacent to the active spring source. A steel jack fencing design was utilized for this project due to its durability and requirement for very little maintenance over the life of the enclosure (Figure 15). Working in conjunction with the Southwest Sage Grouse Local Working Group, Water for Wildlife Foundation and Muley Fanatics Foundation of Wyoming, funding was secured and 5,500 feet of fencing materials were purchased. Completion of both projects is anticipated in early summer 2013.



Figure 15. A full truck load of steel jack fencing materials for the Seven Mile Gulch and Scott Spring enclosure projects.

Hay Reservoir (Goal 2) – WLCI, Jim Wasseen

This has been a multi-year project to treat approximately 1,200 acres for Russian knapweed, whitetop, and swainson pea invasion on public and private lands over a three year period. Past monitoring showed the density of treated weed populations is reduced and patchy as compared to thicker and larger patches the previous year, and that beneficial grass cover is increasing. Saltcedar has been removed throughout the treatment area. In 2012 the project was completed when the final 600 acres were treated using ground applications of herbicide and monitoring information collected on 250 acres.

Wyoming Water Development Commission – McMillen Ranch Riparian Trend Monitoring (Goal 2) – Ben Wise

The McMillen Ranch property was purchased by the WWDC to mitigate the impacts of High Savory Reservoir. The property was set aside to offset the loss of riparian wetland habitat due to the formation of the reservoir behind the dam. Woody riparian species monitoring sites were established on this property and livestock grazing was deferred until the site reached an adequate level to fulfill the mitigation requirements of the property. Transects were re-read in June 2012 (10 years post establishment) with minimal improvements observed on the monitoring transects (Figures 16 and 17). The average height of willows across the three sites increased one foot and

cottonwoods increased 0.53 feet. A detailed report on this monitoring effort will be included in the 2012 Fish Division Progress Report.



Figure 16. Middle McMillen Ranch woody riparian belt transect, 2001.



Figure 17. Middle McMillen Ranch woody riparian belt transect, 2012.

Little Snake Aspen Conservation Initiative (Goal 2) – WLCI, Jim Wasseen

This is the fifth year of a ten year project to restore up to 5,000 acres of aspen stands in the Little Snake River Basin. This project treats aspen habitat through removal of decadent trees and encroaching conifers. The project consisted of removing the conifers and old aspen clones from existing stands through mechanical treatments and prescribed burns. In 2012, 621 acres were treated: 190 acres of private lands intermixed with 431 acres of BLM administered lands, in three separate parcels (Figure 18). Treatments have benefitted adjacent acres through increased vigor of aspen stands resulting in a two fold increase in effected acres for a total of 1,242 improved acres.



Figure 18. Aspen regeneration 3 years after treatment.

Wyoming Range Mule Deer Nutritional Carrying Capacity (Goal 5) – Ben Wise

In conjunction with the “Wyoming Range Mule Deer Nutritional Carrying Capacity” research project conducted by Dr. Kevin Monteith of the Wyoming Cooperative Fish and Wildlife Research Unit, a series of winter range production and utilization habitat transects were established. The main purpose of this study is to link habitat condition; winter range shrub utilization, mule deer body condition and carrying capacity together to better manage the overall herd health and population level of the Wyoming Range Mule Deer herd. Ten additional winter range production and utilization transects were established along with three existing transects to collect data across the entire extent of this crucial mule deer winter range (Figure 19). Due to the below average snowpack from the winter of 2011-2012 and extreme drought conditions of 2012, winter range

Muddy Creek Sheet Piling Modification (Goal 2) – WLCI, Jim Wasseen

The BLM in cooperation with TU, WGFD and the LSRCD modified four galvanized metal sheet piling structures that were acting as barriers to upstream fish movement. Additional rock ramp structures were placed in the stream to maintain the water table and allow for fish passage (Figure 20). This project is part of an ongoing effort to restore BLM and state sensitive native Colorado River cutthroat trout to the Muddy Creek watershed. This project reconnected an additional eight miles of stream for native BLM sensitive fish species in the Muddy Creek watershed.



Figure 20. Rock ramp structure to allow fish passage.

Rawlins Fence Conversions (Goal 2) – WLCI, Jim Wasseen



Figure 21. Pole Canyon allotment fence conversion.

Existing fences in the Powder Rim allotment were converted to wildlife friendly fences. This included converting 12 miles of 6 wire barbed; and mesh with 2 barbed wires to BLM standard 4 wire fences. This completed the primary conversion of north-south fences in the Powder Rim allotment. A Wyoming Conservation Corp crew was also funded to convert 1.1 miles of non-standard BLM fences on the north slope of Ferris Mountain (Pole Canyon allotment) to a wood post/rail top with three wires underneath and the bottom wire smooth (Figure 21).

Collaborative Colorado River Cutthroat Trout Habitat Improvement in the Little Mountain Ecosystem (Goal 5) – Kevin Spence

Technical support and assistance was provided for four individual Colorado River cutthroat trout habitat improvements led by TU during 2012 located within the Little Mountain Ecosystem. Equipment, manpower, and technical assistance was provide to the Flaming Gorge/Lower Green River Chapter of TU to install a series of conifer streambank revetments and woody debris

structures in Red Creek to improve pools and cover for Colorado River cutthroat trout. A local Boy Scout Troop also planted young aspen trees along the same reach of Red Creek to improve riparian habitat and complement the instream habitat structures. Labor assistance was provided to the TU Green River Project Coordinator and contractor to replace Sweetwater County Road #34 crossing at Gooseberry Creek with a new bottomless arch styled culvert to improve fish passage and maintain hydrologic processes (Figure 22). Assistance was provided to the TU Green River Project Coordinator to cut and haul large timbers to Gooseberry Creek (Figure 23) for use to restore the stream channel at two head-cut reaches while providing upstream fish passage. Continued planning support was also provided to the TU Green River Project Coordinator, who has been working with private landowners since 2011 to rebuild a failed irrigation diversion structure with a fish passage component on Trout Creek. More information about these projects can be found in the 2012 Fish Division Annual Progress Report.



Figure 22. New arch styled bottomless culvert installed by Trout Unlimited on Gooseberry Creek at Sweetwater County Road #34 crossing. The new culvert is expected to improve fish passage and maintain hydrologic processes.



Figure 23. Assisting Trout Unlimited with cutting and hauling large timbers to Gooseberry Creek for use in stream channel restoration activities to provide fish passage.

Raymond Mountain (Goal 2) – WLCI, Jim Wasseen

This project involves removing two aggressive invasive species to improve the forage base for wildlife species in the Raymond Mountain area. This project was designed to be implemented and funded over a five year period. The project 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. Lincoln County Weed and Pest (LCWP) treated 150 acres of Dalmatian Toadflax and Dyer's Woad on infested areas near Raymond Canyon and Border Junction. The total area influenced by this spraying was close to 2,000 acres. Along with the treatments, LCWP was able to do a significant amount of monitoring in the helicopter. The monitoring showed a significant decrease in infestations in this area. This has been a highly successful program with the cooperation of the BLM, LCWP, and WLCI.

Green River Region Aspen and Cottonwood L-D Monitoring (Goal 2) – Ben Wise and Jim Wasseen

Six aspen and three cottonwood monitoring sites were resurveyed within the Little Mountain Ecosystem and Seedskaadee NWR during 2012 to evaluate large ungulate browsing effects on woody species regeneration. The locations of the aspen 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 (Figure 24). Cottonwood monitoring sites at Seedskailee NWR are located at lower Dodge Bottoms, Deer Island, and the Johnson Unit. 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. Cottonwood data collected at Seedskailee NWR 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.

The Live-Dead (L-D) Index was used for the trend surveys. The L-D 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 L-D 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 L-D value near zero indicates that browsing is suppressing growth of young aspen, and a negative L-D value is an indicator of significant aspen decline and possible death of young trees.

Results from the 2012 aspen survey revealed negative L-D index values at five sites surveyed, and a positive L-D value at Miller Mountain. The decrease in L-D index values in 83% of the sites monitored could be attributed to the lack of regional precipitation and excessive browse experienced due to the severe drought conditions of 2012. The 2012 L-D index data results indicate a decline in aspen recruitment and growth compared to 2011. 2012 cottonwood survey L-D index values improved at the Dodge Bottoms and Deer Island monitoring site, and declined at the Johnson Unit sites compared to values measured in 2011. The increased growth and recruitment of these sites may be attributed to the record flows of the summer of 2011, depositing nutrients and providing substantially better growing conditions for seedlings.

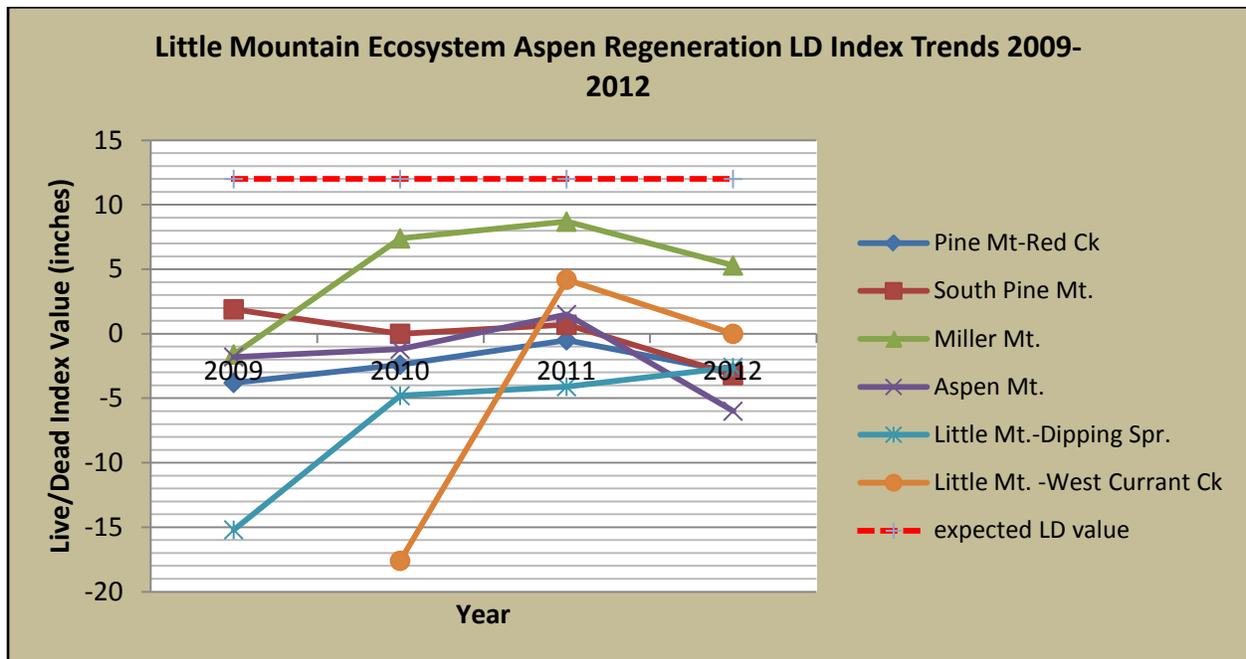


Figure 24. Graph of L-D Index Values (in inches) monitored in the Little Mountain Ecosystem (LME). Expected L-D Value derived from protected aspen regeneration in the LME with 9-14” of vertical annual growth.

Red Rim Daley WHMA Woven Wire Fence Conversion (Goal 2) – WLCI, Jim Wasseen
 This project includes the conversion of existing woven wire fences to wildlife friendly four

strand wire fences in mapped mule deer migration routes. The grant will pay for fence materials and private sector contract labor for removal of woven wire and reconstruction of four strand wildlife friendly fences. In 2012, four and a half miles of fence was converted on the Daley WHMA. Additional fence materials will be purchased in 2013 and additional fence conversion work will be bid and completed in 2013.

Phase II Russian Olive/Tamarisk Assessment Along the Lower Green River Riparian Corridor (Goal 5) – Kevin Spence and Jim Wasseen

TSS was contracted by the WGFD to inventory and determine the existing distribution of invading Russian olive and tamarisk plants within the lower Green River riparian corridor between the southern boundary of Seedskafee NWR and Interstate 80, and that portion of the Flaming Gorge National Recreation Area between Scott’s Bottom and Davis Bottom. Funding for the Phase II inventory was granted to the WGFD from the WLCI program.

The inventory focused on a half mile wide belt of riparian floodplain adjacent to, and along, approximately 28 miles of river totaling 8,658 acres of the riparian habitat corridor (Figure 25). 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. The effort identified 115 stands of Russian olive and 93 stands of tamarisk located on those lands participating with the inventory. 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.

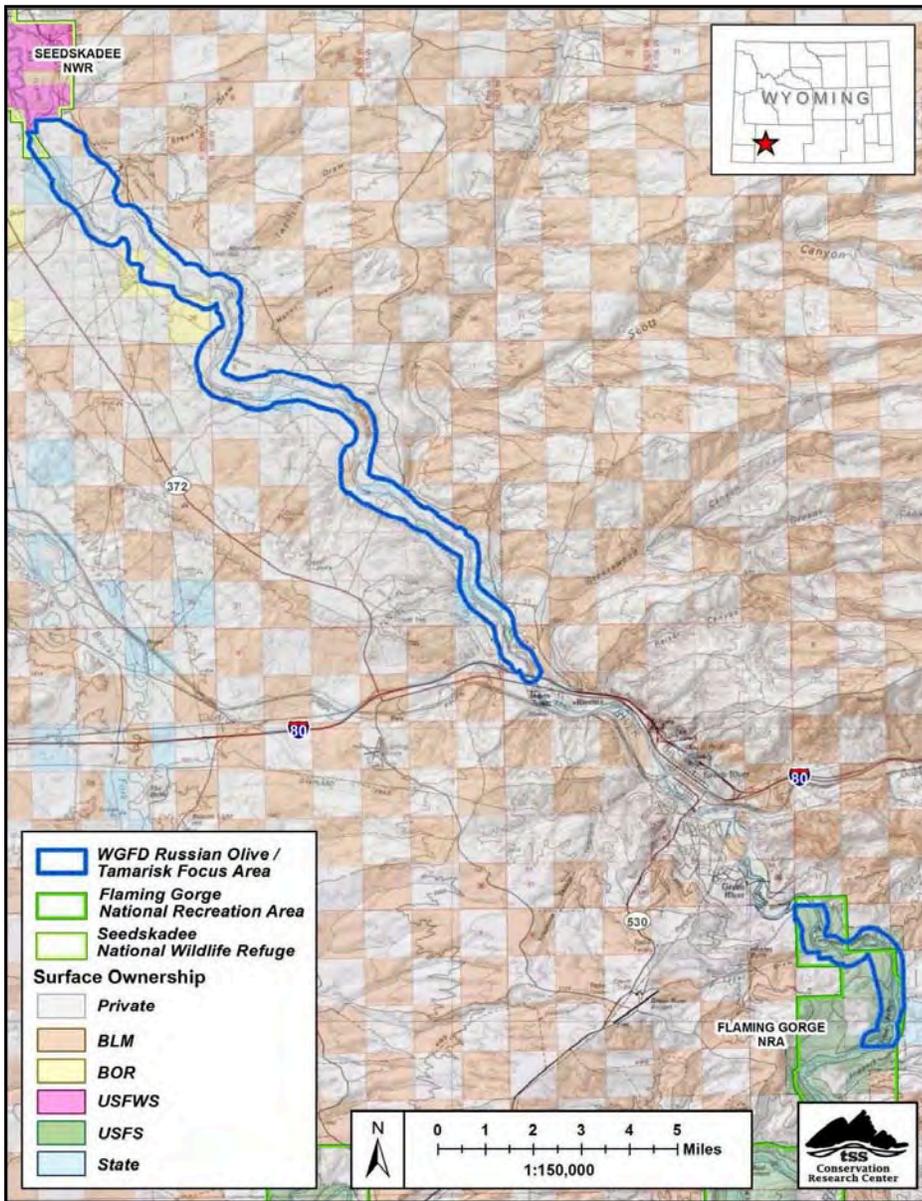


Figure 25. A map depicting the phase II Russian olive/tamarisk inventory focus area along the lower Green River riparian corridor (courtesy of Teton Science School).

Sand Creek Saltcedar Control (Goal 2) – WLCI, Jim Wasseen

The Sand Creek Saltcedar control project entails treating approximately thirty (30) miles of stream bottom in the Colorado River Watershed for saltcedar invasion. Treatment consists of aerial and ground application of herbicide to remove saltcedar from the area. In 2012, 75 acres were treated, 200 acres monitored, and 20,000 acres were inventoried.

Upper Currant Creek Riparian Pasture Fence (Big Ridge Fence) (Goal 2) – Ben Wise

The construction of a riparian pasture fence on Upper Currant Creek, within the Sugarloaf Mountain Grazing Allotment, is essential to addressing watershed health concerns within the allotment (Figure 26). This portion of Currant Creek is a BLM designated Area of Critical Environmental Concern and has been the focus of watershed scale habitat restoration projects over the last 20+ years. Work in the watershed has involved significant contributions of wildlife conservation dollars from numerous entities, including WGFD. The proposed fence will consist of approximately 4.9 miles of three-wire stock fence. Two existing fences will be connected and will result in the protection of 8.25 miles of riparian pasture along upper Currant Creek. The WGFD granted money to the Rock Springs BLM Field Office to purchase fence materials. WLCI and RMEF are funding fence construction, with completion scheduled early spring of 2013.

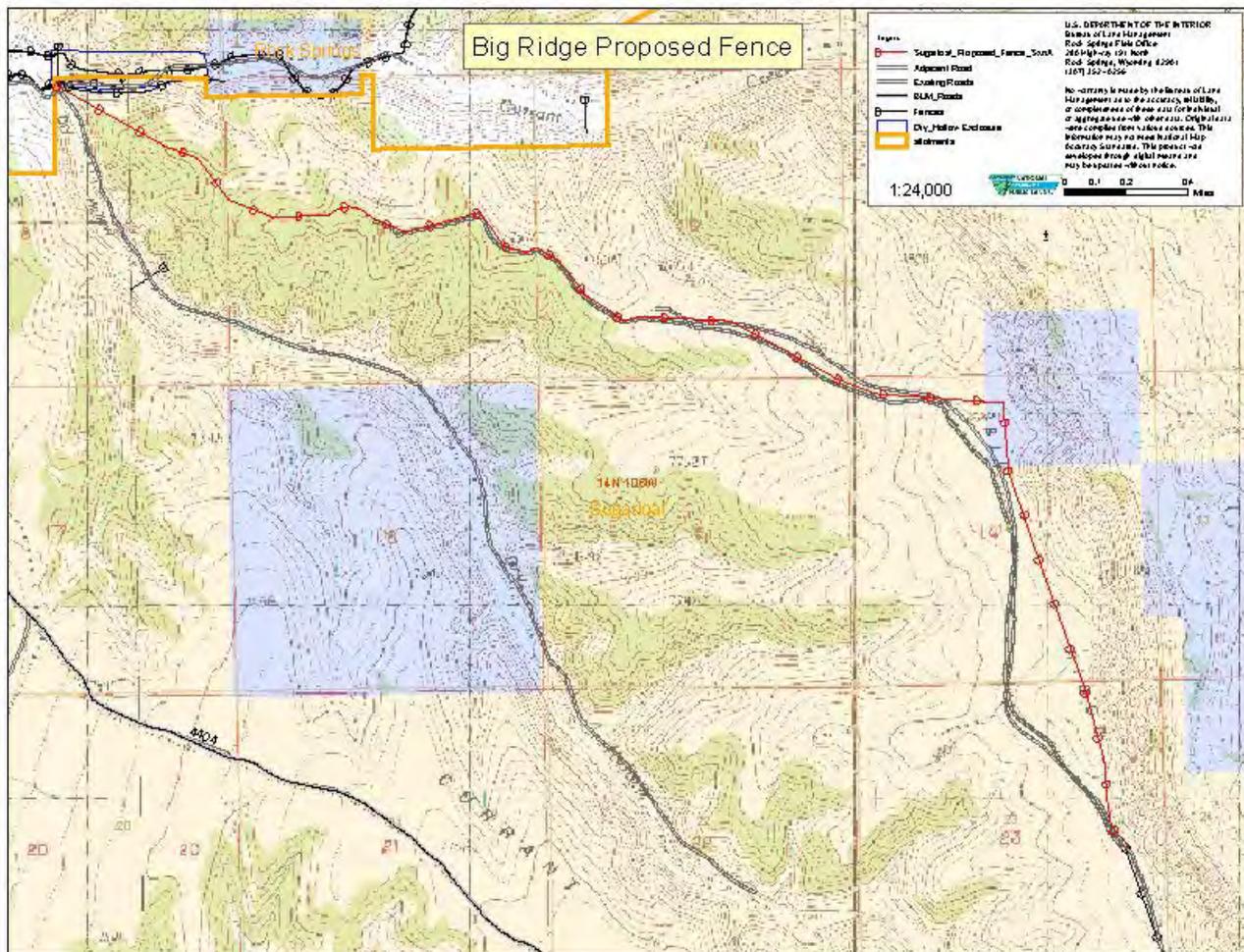


Figure 26. Proposed riparian pasture fence in the Sugarloaf Grazing Allotment. Construction of the 4.9 mile fence will afford protection of 8.25 miles along upper Currant Creek.

Uinta County Weed and Pest Tamarisk Treatment, Blacks Fork River Drainage (Goal 2) – WLCI, Jim Wasseen

Approximately 22 acres of tamarisk was sprayed on BLM, state and private lands, and 87 miles of stream bank was surveyed. The areas treated were in Uinta County and Lincoln County to approximately one mile from the Sweetwater County line. Drainages treated were Muddy Creek, Little Muddy, Blacks Fork River, Smiths Fork River, Dry Creek, Levitt Creek, and Cottonwood Creek. Over 3,400 acres were protected with this treatment. Retreatment areas were minimal due to an 85% mortality rate of salt cedar the first year of treatment. However, there were areas of first year plants found in sand bars and along the Black's Fork. The UCWP planted 210 seedling trees, 20 one-gallon buffaloberry plants, 14 five-gallon Cottonwood seedlings, and 12 five -gallon sandbark willows along the Smiths Fork and Blacks Fork River to rehabilitate riparian habitat this year. The area was on private land. Fencing was erected to protect the trees. UCWP crews watered newly planted trees weekly.

Upper Colorado Erosion Control (Goal 2) – WLCI, Jim Wasseen

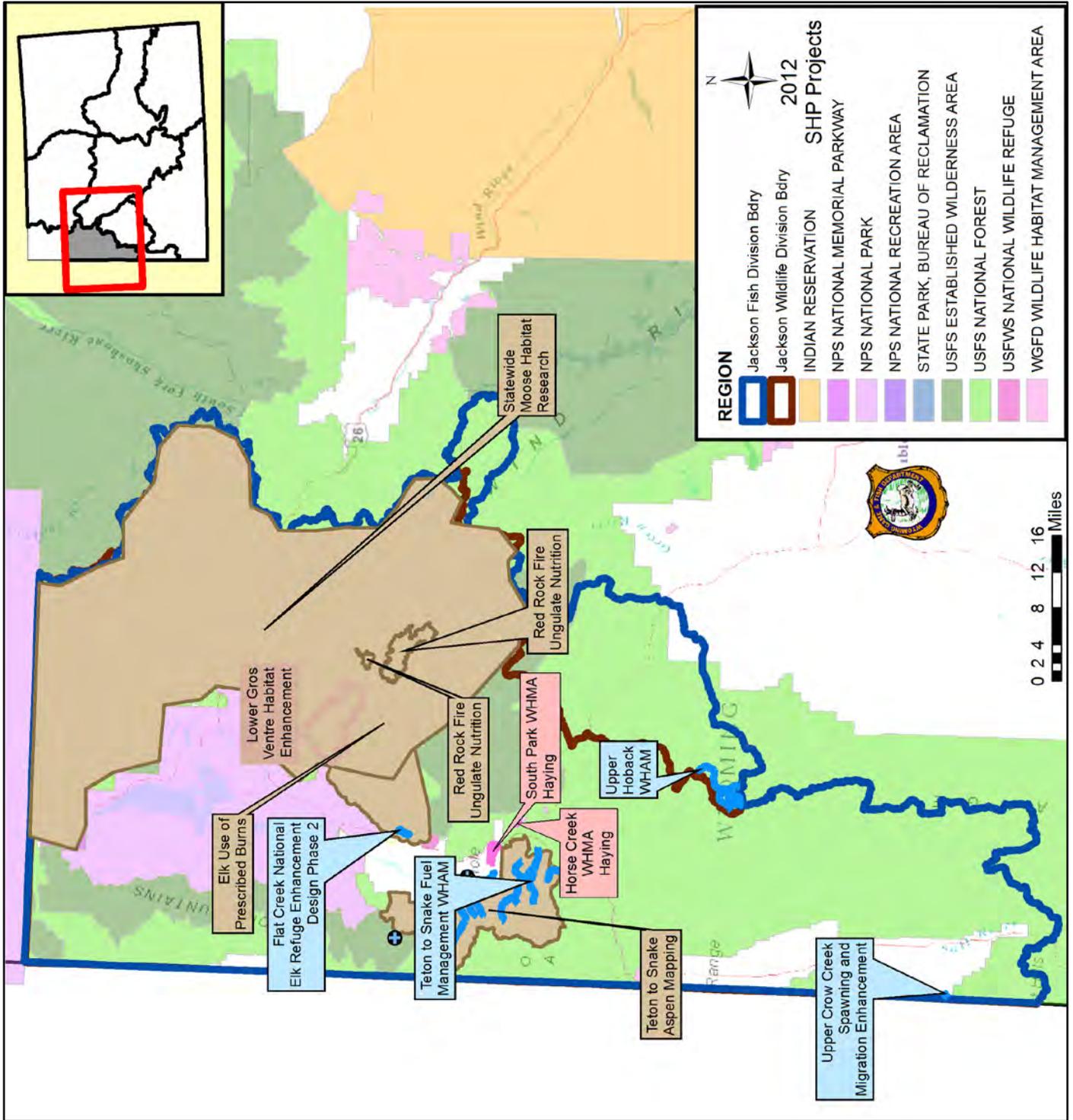
The goal of this effort is to reduce erosion from roads in the Colorado River watershed by adding culverts, wing-ditches, moving a road, and other actions to improve drainage along or across roads. The current focus is on the BLM road along Muddy Creek in the Grizzly grazing allotment and the Carbon county road on either side of McKinney Creek. Planned roadwork was not accomplished due to drought conditions, which caused concern that disturbance might have created loose dirt that would end up in the creeks. In addition, there was higher priority to complete projects in other locations. However, in 2012 funding was used to purchase culverts for use in 2014, and used on re-routing the BLM Wild Horse Road to benefit wildlife, primarily mule deer migration corridors. Engineering and hydrology consultation and planning will take place in 2013; roadwork is planned for 2014 by the BLM force account crew. No additional funding will be sought in 2013.

Green River Regional Information and Education Efforts (Goal 4) – Lucy Diggins-Wold

In the Green River Region, I&E Specialist Lucy Diggins-Wold covered habitat issues through various media and educational presentations. These included 4 news releases, 18 radio programs, 11 workshops/training, 2 brochures and taught 570 students/adults. Examples include:

- An Interview for the Lander Region on KTAK/KVOW "Chit Chat" program about Christmas trees for fish habitat projects.
- Pre-recorded radio programs on the Wyoming Range Mule Deer Herd collaborative meeting results.
- Worked with the state forester on riparian habitat projects in the eradication of the Russian olive and tamarisk along the Green River being worked on by Kevin Spence and the city.
- Worked with SeedsKadee NWR personnel to conduct multiple environmental education programs at the refuge.
- Coordinated with an I&E group assigned to come up with messages and strategies for the mule deer initiative, new big game population modeling and impacts to wildlife from energy development.
- Handed out hundreds of mule deer flyers at game check stations that included information on drought and poor habitat conditions for the Wyoming Range Mule Deer Herd.

JACKSON REGION



JACKSON REGION HIGHLIGHTS

- 523 acres of prescribed burns were completed by USFS in the lower Gros Ventre area.
- 130 wetland sod mats and 5,000 bare root wetland plants were planted along one of the wetland ponds on the South Park WHMA.
- 2 irrigation diversion structures on Spring Creek were reconstructed to allow fish passage throughout 13 miles of Spring Creek.
- Coordinated Habitat Day activities at the annual WGFD Youth Conservation Camp at the Whiskey Basin WHMA near Dubois.
- 46.6 acres of noxious weeds were controlled on WHMAs, PAAs and feedgrounds.
- 3,975 acres of aspen communities were evaluated for health and risk for loss with USFS within the Teton to Snake urban wildfire interface area.

Upper Spring Creek Fish Passage (Goal 2) – Lara Gertsch

The WGFD, local landowners and cooperative partners continue to enhance Snake River tributary streams. These spring creeks are crucial spawning and rearing habitats for native trout in the Snake River system a fishery of national importance. Upper Spring Creek Fish Passage, the latest completed phase of these endeavors, removed two fish migration barriers. The JA Williams Irrigation Diversion and the TSS Irrigation Diversion were dilapidated structures causing bank erosion, over-wide channels and restricting fish passage (Figure 1).

The JA Williams Irrigation Diversion structure was replaced by a “rock-ramp” fish ladder to provide a low-velocity, low-gradient, and stable structure (Figure 2). The second barrier, the TSS Diversion was replaced with a headgate that will allow for better control of irrigation flows. This type of structure manages water levels in intervals that allow the system to flush out sediment with less manual labor and gives fish the flow cues to return to the main channel. Native trout and non game fish of all age classes can now access the entire 13 miles of Spring Creek at all times of the year.



Figure 1. The JA Williams Diversion prior to being replaced. The headgate was a migration barrier to native fish in Spring Creek.



Figure 2. The JA Williams fish ladder following completion and 2012 high flows. Upstream landowners observed a significant increase in adult trout within upstream reaches of Spring Creek.

Lower Gros Ventre Habitat Enhancement (Goal 2) - Alyson Courtemanch

The Lower Gros Ventre Habitat Enhancement Project was completed in 2012 after conducting prescribed burning over six years (2007-2012) (Figure 3). In total, 4,888 acres received prescribed fire (28% of the project area) (Figure 4). The overall goals were to reduce conifers and mature shrubs (sagebrush) within and peripheral to aspen stands, promote diverse habitat mosaics that include mid-age aspen, and improve forage quantity, quality, and palatability for big game. Prescribed fire was used to enhance habitat for elk, bighorn sheep, mule deer, and moose by increasing the quantity and quality of forage and vegetation diversity on transitional, winter, and parturition ranges and along migration routes. We achieved a mosaic of burn intensities within the project area of low, medium, and high intensities, and unburned patches.



Figure 3. Prescribed burning in spring 2012, targeting conifer encroachment into bighorn sheep habitat.

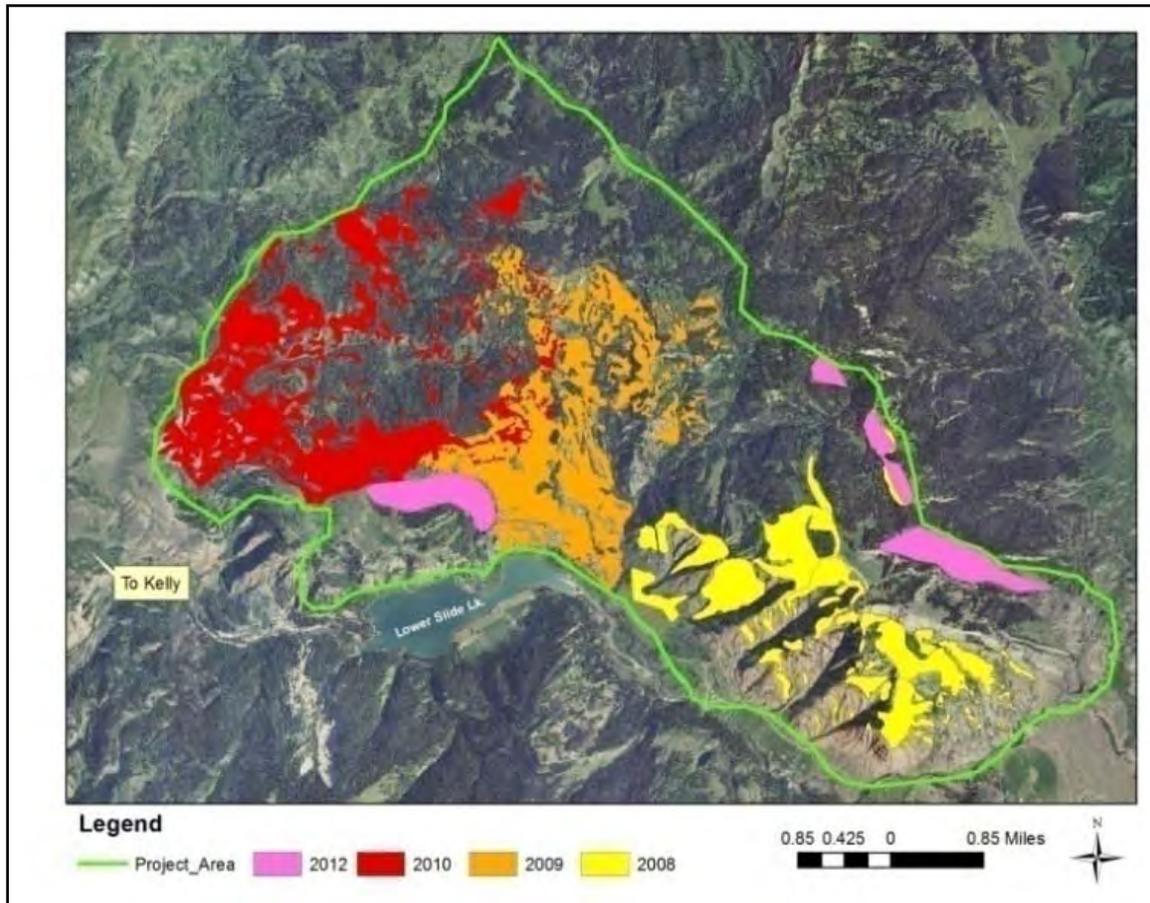


Figure 4. Prescribed burn areas by year in the Lower Gros Ventre Habitat Enhancement Project (2007-2012).

Several aspen monitoring sites were established pre-treatment and we have found that aspen suckers at these sites have exceeded 1,000 stems per acre and have experienced light ungulate browsing. Aspen sucker density increased dramatically (over 2-fold), and conifer density

decreased (over 2-fold) at the monitoring sites one-year post-burn. Ungulate use of aspen leaders at two-years post-burn (2010 treatment) was low, averaging only 4.2%. These parameters will continue to be measured up to 15 years post-burn to assess the burn success. This was a highly successful, multi-year project that involved many partners, including Bridger-Teton National Forest (BTNF), Grand Teton National Park, WWNRT, RMEF, Wyoming Wild Sheep Foundation (WWSF), and WGBGLC.

Teton to Snake Watershed Habitat Assessments (Goal 2) – Lara Gertsch

Watershed Habitat Assessment Methodology (WHAM) Level 1 surveys were conducted on tributary streams to the Snake River during summer 2012. These assessments provide a systematic means for documenting watershed, riparian and stream channel conditions and identifying issues that can be addressed to improve habitat. Surveys were conducted on 10 streams within the Fall Creek sixth level HUC (170401030107) and Snake River-Spring Creek sixth level HUC (170401030101). Approximately 36 stream miles were surveyed in total. The intent was to inventory stream reaches prior to the Teton to Snake Fuels Management Project. This BTNF proposal will reduce fuel loads near communities in Teton County, such as the town of Wilson and the Red Top Meadows housing development. Treatment goals include reducing extreme fire behavior potential, increasing aspen habitats, improving fire protection, and enhancing firefighter and public safety.

The inventory identified housing developments, roads and cattle loafing as negative influences on soil and drainage within the riparian areas (Figure 5). Other widespread watershed impacts observed included bark beetle infestations to upland conifer vegetation. Aspen “fairy rings” with conifer and sagebrush encroachment were numerous. Aspen clones, conifer stands, and sagebrush communities have become monotypic and decadent (Figure 6).



Figure 5. Fall Creek Road, cattle grazing and housing development within the Fall Creek drainage are having cumulative impacts.



Figure 6. Uplands with aspen “fairy rings” and conifer beetle kill. The Teton to Snake Fuels Management Project anticipates improving aspen habitats to reduce fuels and fire danger to housing developments.

The most important and well-timed tool within the Teton to Snake Fuel Management Project is the proposed burns. When properly managed, both prescribed burns and naturally occurring wildfires can benefit vegetation in the basin and replace expensive human suppression of wildfires. Prescribed burning can lower conifer densities and “release” growth of aspens and other species that depend on fire for regeneration. Future projects should address the abandoned housing development at the confluence of the South and North Forks of Fall Creek and the effects of the

Fall Creek Road on watershed sediment yield. Additional information can be found in the WGFD Annual Fisheries Progress Report, and the WHAM and photo databases.

Jackson Wildlife Habitat Management Areas (Goal 2) – Ray Bredehoft, Matt Miller, Kade Clark, and Breanne Thiel

- **Greys River WHMA:** 13 miles of crucial winter range elk fence was maintained on and around the WHMA. A contractor worked on the elk fence and replaced approximately 1,000 posts; all wildlife gates were replaced, one new elk jump was constructed, and over one mile of fencing was rebuilt.
- **South Park WHMA:** 2.5 miles of crucial winter range elk fence were maintained.
- **Horse Creek WHMA:** 1 mile of crucial winter range elk fence was maintained and 60 acres of meadow was irrigated.
- **Teton County WHMAs, feedgrounds and PAAs:** 26.1 acres of noxious weeds were treated.
- **Lincoln County on Greys River WHMA, Salt River PAAs, and Alpine Wetlands Complex:** 20.5 acres of noxious weeds were treated.

Red Rock Fire Ungulate Nutrition (Goal 2) – Alyson Courtemanch

Fire is generally considered to be beneficial for big game habitat because it sets back forest succession and improves forage quantity and quality. Forage quality (i.e. percent crude protein, digestibility) can increase in some plant species for up to seven years post-fire and is directly related to body condition, reproduction, and lactation for ungulate species. However, a recent study from the Wyoming Cooperative Research Unit on the Jackson moose herd in northwest Wyoming found that summer forage quality was significantly *lower* in areas burned in the 1988 Yellowstone fires than in unburned sites. These findings suggest that large-scale wildfires may, in some situations, have persistent negative effects on forage quality, and raise questions about whether all types of fire are beneficial for ungulates. In 2011, the Red Rock Wildfire burned over 9,000 acres in the Gros Ventre drainage on BTNF. The wildfire burned in a mosaic pattern of burn severities, ranging from unburned areas to high severity, stand-replacing fire. This event presented a unique opportunity to monitor changes in the nutritional quality of ungulate forage in response to fire of varying severities (Figure 7).



Figure 7. Examples of two sampling sites: a mixed conifer-aspen stand that burned at high severity (left) compared to one that burned at low severity (right) in the Red Rock Fire. Vegetation sampling and lab analysis will reveal how different wildfire severities affect nutritional content of ungulate forage species.

In summer 2012, we initiated a collaborative project to monitor these changes in ungulate forage quality with BTNF, and with funding support from WGBGLC, RMEF, and WWSF. The overall goal of this project is to understand how fires of varying severity affect the nutritional and mineral content of typical forage species used by ungulates (bighorn sheep, elk, moose, and mule deer). We are interested in tracking nutritional and mineral content over both the short-term (1-5 years) and the long-term (6-10+ years).



During summer 2012, we established 57 permanent sampling sites in aspen, conifer, meadow, and willow communities within the Red Rock Fire perimeter. These sites were selected to represent a range of burn intensities in each community, from unburned (control) to high severity. Key ungulate forage species were sampled at each site. In total, we collected 236 vegetation samples representing 14 different species that will be sent to the Colorado State University Plant and Soil Lab this winter for nutritional and mineral analyses (Figure 8). These sites will be re-visited each summer to collect samples from the same plant species to track changes in nutritional content over time. Results from the study will reveal how fire severity affects nutritional quality for ungulates, and improve our understanding of the benefits of prescribed fire and wildfire for big game populations.

Figure 8. Vegetation samples collected for the Red Rock Fire Ungulate Nutrition Project, ready to be sent to the lab.

Star Valley Front Habitat Enhancement Planning (Goal 2) – Alyson Courtemanch

The Star Valley Front Habitat Enhancement Project is located to the east of Afton on the Greys River Ranger District, BTNF. This project is currently in the planning stages and the WGFD is working closely with BTNF to develop objectives. BTNF is currently working on completing NEPA for this project that proposes using prescribed fire to improve mule deer crucial winter range, and moose and elk winter and transitional range. The area includes an important crucial winter range area for the Wyoming Range mule deer herd. A recent habitat assessment completed by the Conservation Research Center of the TSS (Star Valley Front Habitat Assessment, 2012), funded with 2010 Director's Office Funds, showed that only 0.3% of the vegetation in the project area is classified as early succession. In addition, 77% of the aspen stands (over 3,000 acres) in the project area were classified as "highest" treatment priority (Campbell and Bartos, 2001). The habitat assessment also showed that fire has been a natural occurrence in the project area from 1745 and 1941, based on aged fire scars from 23 trees. However, there has been no evidence of

fire in the past 70 years (since 1941), likely due to active fire suppression, which has undoubtedly contributed to the dominance of late succession classes. The habitat enhancement project proposes targeting various community types, including aspen, mixed mountain shrub, sagebrush, and mixed conifer to set back vegetation succession and increase habitat diversity. Project implementation will occur over five to seven years, with close coordination between BTNF and WGFD to spread treatments out spatially and temporally.

Upper Crow Creek Spawning and Migration Enhancement (Goal 2) – Lara Gertsch

Upper Crow Creek is a tributary to the Salt River. The WGFD is continuing to work with landowners, NRCS and the Star Valley Conservation District to promote watershed function and ecosystem integrity by enhancing riparian and in-channel habitats. This enhancement began during the spring of 2010 with Boy Scouts of America planting willows. Only 10% of those willows plantings survived into the fall of 2012. The landowner noted muskrat damage to the planting and used an innovative tree wrap to discourage muskrats (Figure 9). In contrast, the naturally occurring willows are expanding within the riparian zone without any artificial protection. The landowner will continue to monitor willow recovery within the riparian pasture.



Figure 9. Surviving planted willows have been wrapped to thwart winter rodents.



Figure 10. The rested riparian pasture, stream enhancement and upland livestock trough improve Crow Creek riparian and stream habitats.

Riparian fences assist three different landowners in managing their horse pastures with a rest/rotation system. In 2012, a pipeline, trough and well system was in full operation and water gaps were removed to dissuade livestock from loafing in the riparian area. The livestock were successfully managed in the upland pastures this first year (Figure 10). The new system will exclude livestock from the riparian pasture until shrub plantings have established or after five years of grazing rest. The next phase involves similar work on private land downstream and will be pursued in 2013.

Salt River Public Access Area Development (Goal 3) - Ray Bredehoff, Matt Miller, Kade Clark, and Breanne Thiel

The Jackson Region of the Habitat and Access Branch developed a new PAA along the Salt River near Alpine. The new area will be open for public use in the spring of 2013 and will have a boat ramp along with fishing and waterfowl hunting opportunities. The WGFD worked with the USFS to update a current access road and also worked with private landowners to develop a new parking area and boat ramp. The new public access will be the last major take-out for boaters along the Salt River before hitting Palisades Reservoir.

Western Wyoming Aspen Days Event (Goal 4) – Alyson Courtemanch

Aspen Days, organized by the WGFD, took place September 25-26, 2012 in Jackson.

Twenty-six participants from the WGFD, BTNF, Caribou-Targhee National Forest, Grand Teton National Park, UW, University of Utah, U.S. Geological Survey, Wyoming Wildlife Federation, and TSS attended this two-day event (Figure 11). The event



Figure 11. Biologists from six different agencies, universities, and organizations collect data on a historically treated aspen stand as part of Aspen Days.

included field trips to the Gros Ventre drainage to discuss historical aspen treatments and re-read aspen transects (Figure 12) and the Greys River drainage to discuss current aspen issues, and an evening of public presentations on aspen ecology, aspen/wildlife

relationships, and aspen management in Jackson Hole. The event promoted collaboration and built relationships between various agencies, academic institutions, and the public, and has led to several new partnerships on aspen projects.



Figure 12. Collecting data along a transect to record aspen regeneration on Aspen Days.

Upper Hoback Watershed Habitat Assessments (Goal 2) – Lara Gertsch

WHAM Level 1 inventories were completed within the South Fork Hoback River sixth level HUC (170401030301) in the upper Hoback River drainage on the BTNF during summer 2012. Surveys were conducted on 6 streams. Approximately 4.5 stream miles were inventoried. The purpose was to identify conditions of upland, stream, and riparian habitats and identify reference reaches. Reference reaches provide vital stream channel design criteria for restoring degraded stream reaches. The drainage contained streams assessed as stable, although some areas of instability were observed. The majority of channel types of these streams are classified as a B4 or A3 which are common in the Jackson Region. The upper Hoback River is classified as a C3 channel, indicating a moderately sinuous channel in a well developed floodplain with riffles, pools and point bars and a cobble substrate which is ideal for a reference reach (Figure 13).



Figure 13. The upper Hoback River stream flow was low during summer 2012. Beaver ponds and streams with northern aspects serve as refugia for Snake River cutthroat trout during drought years.

designated as unsuitable, but during 2012 sampling adult Snake River cutthroat were found. Bare Creek's headwaters are within a "bowl" shaped glacial formation. Bare Creek and its tributaries have limited exposure to sunlight and the snowmelt is delayed into the summer months. This geomorphology may make it ideal adult habitat during drought years but stream temperatures may be too cold during "normal" years and/or the other three seasons.

There were several distinguishing landscape issues within the drainage. Aspen communities were notably absent from the uplands. Conifer stands lacked diversity in age classes and had minor bark beetle infestations. Beaver ponds were relic and two of the larger ponds were abandoned on the terrace above the active stream channel. These dams produce a stable wetland vegetative community and amphibian habitat. The most remarkable element of the inventory was Bare Creek (Figure 14). This stream doubled the flow of the upper Hoback River at its confluence. The water temperature was considerably colder than the Hoback River or other surveyed tributaries. This stream was previously



Figure 14. Bare Creek provided adult Snake River cutthroat trout summer refugia from low flows and high water temperatures but may be unsuitable at other times.

Information and Education (Goal 4) - Mark Gocke

Wildlife and habitat ecology was taught at several events including Jackson Hole Elk Fest, the Jackson Interagency Wildlife Expo, WGFD Hunting and Fishing Expo, and the WGFD Teachers and Youth Conservation Camps. Probably the most noteworthy was coordinating the Terrestrial Habitat Day activities at the annual WGFD Youth Conservation Camp near Dubois. Groups of students are paired up with habitat biologists to inventory and evaluate a habitat type, learn techniques for possible improvement, and provide a PowerPoint presentation on their findings to the rest of the students at the end of the day.

Text and photos were developed for a flyer on Wyoming Range mule deer and habitat projects. The flyer was handed out at hunter check stations and emailed directly to a list of stakeholders. In

addition, PowerPoint presentations were developed for public meetings on the Wyoming Range Mule Deer Initiative.

Additional habitat efforts by the Jackson I&E Specialist included providing interviews and photos to several media outlets including the *Casper Star Tribune* and *Bugle* magazine on two separate CEs involving the Chrisman and Budd Ranches near Big Piney.

Teton to Snake Aspen Mapping (Goal 2) – Alyson Courtemanch

The Teton to Snake Project is a proposed fuel treatment by the BTNF that would occur within wildland-urban interface areas around the town of Jackson. The project proposes to conduct prescribed burning and non-commercial thinning on approximately 22,511 acres (within a larger 79,000-acre project area) to modify potential wildfire behavior, set back vegetation succession, enhance aspen communities and protect private property. The project area includes important big game habitats along the west side of the Snake River from Teton Village to south of Hoback Junction.

In 2010, the WGFD granted funding to the Forest Service to help support information collection required by NEPA. In part, the funding has been used to map aspen stands within the project area and collect information on historical fire events using fire-scarred trees. Past fire suppression has moved the landscape toward an advanced successional state with decreased vegetation age-class diversity. During summers 2011 and 2012, personnel from the WGFD and BTNF completed aspen surveys on 3,957 acres within the project area. 29 aspen stands were mapped and data collected on habitat type, aspen community type, overstory and understory species composition, and each stand was assigned to a fuel model and aspen risk ranking (Campbell and Bartos, 2001). We discovered many aspen and mixed aspen-conifer stands on the ground had been misclassified on the *BTNF 2007 Vegetation Map* as conifer forest types. Oftentimes, these stands were at the highest risk of disappearing due to conifer encroachment, and would benefit most from prescribed fire, making them important to identify and map. These maps and aspen risk rankings will help BTNF to prioritize aspen stands for treatment.

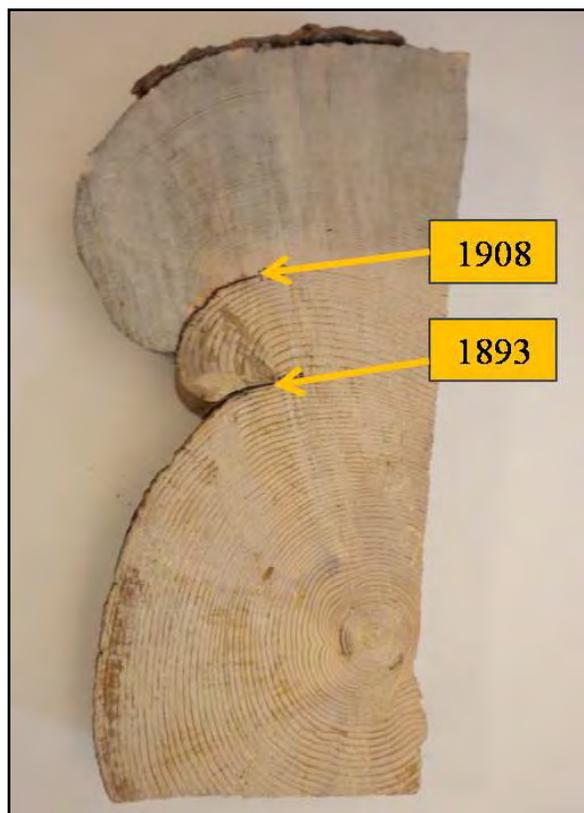


Figure 15. – An example of a fire scar sample from the Teton to Snake project area. Fires scars were present on the 1893 and 1908 rings. This tree was 176 years old.

With permission from BTNF, we collected samples from ten fire-scarred trees within the project area (Figure 15, previous page). The fire scar data indicated that several large-scale fire events have occurred in the project area within the last 200 years (fires that affected multiple sampled trees), as well as many smaller scale events (Figure 16). The earliest fire we were able to record was in 1830 and the most recent occurred in 1974. A large-scale fire event occurred in 1934,

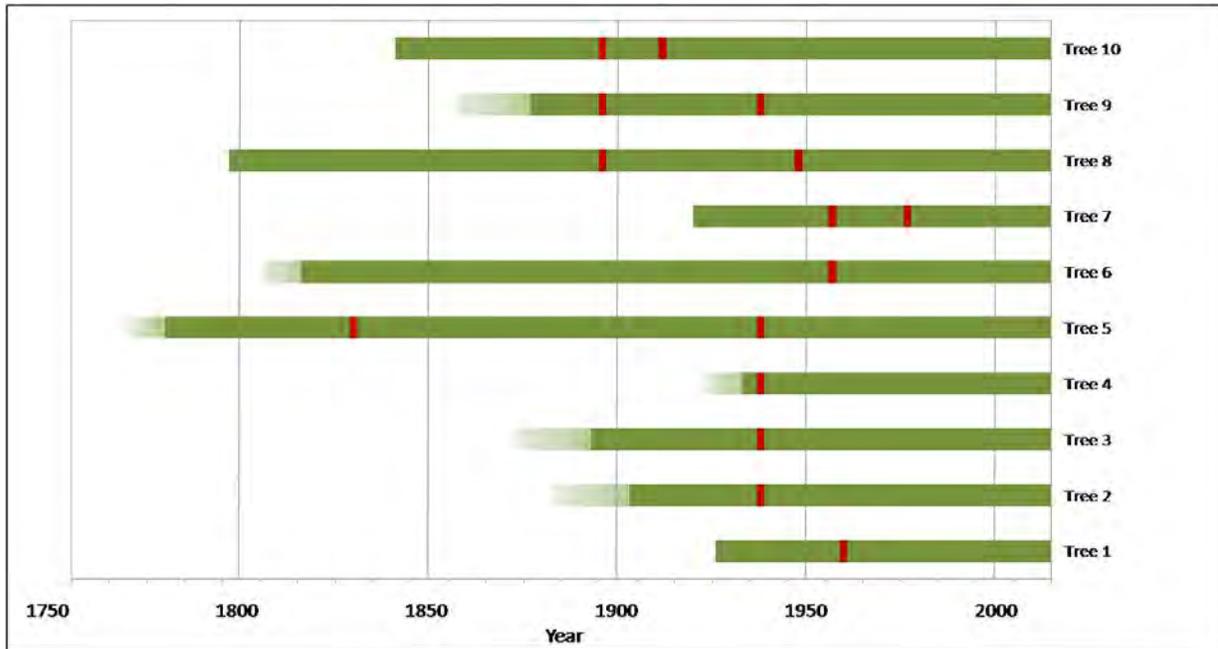


Figure 16. Chronology of fire events in the Teton to Snake project area (n = 10 trees). Green bars represent the life of sampled fire-scarred trees and red bars represent fire scar events. Faded green bars indicate uncertainties (some samples did not include tree cores, so the year of germination is unknown).

affecting five of the sampled trees in multiple drainages. These data illustrate that fire has been a natural and relatively common event for at least 200 years, but there has been little fire activity since the 1950s, probably mostly due to fire suppression efforts. We shared this historical fire information with the public during a field tour in fall 2012. We will continue efforts in summer 2013 to map the remainder of the project area.

Flat Creek National Elk Refuge Enhancement Design Phase 2 (Goal 2) – Lara Gertsch

The preliminary design of the Flat Creek National Elk Refuge Enhancement Phase II Project



Figure 17. Partners discuss designs plans for the Flat Creek National Elk Refuge Enhancement. The USFWS, WGFD, Jackson Hole Trout Unlimited and Biota Research and Consulting, Inc. are working together to improve this iconic fixture in Wyoming's Jackson Hole for tourists, anglers and the native cutthroat trout.

has been proposed by the WGFD and local stakeholders to restore fluvial processes and to improve aquatic conditions for Snake River cutthroat trout and other native trout (Figure 17). The Flat Creek project reach has experienced direct and indirect alteration as the result of changes in hydrologic and sediment inputs, past installation of various in-stream structures and treatments, and proximate land management activities. Specific channel stabilization and restoration treatments have been designed to restore fluvial process and function within the bonds of existing land use practices, irrigation management influences, site specific hydrologic regime, local sediment conditions, and site attributes. The proposed plan will have considerable

beneficial effects including reduced sediment inputs to the watershed and increased habitat for all age classes of Snake River cutthroat trout.

Elk Use of Prescribed Burns (Goal 2) – Alyson Courtemanch and John Henningsen

A common objective of habitat enhancement projects in northwest Wyoming has been to improve native winter and transitional range for elk, in part to reduce dependence on supplemental feeding and reduce brucellosis seroprevalence. However, little work has been done to determine if and when elk are utilizing these past habitat treatments. The WGFD and U.S. Geological Survey - Montana State University have been collaborating on elk brucellosis research projects in western Wyoming using GPS collars for the past several years. As part of that research, the WGFD deployed GPS collars and vaginal implant transmitters (VITs) on elk in the Gros Ventre drainage over the past five years. Numerous habitat enhancement projects have occurred in the Gros Ventre drainage, spanning from 1974 to 2012, making this an ideal area to study elk response to a variety of habitat treatments (Figure 18).

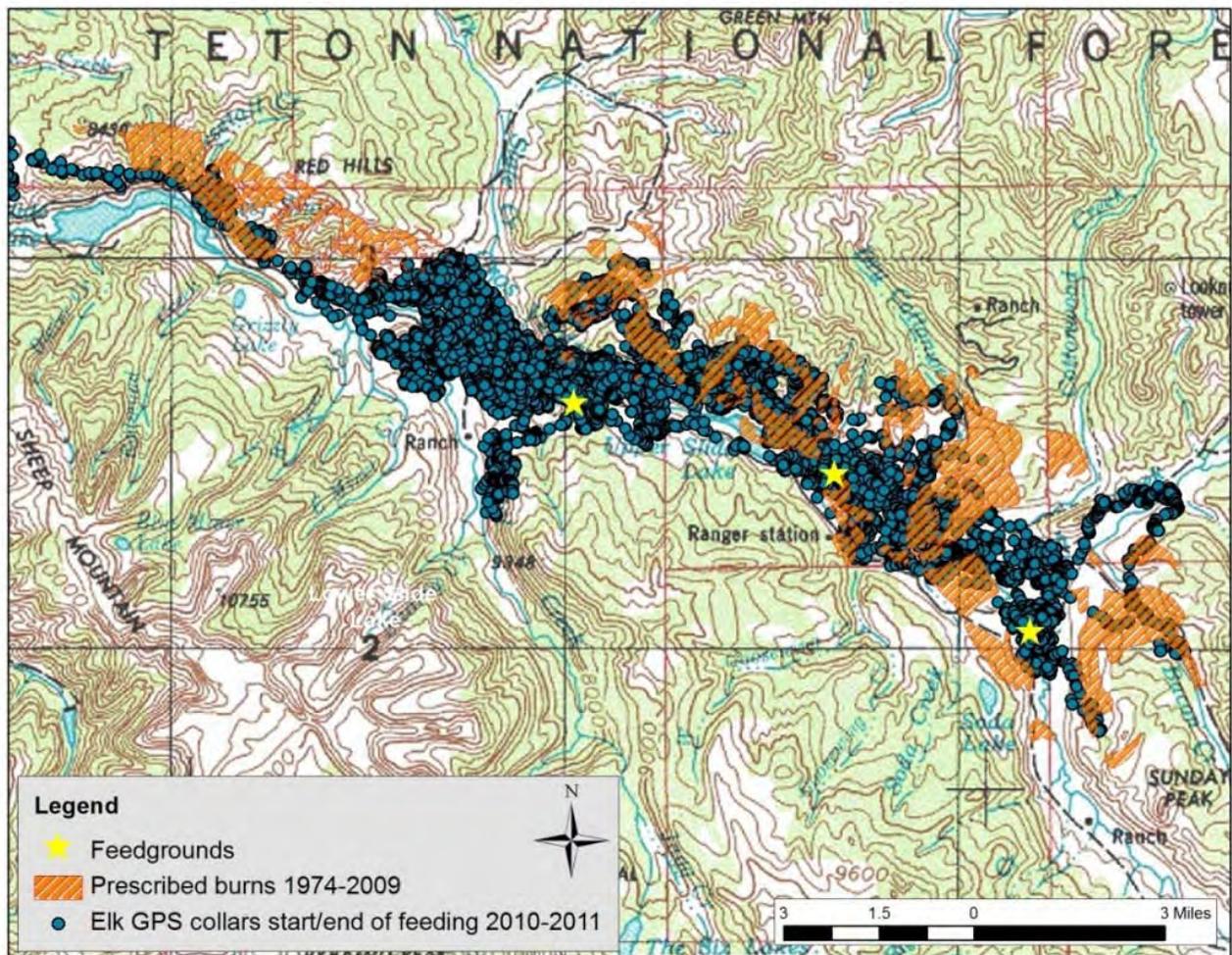


Figure 18. Habitat treatments in the Gros Ventre drainage (1974-2009), GPS-collared elk locations during start and end of feeding (2010-2011), and the locations of three WGFD-operated feedgrounds.

We used movement data from 11 GPS-collared elk in winters 2010 and 2011 to determine whether elk are selecting for past habitat treatment areas during the one month surrounding the initiation of feeding and the one month surrounding the end of feeding on three WGFD-operated feedgrounds in the Gros Ventre drainage (two weeks before and after feeding initiation date and two weeks before and after feeding end date). We predicted that elk would select the habitat treatment areas in native winter and transitional ranges around the initiation of feeding and at the end of feeding, thus, reducing their dependence on the feedgrounds. Results showed that elk selected for past habitat treatment areas during some years, especially during mild or average winters. These results suggest that these habitat projects contribute to keeping elk dispersed on transitional ranges in the early winter and early spring, potentially reducing brucellosis transmission. However, results also suggest that during particularly prolonged or severe winters, elk avoid habitat treatments and instead, remain in close proximity to feedgrounds (Figure 19). During average or mild winters, improved habitat for wintering elk could lead to less dependence on supplemental feeding, shorter feeding seasons, and lower prevalence of brucellosis. We intend to build on this study in the future with additional elk GPS collars and by analyzing elk response to different types of habitat treatments (including wildfires) and length of time since treatment.

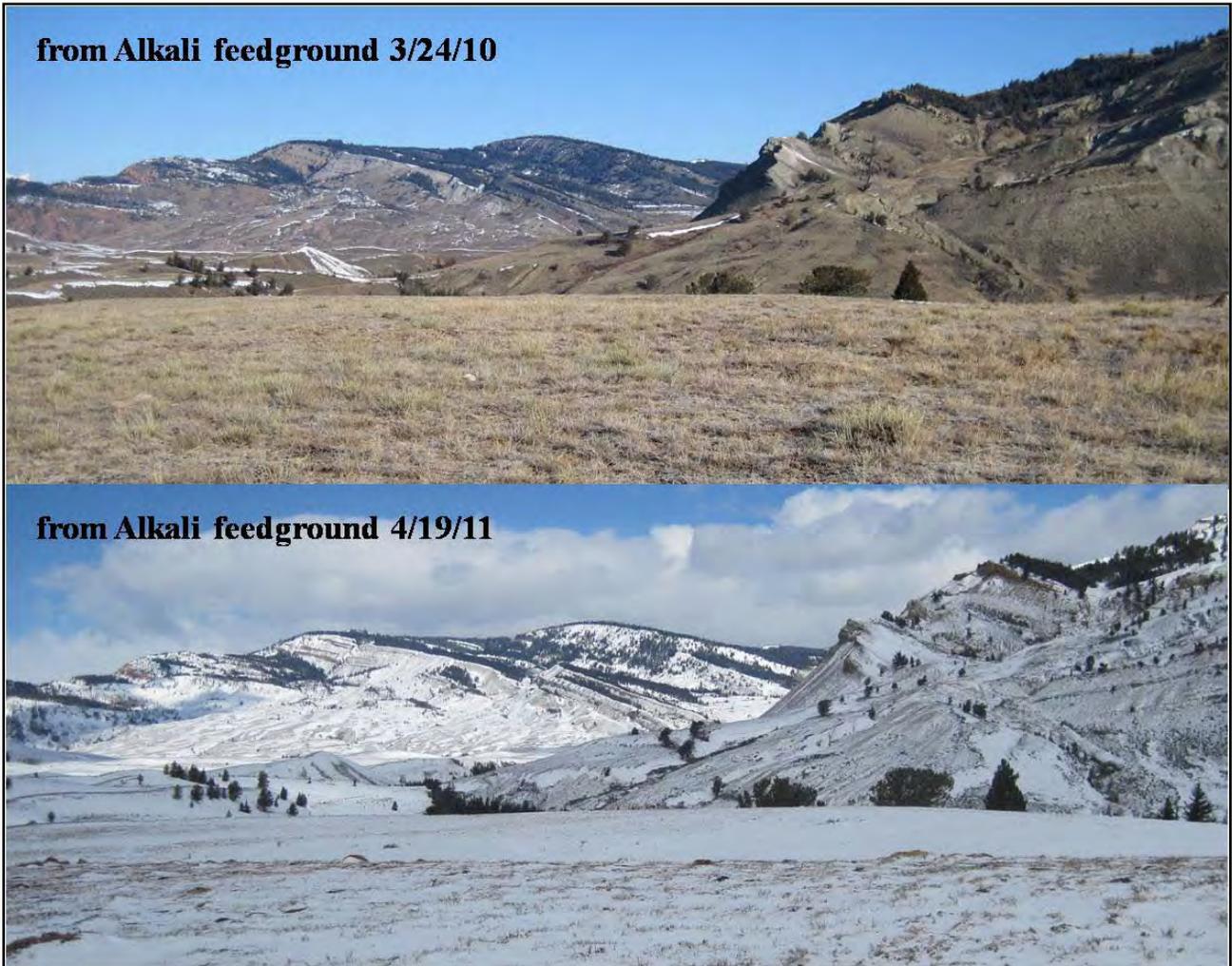


Figure 19. Differences in snow conditions in early spring can vary from year to year (2010 vs. 2011), which restricts elk dispersal from feedgrounds to habitat treatments on transitional ranges.

South Park WHMA Wetlands Restoration Phase II (Goal 2) – Ray Bredehoft, Matt Miller, and Kade Clark

The western developed wetland on South Park WHMA was restored in 2012. The islands and shoreline were excavated in 2011 and in 2012 bare root sedges and rushes along with wetland sod was planted in the newly excavated areas. In all, 130 wetland sod mats were placed along the shoreline and on the islands to help create more biodiversity and prevent erosion (Figure 20). The project also included the planting of over 5,000 bare root wetland plants (Figure 21). All new plants and wetland sod was comprised of native species of sedges and rushes. The new plant materials will give trumpeter swans and other waterfowl species nest building materials while also increasing the nutritional value of the vegetation.



Figure 20. Installed wetland sod at South Park WHMA



Figure 21. Installation of bare root wetland plants.

Horse Creek and South Park WHMA Haying (Goal 2) – Ray Bredehoft, Matt Miller, Kade Clark, Alyson Courtemanch, and John Henningsen

The Horse Creek WHMA and South Park WHMA were hayed in 2012. In all, approximately 90 acres were hayed and the WGFD produced 112 tons of hay to be fed out on the Horse Creek Feedground (Figure 22). The main goal of haying on the WHMAs is to produce more nutritional forage for wintering big game during the late fall and early spring as they are migrating to and from the elk feedgrounds. This year the Jackson Region proved this by developing ten grass monitoring points (five hayed sites and five control sites) on the Horse Creek WHMA and having a forage analysis completed at the Colorado State University Soil-Water-Plant Testing laboratory. Grass samples were clipped once in September and once in October from hayed sites and control sites (un-hayed). The grass samples were analyzed for digestible energy, crude protein, and acid detergent fiber, which are used to assess forage nutritional quality for big game. The results showed that haying had a very positive impact on the quality of forage at the Horse Creek WHMA (Figure 23). The digestible energy and crude protein at hayed sites both saw significant increases while the acid detergent fiber declined, making the grasses on the hayed sites much more



Figure 22. Horse Creek WHMA hay meadows after cutting.

nutritious for big game. The difference in nutritional values between the hayed areas and the control areas became even more evident as time went on as shown in the difference between the September and October results. As expected, the nutritional value of the grass declined from September to October (crude protein and digestible energy decreased and acid detergent fiber increased) on all sites, but the hayed sites remained within the nutritional requirements for adult female elk, while the control sites did not. These results suggest that haying increases the amount

of time in the spring and fall that big game can meet their nutritional needs on the WHMAs without supplemental feeding. Haying will continue on the Horse Creek and South Park WHMAs to continue providing more nutritional forage for big game, reduce comingling between elk and cattle on private land adjacent to elk feedgrounds, and reduce the amount of hay that the WGFD needs to purchase each year.

	% Crude Protein	Requirements
Hayed Area (Sept)	17.91	14-18%
Control (Sept)	14.96	
Hayed (Oct)	15.70	
Control (Oct)	12.51	
	Digestible Energy (Mcal/kg)	Requirements
Hayed Area (Sept)	2.71	2.3-2.8
Control (Sept)	2.33	
Hayed Area (Oct)	2.51	
Control (Oct)	2.11	
	% Acid Detergent Fiber	Requirements
Hayed Area (Sept)	35.09	20-45%
Control (Sept)	45.64	
Hayed Area (Oct)	40.59	
Control (Oct)	51.96	
% Crude Protein: Total amount of protein in forage. Higher values are better.		
% Acid Detergent Fiber (ADF): The fibrous, indigestible part of the forage (cellulose and lignin).		
Lower values are better. ADF is inversely related to digestible energy.		
Digestible Energy (DE) (Mcal/kg): The actual amount of energy (calories) the animal has available for use. Simply the gross intake energy the animal consumes (GE) – fecal energy expelled as waste (FE) = DE. Higher values are better.		

Figure 23. Horse Creek WHMA forage results after and before haying.

Statewide Moose Habitat Research (Goal 5) – Alyson Courtemanch

The WGFD and Wyoming Cooperative Research Unit at the UW initiated the Statewide Moose Habitat Research Project in 2011.

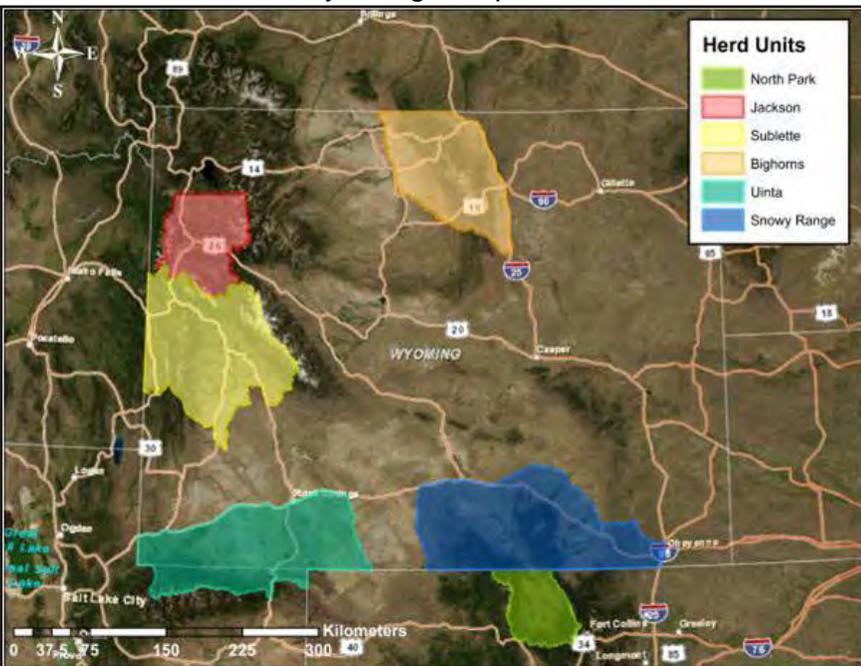


Figure 24. Locations of six moose herds being evaluated for the Statewide Moose Habitat Research Project.

This project explores the role of habitat and nutrition in moose population performance statewide, including herds that are declining, stable, and increasing (Figure 24). The project also aims to provide WGFD biologists and managers with meaningful habitat and body condition metrics that could serve as “early warning” tools to indicate impending declines in herd productivity. The graduate student on the project, Brett Jesmer, has completed one winter and one summer field season, as well as two hunting seasons of kidney collections from harvested moose.

Winter habitat condition is being quantified by measuring live-dead (L-D) indices, leader length, and

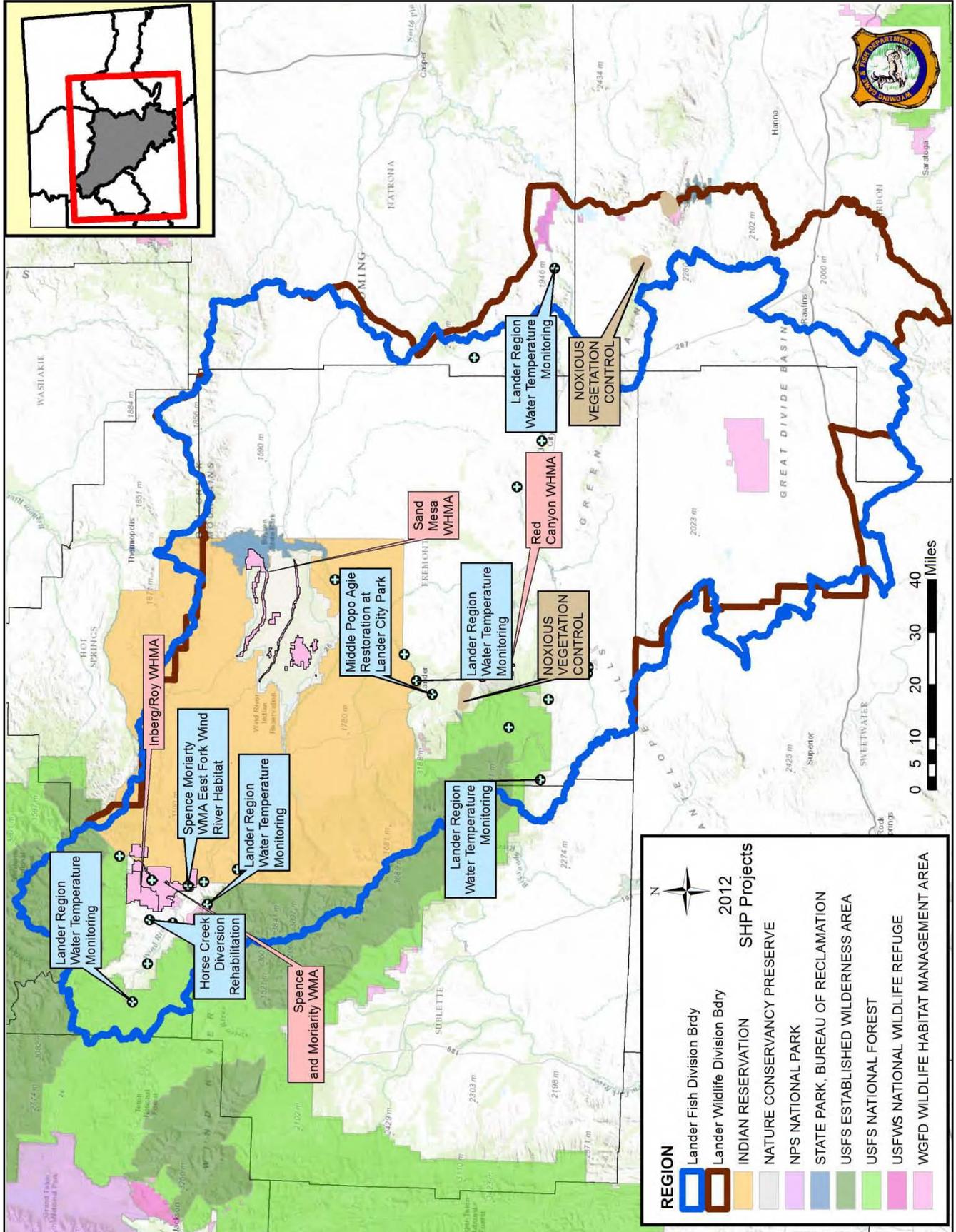
percent browse for preferred willow species along 30 transects within each herd unit (Figure 25). In addition, winter scat samples are collected along each transect to assess diet and pregnancy rates. Scat samples are also being collected during summer to assess summer diets. Twenty summer transects were established within each herd unit, and scat detection dogs were used to locate moose scats. Summer nutritional condition of moose is being quantified using kidney fat from hunter-collected kidneys (241 kidneys have been analyzed thus far).

Preliminary results indicate that winter habitat condition (willow L-D index) and browse intensity are significantly different amongst herds, as well as male autumn nutritional condition (kidney fat). Additional field work will be conducted in 2013 and kidney samples from the 2012 hunting season will be analyzed this winter. Preliminary results from the study are highly encouraging and we suspect that we will be able to make strong linkages between habitat and moose population performance in most herd units once the analyses are complete. The project has benefited from collaboration with the USFS, Colorado Division of Parks and Wildlife, USFWS, Working Dogs for Conservation Fund, and funding support from the WGFD and WGBGLC.



Figure 25. A field technician collects live-dead index data in a willow community.

LANDER REGION



LANDER REGION HIGHLIGHTS

- 170 cubic yards of rock were used to build two cross vanes on Horse Creek to improve fish passage at an irrigation diversion.
- 2,700 feet of stream have designs ready for construction on the Middle Popo Agie River in Lander.
- Over 20 miles of stream were assessed for streambank stability on the Spence/Moriarity WMA.
- 1,136 acres of cheatgrass were treated with Plateau® herbicide in the fall of 2012 on private lands north of Lander.
- The WGFD provided 24 gallons of Plateau® at a cost of \$3,500 to the Rawlins BLM for post wildfire treatment of cheatgrass on winter ranges north of Rawlins.
- Vegetation monitoring was re-initiated on the Red Rim-Dailey WHMA west of Rawlins. The primary use of this unit is pronghorn winter range, however, residual grass cover is critical to keeping elk from using lichen found in the understory.
- Nineteen permanent transects were monitored to assess annual vegetation production and winter utilization by elk and bighorn sheep in 2012. As expected annual forage productivity was down considerably due to drought.

Wildlife Habitat Management Areas (WHMA) (Goal 2) - Miles Anderson, Derek Lemon, Silas Deselms, Skye Shaw, and Brian Parker

Inberg/Roy WHMA

Phase 1 of the Dennison Meadows pipeline and restoration was completed during the fall of 2010. Approximately 4,500 feet of transport ditch was converted to buried pipeline. Phase 2 began in the spring of 2011, two of the four meadows were re-farmed with palatable, drought-tolerant herbaceous species and field spreader ditches were replaced with gated pipe. An analogous treatment for the remaining two meadows began in late summer/fall of 2012. The project will be finalized spring 2013. Pipeline installation will greatly increase water use efficiency, which will benefit Yellowstone cutthroat trout, while meeting needs of supplemental forage production for wintering elk.

Spence and Moriarity WMA Management

Restoration of the Duncan Bench pivot fields began during the fall of 2011. Approximately 200 acres of the Duncan Bench has been planted with drought-tolerant grass species since project inception (Figure 1). A contract was awarded in the fall of 2012 for reclamation services. The contractor will provide seedbed preparation, seed drilling, and mulch crimping services on approximately 76 acres. Mulch amendment will provide increased organic matter, moisture retention, and combat wind erosion. An adjacent 100 acres will be seed drilled for comparative purposes in addition to the area targeted by the reclamation services during spring 2013.



Figure 1. Duncan Bench area of Spence and Moriarity WMA.

Big Horn Coop sprayed approximately 300 acres of field pennycress on the Duncan Bench in May 2012. Suppression of field pennycress resulted in increased water and nutrient availability. Grass production has increased on the Duncan Bench site.

Hedges Weed Spraying applied herbicide on approximately 180 acres of noxious weeds, largely white-top, on the Spence and Moriarity WMA irrigated meadows in early June. Additionally, Fremont County Weed and Pest sprayed a variety of noxious weed species on irrigated meadows starting in July and continuing through fall 2012. Approximately 26 miles of road corridor within Spence and Moriarity WMA was sprayed with Plateau® to combat a cheatgrass infestation (Figure 2).

Sand Mesa WHMA

Alfalfa and grains were planted at Sand Mesa in the three pivot fields and two additional fields. This provided cover and forage for stocked pheasants and migrating waterfowl.

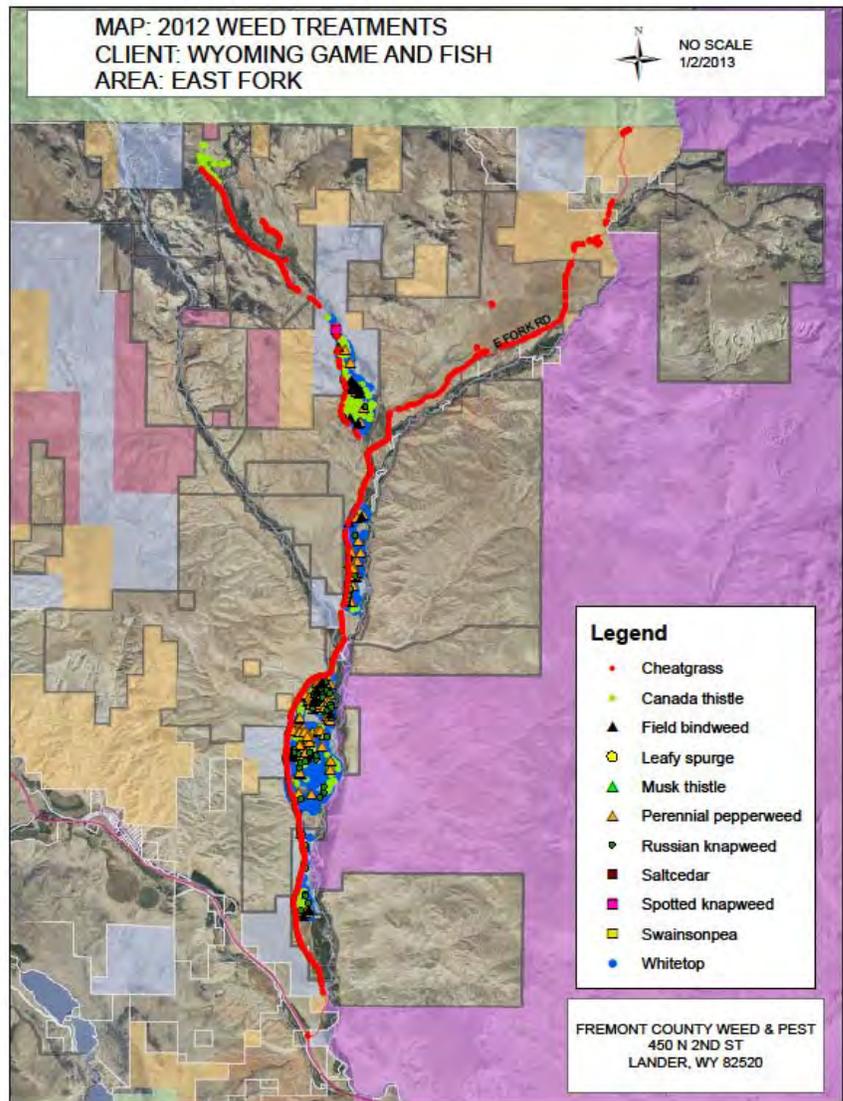


Figure 2. Spence and Moriarity weed spraying.

Resource Management Planning (Goal 5) – Ron Lockwood

WGFD Lander regional personnel continue to participate as state cooperators in the Lander BLM Resource Management Plan and the Shoshone National Forest Management Plan revisions. The WGFD provided comments on a wide array of topics and alternatives for wildlife, vegetation, weed control and fire management. Of specific note, the WGFD worked with the state cooperators on the forest plan with regard to final revisions of the travel management plan and a proposal for NSO (no surface occupancy) on portions of the forest providing crucial winter range that are adjacent to BLM lands with similar NSO stipulation or private lands protecting winter range with CEs.

Horse Creek Diversion Rehabilitation (Goal 2) – Nick Scribner

Horse Creek begins on the Shoshone National Forest and joins the Wind River in the town of Dubois. Approximately 4 miles north of Dubois on State Land a diversion provides water for 330 acres of cropland. Prior to this project, a push up dam was annually constructed which inhibited

upstream movement of fish and likely contributed to fish entrainment in the ditch (Figure 3). In addition, the headgate structure was severely deteriorated and did not function properly. In 2011, project partners secured funding to survey and develop designs to improve the diversion and associated infrastructure. Construction began in April 2012 when two cross vane structures were placed in the stream (Figure 4). These allow fish passage year round, require little maintenance, and provide ample flows for irrigation. The old headgate and concrete wall were removed and replaced with a new structure that includes a bypass pipe to assist with sediment removal in front of the headgate. Minor work is expected in 2013 to adjust the upper cross vane and install screw gates on the headgate.



Figure 3. The previous Horse Creek annual push up dam was often 3-4 feet high and impeded fish movements.



Figure 4. The new upper cross vane is fish friendly while directing diversion water during the 2012 irrigation season. The structure was built 60 feet upstream of the previous push up dam.

Winter Range Vegetation Transects (Goal 2) – Ron Lockwood

Permanent transect sites to monitor annual vegetation production and winter utilization by elk and bighorn sheep were evaluated in 2012. As expected, annual forage productivity was down considerably with production on the Inberg-Roy WHMA at 62% of the 10 year average, Spence and Moriarity WMA at 72% of the 10 year average, and on the Whiskey Basin WHMA at 32% of the 10 year average.

Utilization levels measured during spring 2012 for the 2011/2012 winter averaged 32% on the Inberg/Roy WHMA and Spence and Moriarity WMA and 41% on the Whiskey Basin WHMA. These utilization levels are below the recommended 60% indicating grazing was not excessive. Additionally, residual cover should have provided an increase in nesting and brood rearing habitat for a variety of nongame bird and mammal species. Fortunately, winter conditions, so far in 2012 - 2013 have been mild. Nevertheless, we anticipate higher use given productivity was much lower than normal.

Ferris/Seminole Mountain Bighorn Sheep Enhancement (Goal 1) - Ron Lockwood

Three successful bighorn sheep translocations costing approximately \$115,000 were conducted from 2009-2010 to augment the waning Ferris/Seminole Mountain bighorn sheep herd. GPS collars were placed on some of the bighorn sheep to collect movement and habitat use data. Many habitat issues have been identified within the Seminole Mountain area, including shrub over-maturity and/or decadence, lack of structural and age stratification, reduction in the amount, vigor, and nutritional quality of grasses and forbs, and conifer encroachment limiting travel corridors to

available habitats. These issues are thought to be caused by a lack of disturbance including fire and grazing. An example of this is the Morgan Creek WHMA which has been excluded from livestock grazing for the past 48 years.

This area was burned by wildfires during the summers of 2011 and 2012 (Figure 5). During the summer 2011 and 2012 wildfires were ignited by lightning strikes on the Ferris Mountains. The 2011 fire was started in the proposed project area and in close consultation with the WGFD the BLM allowed the fire to burn naturally. The 2012 fire was fought aggressively but still burned a considerable area including a significant portion of crucial mule deer winter range. Due to the time of year and lack of soil moisture the wildfires burned extremely hot and allowed cheatgrass to establish. The WGFD donated 24 gallons of Plateau® at a cost of \$3,500 to the BLM to help control cheatgrass. During 2012 approximately 2,000 acres were treated on Seminole and Ferris mountains and the Morgan Creek WHMA. The herbicide was applied at 6 ounces per acre and costs for the helicopter application ranged from \$9.68/acre to \$18.88/acre depending on ferry time. Vegetation response monitoring will begin in the summer of 2013 and any remaining patches of cheatgrass will be treated.



Figure 5. Ferris Mountain wildfire summer, 2011 pre- and 2012 post-burn.

Overland Trail Ranch Fence Modification (Goal 5) – Ron Lockwood

This project is a cooperative effort between Overland Trail Ranch and BLM to convert approximately six miles of woven wire fence to a four-wire wildlife-friendly fence south of Rawlins. The private landowner will provide labor and the WGFD will provide materials. The area is classified as crucial winter range for elk, deer, and pronghorn and is part of a core sage grouse core area. The project is scheduled for completion during the spring of 2013.

Lander Front Mule Deer Habitat Improvement (Goal 2) – Ron Lockwood

The goal of the project is to re-establish native perennial grasses and forbs and slow the infestation of cheatgrass into additional productive sites. This will also improve shrub production by decreasing direct competition for water and soil nutrients. Additionally, minimizing or eliminating cheatgrass will maintain natural fire intervals. Natural fire intervals in this precipitation zone are usually between 50 and 100 years, however, in areas dominated by cheatgrass, wildfires tend to be far more frequent. Shorter fire intervals eliminate native shrubs such as Wyoming big sagebrush.



Figure 6. Plateau application using Wyoming Helicopters south of Lander on southwest side of Table Mountain – September 2012.

A total of 1,136 acres of cheatgrass was treated with Plateau® during the fall of 2012 on private lands owned by five different landowners (Figure 6). The application rate was 6 oz/acre as recommended on the label (Figure 7). We will monitor the treatment effect and presence/absence of cheatgrass starting in spring 2013.

Plans have been finalized to conduct additional cheatgrass herbicide treatments and sagebrush thinning treatments in 2013 on BLM and private lands in the area.



Figure 7. Wyoming Helicopter's ship reloading chemical.

Red Canyon WHMA (Goal 5)

RWGFD is an active member of the Red Canyon CRM. CRM cattle grazed the Upper and East meadows in late May 2012 in order to remove decadent vegetation and promote vigor and palatability of meadow vegetation for wintering elk. Grazing of the meadows occurs every other year. Temporary electric fence was deployed to mitigate riparian impacts. The Upper and East meadows were irrigated throughout the summer following grazing to provide supplemental forage for wintering elk (Figure 8).



Figure 8. Cattle grazing on Red Canyon WHMA.

Red Rim-Daley WHMA (Goal 5)

Red Rim-Daley is comprised of State, BLM and WGFC owned property. Two operators annually graze the Red Rim - Daley WHMA, collectively consuming approximately 1,650 AUMs.

Middle Popo Agie Restoration at Lander City Park (Goal 2) – Nick Scribner

MIn 2010, WGFD partnered with Popo Agie Conservation District to hire a consultant to conduct survey work on 2.5 miles of the Middle Popo Agie River through Lander (Figure 9). The goal of the survey was to help develop solutions that improve low flow instream habitat and stream function. In 2012, designs were completed for approximately 2,700 feet at Lander City Park. Designs include instream rock structures (i.e., cross vanes and j-hook vanes) to maintain grade control, relieve stream bank stress, and provide deep pools for fish. A low-flow channel will also be constructed to concentrate late summer flows that will increase water depths and available oxygen while reducing water temperatures. A result of these structures will be better sediment movement through City Park that can reduce future flood potential. Several meetings were held with the city and affected landowners with great enthusiasm and support for the project. Fundraising efforts and permitting are underway in 2013 with hopes of completing construction in 2014.

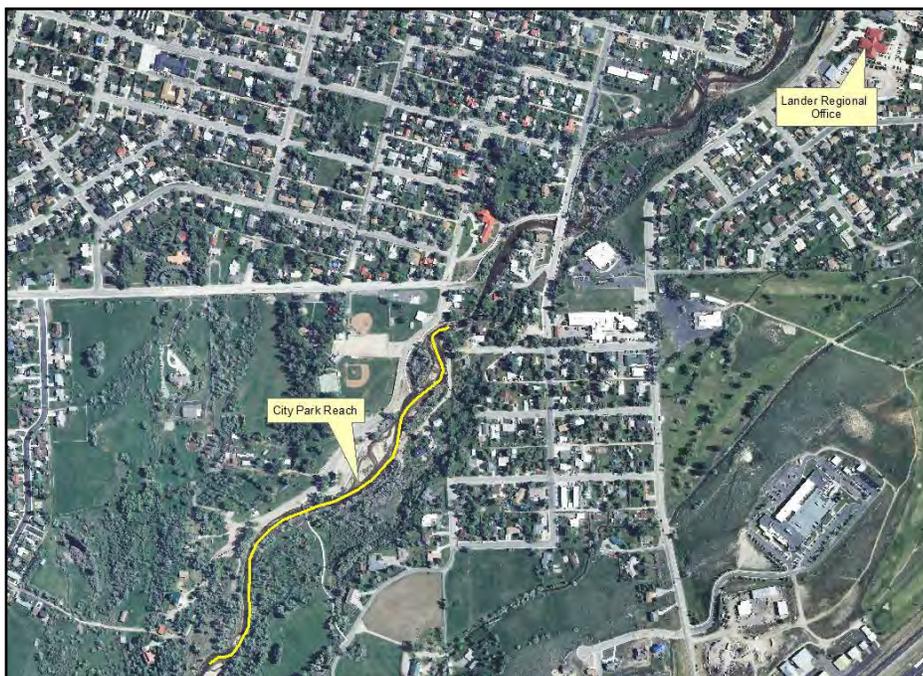


Figure 9. The Lander City Park reach of the Middle Popo Agie River has stream restoration and enhancement designs ready for implementation.

Red Rim-Daley WHMA Monitoring (Goal 2) – Ron Lockwood

Vegetation production and utilization monitoring began again this year on the Red Rim-Daley



Figure 10. WGFD personnel monitoring grass production on the Red Rim-Daley WHMA during September 2012.

WHMA west of Rawlins (Figure 10). A report will be distributed after spring clipping has occurred. The primary use of this WHMA is pronghorn winter range, however residual grass cover is critical to keeping elk from using lichen found in the understory. During the winter of 2003 - 2004 a total of 327 dead elk were found during late winter. Also, in the late winter of 2007 - 2008 a total of 89 dead elk were found. Toxicology tests indicated that elk had consumed lichen (*Xanthoparmelia chlorochroa*). Biologists indicate that elk utilize more lichen as forage utilization increases and availability decreases.

At the time of writing this report winter conditions had remained mild and very few elk had been observed using this area. Continued liberal elk harvest and habitat treatments will be needed to accomplish the goal of decreasing elk use of lichen. Additionally, domestic livestock use will continue to be monitored to insure adequate forage remains for pronghorn, elk, and other game and non-game species.

Lander Region Water Temperature Monitoring (Goal 1) – Nick Scribner

Long term data is extremely vital for determining and assessing trends over time, especially when we consider climate. The availability of low cost and convenient temperature loggers and the fact that they can be deployed with relatively little effort, combined with a desire to better understand possible effects of climate change, has led to increased stream temperature data collection. Stream temperature monitoring has occurred since 2001 in the Lander Region at 12 sites in the Wind River and Sweetwater River drainages. In 2012, this effort was expanded to an additional 14 sites and includes the Popo Agie drainage and Wind River Indian Reservation as well. These data will be used in climate modeling by the USGS and USFS Rocky Mountain Research Station to improve our conservation efforts of fish and aquatic habitat. Examples of how temperature data has already been used include documenting changes in spawning times, changes in fish populations, and shifts in species distributions. The data may also assist with questions we have locally regarding burbot and sauger, which have experienced declines over the past decade in the Lander Region (Figure 11).

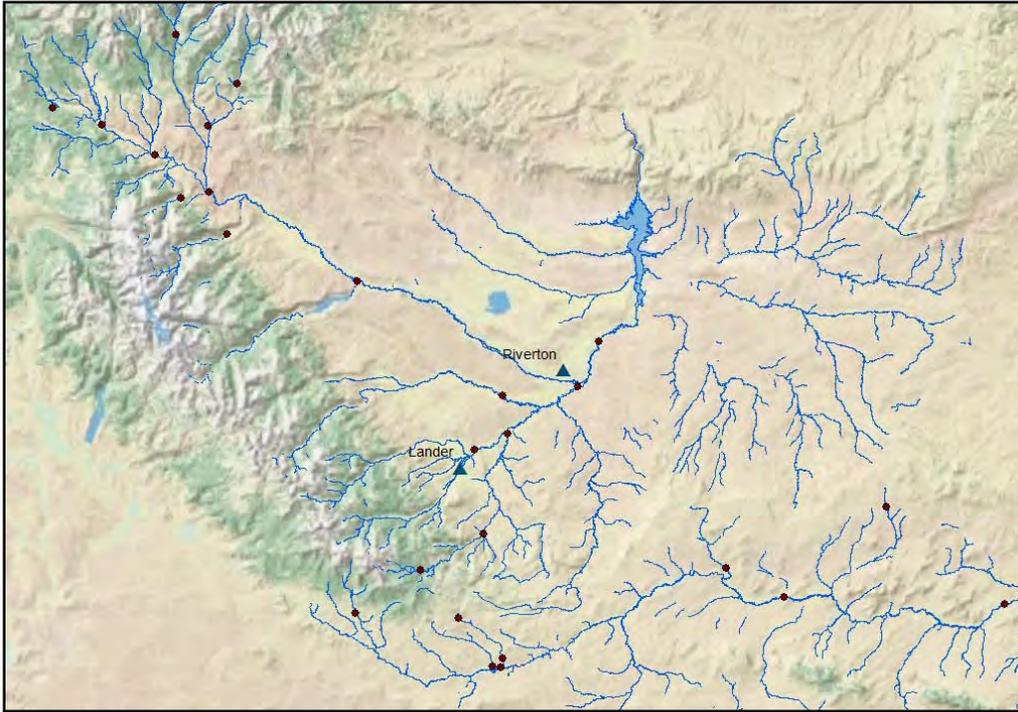


Figure 11. Distribution of temperature loggers in the Lander Region.

Spence and Moriarity WMA Management Plan, 2012 Progress

The following is a list of activities WGFD personnel completed as part of the Spence and Moriarity WMA Management Plan during 2012:

- Assumed irrigation responsibilities and irrigated over 1,200 acres on Dubois area WHMAs.
- Constructed and installed approximately 30 water control boxes.
- Reconstructed Andy's Meadow diversion box as a concrete structure.
- Installed approximately 4,900 feet of gated pipe to improve water efficiency and water distribution on 21 Meadow, Pease Meadow, Bain Meadow, and Andy's Meadow.
- Drilled/seeded approximately 100 acres of meadow with seed on Long Meadow, 21 Meadow, Pease Meadow, and Bain Meadow.
- Installed rip-rap to protect the East Fork ditch (which is shared by Mr. Spence's Thunderhead Ranch and the WGFD).
- Installed rip-rap to protect the Thunderhead Ditch.
- Installed a turbulent fountain to increase water and time efficiency on Pea Patch pipeline.
- Installed grade control structures on numerous ditches.
- Replaced Pease Meadow flush valve.
- Disked and seeded existing ditches on Pease Meadow to facilitate more efficient irrigation.
- Installed three headgate structures to more efficiently control available irrigation water.
- Began use of fish screen structure on Bear Creek diversion.
- Drilled approximately 200 acres of the Duncan Bench with upland grass species.
- Secured over \$83,000 for reclamation efforts on the Duncan Bench.
- Sprayed over 300 acres of field penny-cress on Duncan Bench to stimulate grass production.
- Sprayed approximately 180 acres to control white-top and Canada thistle on areas south of the Wiggins Fork in early June using supplemental weed contract.
- Fremont County Weed and Pest sprayed white-top, Canada thistle and Russian knapweed throughout the East Fork and Bear Creek valleys during late July 2012.

- Fremont County Weed and Pest sprayed Plateau® on approximately 26 miles of road right-of-way to control cheatgrass.
- Contracted supplemental meadow weed spraying. Headwaters Weed Spraying will commence in spring 2013 and continue established efforts.
- Awarded contract to Leseberg Ditching to replace Wiggins Ditch flume structures, which will increase water use efficiency and system life.
- Awarded contract to Shimic Seeding for Duncan Bench reclamation efforts beginning spring 2013.
- Awarded contracts for irrigation system improvements and efficiencies including gated pipe additions and turbulent fountains.
- Power easement has been approved by the WGFC that will allow electrical power to be connected to the warden's cabin. Following electrical establishment water and septic will be connected and the interior finished. All related work will be completed winter 2012/2013. Completion will allow for irrigator habitation during 2013 irrigation season onward.
- Contractor hayed over 500 acres of meadows in August 2012.
- Renewed haying contract for an additional five year lease period.
- Added meadows north of Thunderhead Ranch to hay contract in effort to promote meadow health; these meadows have historically been irrigated and left standing.
- Reconstructed areas of the east boundary fence to mitigate reservation cattle trespass in the South-East corner area.
- Continued weekly cattle sweeps and fence maintenance to remove trespass cattle.
- Nick Scribner coordinated a fence pull to mitigate wildlife entanglement, with Dubois High School student volunteers.

Whiskey Basin WHMA (Goal 2)

W 120 acres on two different meadows were irrigated on Whiskey Basin WHMA. Approximately 47 acres of the Basin Meadow was hayed in July 2012 to promote herbaceous vigor and palatability, as well as help suppress noxious weeds. Fremont County Weed and Pest sprayed 4.6 acres of noxious weeds on Whiskey Basin WHMA. Approximately 30 horses (37.5 animal unit months (AUM)) from the CM Ranch grazed the Basin Meadow from November through December 2012 in lieu of grazing their BLM allotments. This agreement results in increased forage availability within core bighorn sheep winter range to be used by wintering bighorn sheep rather than CM Ranch horses. 2012 was the third year of the latest five-year agreement.

Spence and Moriarty WMA East Fork Wind River Habitat (Goal 2) – Nick Scribner

Approximately, 700 feet of streambank were improved in 2012 on the East Fork Wind River near Dubois. This drainage is crucial for Yellowstone cutthroat trout habitat. The primary concern addressed was a severely eroding bank that was impacting downstream habitat. Prior to 2010 and 2011, this bank was stable and supported willows, cottonwoods, and other vegetation. However, two high runoff seasons caused significant erosion leaving a 30 foot high bank bare and exposed that could potentially lose 300 tons of soil annually without intervention. The solution included moving the river channel away from the bank and building a bankfull bench with 'toe-wood'. Essentially, trees were buried under bed material with their root wads exposed to the river channel. Sod mats with willows were then placed on top to jump start vegetation recovery (Figure 12). Over 150 trees, 100 boulders, and nearly 2,000 cubic yards of material were used to complete the project. The root wads will help protect the bank as vegetation gets reestablished and provide excellent fish habitat at the same time.



Figure 12. Bankfull bench with 'toe-wood' being completed.

Spence and Moriarty WMA East Fork Wind River BEHI Survey (Goal 1) – Nick Scribner



Figure 13. Streambank in 2010 prior to losing 6 feet during 2011 high flows.

Bank Erosion Hazard Index (BEHI) surveys were conducted on roughly 20 miles of stream along Bear Creek and the East Fork Wind River. The surveys were conducted for identification and prioritization of future stream work in the watershed to improve habitat conditions for fish, primarily Yellowstone cutthroat trout. The survey uses several attributes to classify streambanks on their stability such as root depth, substrate, bank angle, and stress from streamflow. From these measurements erosion rates are calculated for bankfull flows that aid in prioritizing stream reaches for habitat improvements. The BEHI survey was used at a smaller scale in 2010 and 2011 to evaluate a 1,200 foot reach of the East Fork that is currently in the planning phase for habitat improvements. Predictions from 2010 estimated 157 tons of soil loss per year from

this reach, but high flows in 2011 likely increased that amount substantially for one season. The least stable bank in that reach (Figure 13) lost 6 feet of bank over approximately 75 feet, which equates to about 132 tons of soil. The BEHI provides an objective and repeatable approach for evaluating erosion and streambank stability.

South Pass Aspen/Willow Habitat Improvement (Goal 2) – Ron Lockwood

The WGFD is cooperating with BLM and USFS to improve aspen communities by removing encroaching conifers. This will release aspen shoots and encourage suckering. Historically aspen

were reliant on wildfire for regeneration. However, if done properly, commercial harvest can mimic this natural process. This project will improve wildlife habitat for big game as well as a host of small game, non-game species, and cavity nesting birds. This project will also improve watershed function and riparian health. Aspen communities use far less water than conifers and they also store water in the soil, slowly releasing it into the watershed. The increased presence of aspen will encourage establishment of beaver in the riparian system. Beaver dams slow and store water, thereby decreasing sedimentation and improving fish habitat.

To facilitate this project WGFD Directors' Office funds were approved for \$8,500 to perform a stage 2 archeological clearance. The WGFD allocated \$8,106 for approximately 1,180 acres to be analyzed. During this reporting period \$2,019 was spent. The survey has been completed and was approved by the Wyoming State Historic Preservation Office. The information will be used by BLM and USFS to meet NEPA requirements and prepare an Environmental Assessment (EA) to implement aspen and willow enhancement projects.

Morgan Creek WHMA (Goal 5)

The Seminole Fire burned over 3,800 acres in the Seminole Mountains including areas within Morgan Creek WHMA (Figure 14). The fire consumed over three (3) miles of boundary fence, which was rebuilt during October 2012. Rawlins BLM coordinated and funded aerial application of Plateau® to help mitigate cheatgrass spread on BLM and WGFD managed areas within the fire perimeter. The wildfire did assist in meeting prescription of previously planned prescribed burns within Morgan Creek WHMA. WGFD successfully negotiated with the BOR an extension of a twenty-five year Memorandum of Agreement. WGFD will continue to have primary management responsibility of Morgan Creek WHMA.

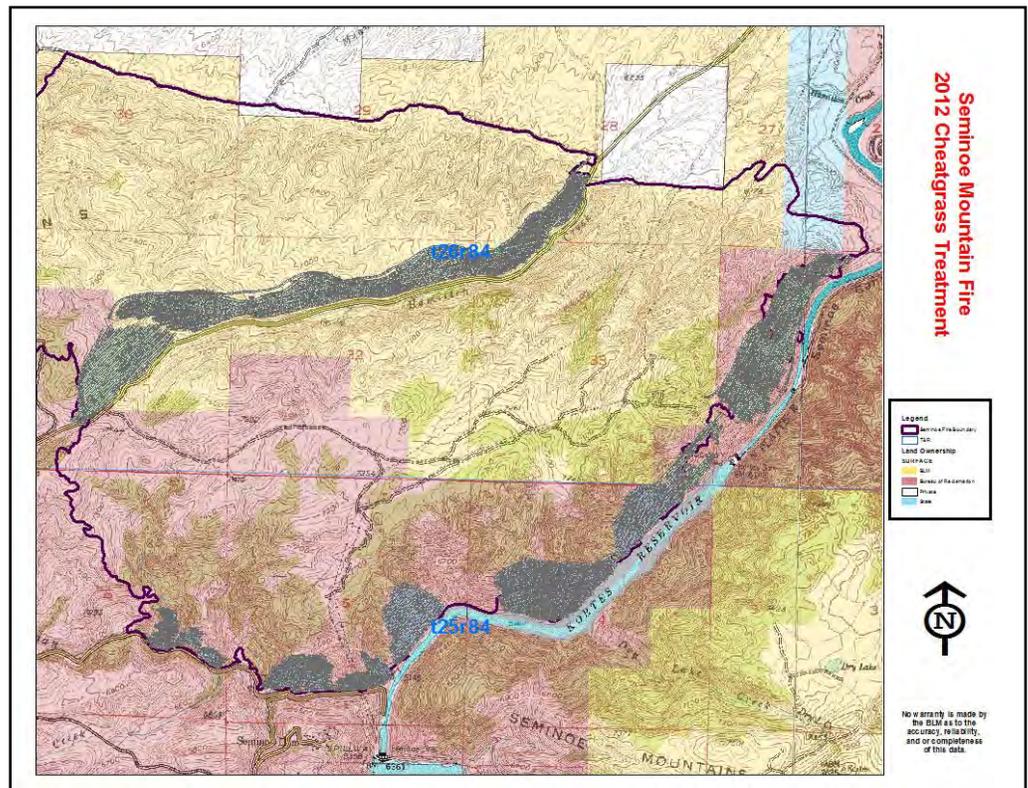


Figure 14. Seminole Mountain fire cheatgrass control area.

Chain Lakes WHMA (Goal 5)

Domestic sheep graze on Chain Lakes WHMA, north of Wamsutter, from December through April each year. During 2012, approximately 900 AUMs were utilized. Chain Lakes WHMA presently operates as a grass bank. The domestic sheep operator is resting the Powder Mountain allotment west of Baggs in lieu of grazing on Chain Lakes WHMA.

Additionally, BP America transferred ownership of two solar water wells on Chain Lakes WHMA to WGFD. WWNRT allocated \$8,000 to WGFD for development of these two wells. Once developed, these wells will provide additional water sources for wildlife and help disperse domestic livestock that graze Chain Lakes WHMA.

Ocean Lake WHMA (Goal 2)

Approximately forty-acres of food-plots were planted in two different fields at Ocean Lake WHMA. Food plots will be planted back to a grass cover crop, as per Ocean Lake farm plan. Farming activities serve as grazing lease Area Improvement Project Agreement (AIPA) payment. As per the Ocean Lake grazing plan, 260 AUMs were consumed in January 2012 on the irrigated meadows in the east Dickinson Park area. The grazing lease is a five-year winter rotation used to maintain irrigated meadows and promote waterfowl nesting.



Figure 15. Agri-drain water control structure installation.



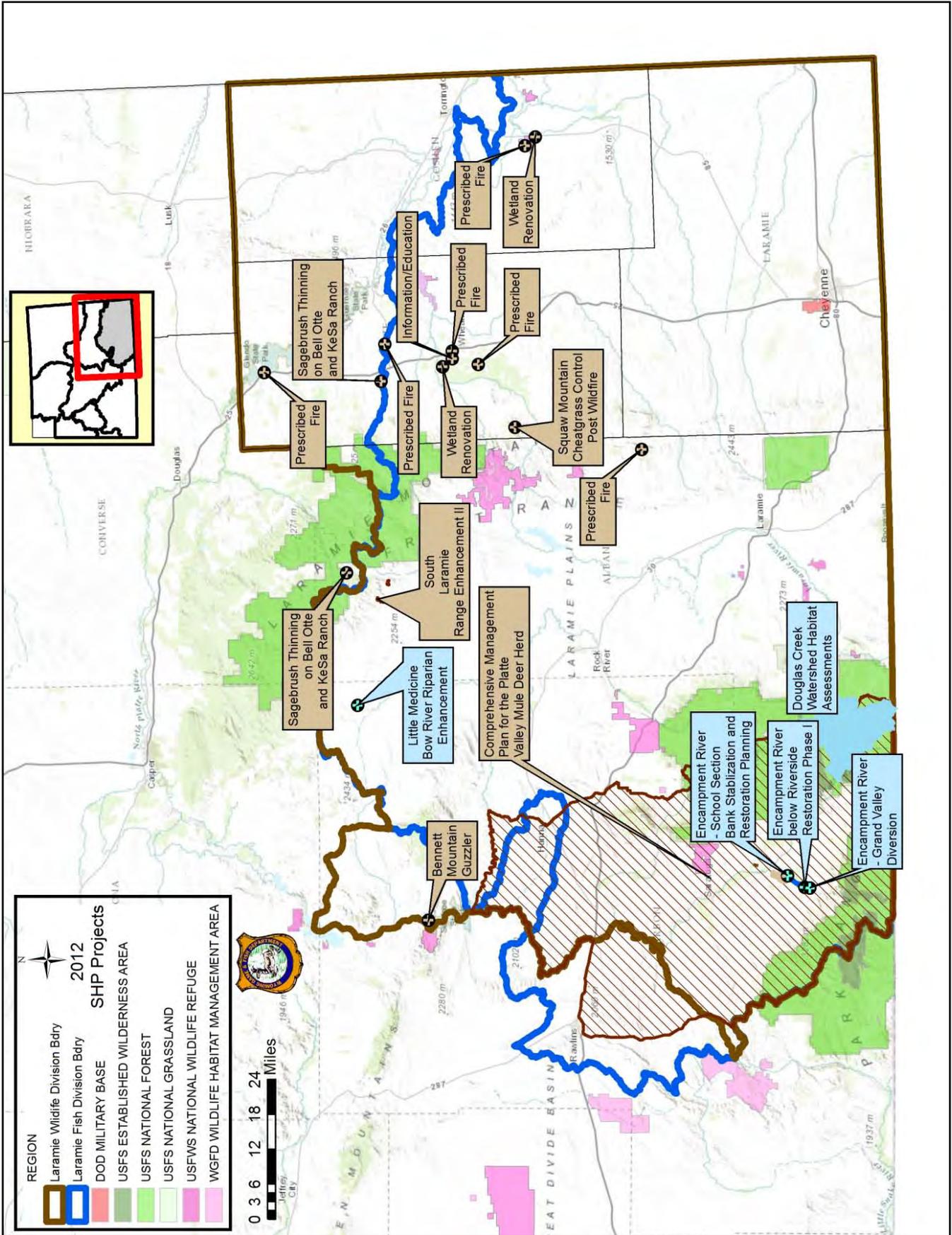
Figure 16. Agri-drain water control structure installation.

Additionally, two water control structures (Agri-Drains) were installed to replace corroded corrugated metal pipe drop structures on Ponds 1 and 2 (Figures 15 and 16). Agri-Drains will have a longer functional life and allow for more precise water level control and management benefitting migratory waterfowl. Goose nests throughout Ocean Lake were bedded, as well.

Ferris Mountain Leafy Spurge (Goal 2) – WLCI, Jim Wasseen

The Ferris Mountain Wilderness Study Area (WSA) Leafy Spurge project comprises treating this area and the adjacent hogback ridges for invasive weeds, mainly leafy spurge, with some whitetop and Russian knapweed. Treatment consists of application of herbicide to control weeds in an extremely rugged area. Monitoring in 2005 showed infestation into the WSA for the first time, along with a marked increase of infested acres along the fringes of the WSA. These weeds have also increased in the adjacent hogback ridges. In 2012, 500 acres were treated, an additional 200 acres were monitored, and 200 acres were inventoried. Work is planned to continue next year. No new patches of spurge were found in 2012, although whitetop seems to be increasing.

LARAMIE REGION



LARAMIE REGION HIGHLIGHTS

- Watershed Habitat Assessment Methodology (WHAM) surveys were completed on approximately 103 stream miles in the Douglas Creek Watershed.
- Along the Encampment River, approximately 1,850 feet of stream channel was restored and a fence was built creating a 77 acre riparian pasture.
- Sprayed 1,074 acres to control cheatgrass in the Baggott Rocks area of the Platte Valley.
- On the Pennock Mountain WHMA 132 acres of irrigated meadows were enhanced along with the development of a wildlife watering tank from a water well.
- Near Marshall, 1,850 acres of big sagebrush was chemically thinned to promote rangeland health.
- Approximately 5,100 acres were sprayed to control cheatgrass within the Squaw Mountain wildfire area.
- Many I&E efforts and public meetings were held relative to the Platte Valley Mule Deer Initiative and the Platte Valley Habitat Partnership.

Squaw Mountain Cheatgrass Control Post-Wildfire (Goal 2) – Ryan Amundson

To address potential cheatgrass invasion following the August 2011 wildfire on Squaw Mountain, located southwest of Wheatland, approximately 5,100 acres of south facing aspects and areas of high fire intensity were aerially treated with imazapic herbicide in September 2012 (Figure 1). Funding from numerous partners was applied for and received to implement the treatment. Several permanent monitoring transects were established pre-treatment to measure herbicide effectiveness. Extreme drought conditions in 2012 resulted in little perennial vegetation recovery post-fire, and at the same time little cheatgrass emergence was seen (Figure 2). Two years of cheatgrass control post-treatment are expected on treated areas. The area serves as crucial winter range for mule deer and elk, and post-fire we expect to see bighorn sheep pioneer into the area as well.



Figure 1. Steep, rugged topography made herbicide application from fixed wing or ground impossible, so a helicopter was used to apply the herbicide.



Figure 2. Re-sprouting of key winter range shrubs was seen post-fire, but cheatgrass in the understory is cause for concern.

Pennock Mountain WHMA Well Development (Goal 2) – Josh DeBerard

The WGFD crew leader installed three hundred feet of pipeline, one 500 gallon water trough and one 30 gallon trough to provide a seasonal water source for wildlife including sage grouse, pronghorn, mule deer, and elk. The well development site is located on a dry sagebrush / grass upland bench.

Encampment River – Grand Valley Diversion (Goal 2) – Christina Barrineau

The Encampment River – Grand Valley Diversion improvement aims to remove an existing cobble push-up dam and replace it with a more stable cross-vane structure. In 2012, WGFD contracted with Stantec Consulting Services, Inc. for a survey and design for the diversion, which is located on the Encampment River, near the town of Riverside. Each year, during the irrigation season, heavy equipment is used to push-up the riverbed to divert flow into the Grand Valley Ditch. The push-up dam spans the width of the channel and inhibits upstream fish movement. Downstream of the dam, the channel has become over-widened and cannot efficiently transport sediment. The new diversion structure will allow water users to receive water without having to annually manipulate the riverbed, while also allowing for fish passage (primarily brown trout and rainbow trout). In order to create the stability for the new structure, the stream channel immediately upstream and downstream (~550 ft each direction) will be narrowed and deepened.



Figure 3. Surveying the Encampment River – Grand Valley Diversion for a new, stable structure and stream channel.

Survey work on the river was completed in December 2012, and a design is expected in spring 2013 (Figure 3). Construction is slated for fall 2013. The Saratoga-Encampment-Rawlins Conservation District (SERCD) is the lead for the project and will work closely with the landowners, water users, and funding partners. Other partners for the improvements include; WLCI, USFS Resource Advisory Council, WWNRT, and TU.

Cheatgrass Herbicide Treatment at Baggott Rocks in the Platte Valley (Goal 2) – Heather Halbritter



Figure 4. Spraying cheatgrass at Baggott Rocks.

The Baggott Rocks area in the Upper North Platte River Valley is considered crucial winter range for mule deer; however, range conditions have been degraded with an infestation of cheatgrass. With assistance from the Rawlins BLM, the SERCD, and the OSLI a total of 1,074 acres were aerially sprayed with Plateau® herbicide in September (Figure 4). Cheatgrass response to the herbicide will be monitored and the data collected will determine the need for future treatments.

Wetland Renovation (Goal 2) – Ryan Amundson

A 100 acre wetland complex near Wheatland had been previously aerially treated with herbicide to kill Russian olives that had dominated the area for over 15 years. In winter 2012, the Russian olives were masticated followed by interseeding of desirable grasses. In addition, the wetland area was treated with Milestone® herbicide to control kochia and Canada thistle that had dominated the understory of the Russian olive stands for years (Figure 5). Treatment was completed with a boom truck, ATV sprayer units, and backpack sprayers.



Figure 5. Noxious weeds were some of the only plants that had an excellent growth year in 2012 near Wheatland. Efforts to combat weed invasions in new seedlings were necessary.

In recent years, nesting waterfowl have been scarce on the project site. In spring 2012, the wetland was utilized by numerous sandhill cranes, Canada geese, widgeon, teal, and mallards during spring breeding season. Several pairs of ducks, geese, and cranes ended up using the wetlands for nesting, and numerous young broods were seen throughout the summer.

Encampment River Below Riverside Restoration Phase I (Goal 2) – Christina Barrineau

The Encampment River below Riverside is highly unstable with areas of bank erosion, extensive transverse bar development, channel degradation, and channel aggradation. Causes of the instability include: historic tie drives, mining, dredging, water diversions, Cheyenne Stage II, and land use activities. The instability is causing riparian habitat and agricultural land loss, as well as degraded in-stream habitat for aquatic species. Construction efforts for the Encampment River below Riverside Restoration began in 2011 and continued again in late summer and fall 2012 (Figure 6). The goals of the restoration are to 1) dissipate energy and prevent land loss by building floodplain benches, installing bank protection and expanding pool habitats, 2) improve bedload transport by changing stream dimension and pattern, 3) provide grade control by installing in-stream structures, and 4) improve trout habitat with overhead cover on banks, deeper and more abundant pools, and narrower riffles.

Restoration completion was expected in 2012, but due to changes in land ownership and in the original design plan, the restoration was neither completed in two field seasons or within the initial budget. Approximately 1,850 feet of stream

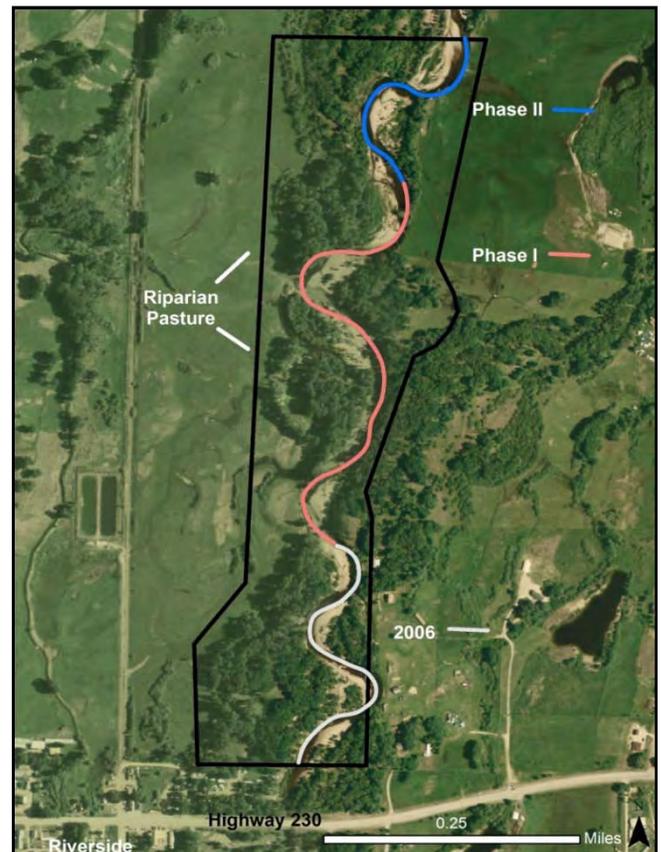


Figure 6. Aerial map of the phases of the Encampment River below Riverside Restoration and the riparian pasture. Phase I represents work completed in 2011 and 2012. Phase II represents work planned for 2013.

channel was restored in 2012, and efforts focused on adjusting meander bends, grading floodplain benches, constructing in-stream rock structures, installing toe wood for bank stabilization, and planting willow stakes and clumps (Figures 7a and 7b). Daily construction oversight was provided by WGFD and TU. Additionally, 6,750 linear feet of fence was installed creating a 77 acre riparian pasture. A 10-year agreement was established between the USFWS and the private landowner for grazing within the riparian pasture.



Figures 7a and 7b. The Encampment River below Riverside Restoration Phase I before (left) construction with an over-widened channel, bank erosion and excessive sediment deposition. Following construction (right), the river has a narrower, deeper channel with floodplain benches and toe wood along pool habitats.

Partners for the 2012 Encampment River below Riverside Restoration Phase I project include; TU, WGFD, private landowner, SERCD, WWNRT, USFWS, and USFS Resource Advisory Council. For 2013, about 1,350 feet of channel will be constructed to complete the restoration on this property. Monitoring efforts will also continue including photo points and channel cross-sections.

Red Rim – Grizzly WHMA Forage Reserve Grazing (Goal 1) – Dave Lewis

Six cattle operators grazed the WHMA under the cooperative management of the WGFD and BLM in a rest rotation grazing plan designed to benefit wildlife habitat values inside the WHMA and habitat adjacent to the WHMA boundary.

Red Rim – Daley WHMA Livestock Grazing (Goal 1) – Dave Lewis

Two cattle operators grazed 2,048 AUMs on the WHMA under the cooperative management of the WGFD and BLM in a rest rotation grazing plan designed to benefit wildlife habitat values inside the WHMA and habitat adjacent to the WHMA boundary.

Conduct Ranch Habitat Improvement (Goal 2) – Heather Halbritter

This project was designed to enhance seasonal and crucial habitats for mule deer, elk, and antelope by providing an immediate source of water, enhancing distribution of livestock from other areas, and removing competition from invasive and encroaching species of plants. Water developments which included well development along with pipeline and stock tanks installation were completed in 2012 with fence construction scheduled this spring. Once infrastructure is complete, livestock grazing management strategies can be implemented to accommodate habitat treatments to control invasive species and improve forage quality.

Red Rim – Daley WHMA Fence Conversion (Goal 2) – Dave Lewis

A contractor completed the conversion of four and one-half miles of woven wire and five wire fences to improve migration of pronghorn and other big game. The fence was converted to a four – wire wildlife friendly design (Figure 8).



Figure 8. Red Rim - Daley WHMA fence conversion.

Encampment River – School Section Bank Stabilization (Goal 2) – Mike Snigg and Christina Barrineau

The Encampment River – School Section Bank Stabilization focused on stabilizing approximately 270 linear feet of eroding streambank on a half section of state land several miles downstream from Riverside (Figure 9). The public has access to the river through the state land via two parking lots. The Encampment River was eroding a bank adjacent to a road. Although the road is private,



Figure 9. Bank stabilization along the Encampment River on state owned lands.

the public has pedestrian access to the road. There was concern from the private landowner who uses the access road, as well as safety concerns for the public along the eroding bank. WWC Engineering was contracted to design the stabilization, which entailed re-sloping the bank to a more stable angle, installing rock barbs and rip-rap, and re-seeding the bank. The bank stabilization was constructed in fall 2012.

In addition to the bank stabilization, over the past several years the local Platte Valley TU Chapter has expressed interest in additional habitat projects on this half section of state land. Several other areas of channel instability exist along the Encampment River through the state land.

In November 2012, WGFD contracted with Stantec Consulting Services, Inc. to complete a survey for conceptual designs for future habitat improvements using Natural Channel Design. Approximately 4,000 linear feet of channel was surveyed in December 2012. Future habitat projects are planned for 2014 and 2015, following further development of conceptual designs and agreements with State Land Board and grazing lessees.

Pennock Mountain WHMA Meadow Enhancement (Goal 1) – Josh DeBerard

The improvement of 132 acres of historical hay meadows included the installation of 1,000 feet of irrigation pipe, four culverts and six water control structures. Installation was performed by a private contractor and the Habitat and Access crew leader. These improvements will increase standing forage production for big game, especially elk wintering on the WHMA.

Bennett Mountain Guzzler (Goal 5) – Ryan Amundson

In July 2012, a group of 20 dedicated volunteers and WGFD employees installed a wildlife guzzler on top of the Bennett Mountains near Seminoe Reservoir (Figure 10). The 2,000 gallon capacity guzzler was hauled to the site and initial ground site preparations were completed by the Rawlins BLM Field Office Engineering and Operations staff. The guzzler, catchment apron, and livestock exclusion fence were installed by members of the Wild Sheep Foundation, BOW, RMEF, and WGFD personnel (Figures 11 and 12).



Figure 10. A hard days' work for a dedicated group of volunteers.

Some bighorn sheep transplanted into the Seminoe Mountains in recent years have made their way across Seminoe Reservoir and have taken up residence on nearby Bennett Mountain. Lack of water at high elevations results in bighorns making long daily trips up and down the mountain to the North Platte River for water. This makes them more susceptible to predation and likely impacts lamb survivability. The guzzler project, costing approximately \$10,500 to complete, will serve as an important seasonal water source for elk, mule deer, antelope, and bighorn sheep.



Figure 11. Rolling out the heavy mil plastic catchment apron liner.



Figure 12. The 100' x 30' catchment apron will catch moisture in the form of snow and rain and transport it to the tank through a small pipeline.

Douglas Creek Watershed Habitat Assessments (Goal 2) – Christina Barrineau

WHAM Level 1 surveys were completed on Douglas Creek and 19 tributary streams, covering approximately 103 stream miles on the Medicine Bow National Forest during summer 2012. Surveys were conducted within the following four, sixth level HUCs: Upper Douglas Creek (101800020104), Middle Douglas Creek (101800020105), Pelton Creek (101800020106), and Lower Douglas Creek (101800020107). Streams assessed were stable, although some areas of instability were observed. Potential reference reaches were also identified for future data collection of stable stream habitat. Reference reaches provide vital stream channel design criteria for restoring degraded stream reaches. Most current beaver activity was found on Douglas Creek and its larger tributaries: Pelton Creek, Lake Creek, and Muddy Creek. Relict beaver activity was observed in most of the smaller tributary streams. Widespread watershed impacts observed included bark beetle impacts to upland conifer vegetation, unauthorized ATV trails, present recreational gold mining, and historical gold mining (Figure 13). An administrative report detailing observations and management recommendations for the surveyed drainages (2010-2012) will be completed in 2013. Additional information can be found in the WGF D WHAM and Photo databases.



Figure 13. Three separate ATV crossings of Camp Creek in the Douglas Creek Watershed.

Platte Valley Mule Deer Habitat Management (Goal 2) – Heather Halbritter

The objective of the project is to modify fencing for mule deer migration, protect natural water sources, construct new water developments to spread livestock use, enhance upland habitat by increasing management flexibility, reduce juniper/conifer encroachment into riparian areas, and reduce noxious invasive weeds. In 2012 a water storage tank was installed, five miles of water pipeline were installed to support seven new tire troughs, and five miles of disturbed surface were seeded as a result of this pipeline install (Figure 14). In 2013, construction of 3 miles of new pasture fence and conversion of 2.5 miles of existing fence to wildlife friendly fencing standards is planned.



Figure 14. One of seven new tire troughs.

Shrub Production 2012 (Goal 2) – Ryan Amundson

In 2012, shrub production was less than desirable throughout the eastern portions of the Laramie Region. Production of key shrubs such as antelope bitterbrush and true mountain mahogany decreased by more than 90% in the Laramie Range from 2011 levels. Many of the shrub transects read annually are within areas treated by prescribed fire or mowing in the last 10 years. Shrubs in treated areas exhibited five to six times greater leader growth compared to

untreated areas. In years like 2012, this is substantial, as untreated areas averaged less than 0.2 inches per leader. It is becoming increasingly apparent that prescribed fire and mowing treatments in mixed shrub habitats exhibit marked increases in annual leader production rates for five years post-treatment. After five years, production slowly tapers off and moves back towards pre-treatment levels. Utilization rates by wild ungulates follow a similar pattern, including high use for five years post-treatment, and then decreasing rapidly to pre-treatment levels as plants mature and nutritive content and palatability decrease. On the eastern flanks of the Laramie Range, annual precipitation was approximately 10% - 15% of “normal”, and shrub production followed this percent decline in precipitation in direct correlation.

Prescribed Fire (Goal 2) – Ryan Amundson

Several prescribed fires were planned for 2012, with some smaller scale projects being completed. Wetland islands were burned to reduce woody vegetation (Figure 15), weed-dominated fields were burned to prepare seedbeds for interseeding (Figure 16), and 680 acres of dense nesting cover were burned to improve the health and vigor of introduced grasses on the Springer WHMA. Phase II of the Iron Mountain prescribed burn was not conducted in 2012 due to the spring burn window being missed (rapid, early green-up), and persisting drought conditions in the fall. If normal moisture conditions return in 2013, plans are to complete Phase II and III of the Iron Mountain project, totaling over 3,000 acres. Coordination with local fire departments, application for Wyoming Department of Environmental Quality smoke permits, and other federal and local clearances were conducted to assist several landowners.



Figure 15. Wetland islands were burned through prescription in spring 2012 to remove woody vegetation and improve nesting success by migratory waterfowl.



Figure 16. Local volunteer fire departments are contacted to assist with containment of prescribed burns on private lands. The projects serve as valuable training exercises for volunteers, as well as accomplishing habitat enhancement goals.

Platte Valley Mule Deer Initiative (Goal 2) – Heather Halbritter

Project development is ongoing with funding tied to improving mule deer habitat in the Platte Valley. A portion of these funds have been granted for a project on the Condict Ranch LLC which was impacted by the South Pennock wildfire. The wildfire burned approximately half a section of the ranch. A wildlife friendly cross-fence will be installed this spring with support from the private landowners and the SERCD to allow for better livestock management and proper recovery of the burn. The cross-fence will allow for two years of rest from livestock grazing in the burned area and will also allow for future use of livestock as a biological control to control cheatgrass.

Shirley Basin Area Sage Grouse Habitat Management (Goal 2) – WLCI, Jim Wasseen

This project involves range improvements on BLM lands believed beneficial to sage grouse. The Shirley Basin watershed provides habitat for a variety of wildlife species including identified core areas for greater sage grouse, as well as historic sage grouse ranges outside of core areas. Project objectives center on bringing upland and riparian vegetation, wildlife habitat, and watershed health towards a condition that will better benefit grouse. Improving areas of nesting habitat as well as brood rearing habitat for grouse will be the major focus in the Shirley Basin area. Archeological and wildlife clearances on three miles of fence were completed. A contractor was hired and materials ordered for work to be completed in 2013.

Saratoga Lake Public Access Area and Storer Wetlands – Dave Lewis

A contractor completed the installation of a new control headgate and 100 feet of new culvert to repair the main outlet control structure in the Saratoga Lake dam in 2012. (Figures 17 and 18).



Figure 17. Saratoga Lake control headgate during construction.



Figure 18. Saratoga Lake headgate completed.

Habitat Extension Biologist, Information and Education Efforts in SE Wyoming (Goal 4) – Ryan Amundson

Numerous presentations were given to schools, 4H groups, and sportsmen organizations during 2012. Projects included tours of local habitat projects, hands-on fish habitat structure construction projects, lake aerator system installation, Science Day and Agriculture Exposition presentations, sportsman convention booths, and other formal educational presentations (Figure 19). In total, over 12 formal events were attended, with over 350 people receiving a conservation message.



Figure 19. Local 4H members assisting WGFD personnel with construction and installation of fish habitat structures at Festo Lake near Wheatland.

Platte Valley Habitat Partnership (Goal 5) – Heather Halbritter

The Platte Valley Habitat Partnership was developed as part of the Platte Valley Mule Deer Initiative. Monthly facilitated public meetings began in Saratoga during the spring of 2012 with an average of 30 participants and as many as 50 attendees. Various agencies, private landowners, and other interested groups have been well-represented at these meetings and through the process of collaborative learning the group has gained knowledge about mule deer ecology and the tools available to improve habitat in the Platte Valley. Participants are currently working on developing a habitat plan that will guide habitat management efforts in the Platte Valley into the future.

Little Medicine Bow River Riparian Enhancement (Goal 3) – Christina Barrineau

Willow planting efforts on the Little Medicine Bow River continued in 2012 with assistance from the USFWS and the Medicine Bow Conservation District (Figure 20). This marks the third year of willow planting along the Little Medicine Bow River on private land. Approximately, 2,000 feet of streambank was planted with willow sprigs near the Walker-Jenkins PAA. Over the next several years, willow plantings will continue to be monitored for success and other areas will be identified on the ranch for future plantings.



Figure 20. Planting willows along the Little Medicine Bow River.

Wildfires 2012 (Goal 1) – Ryan Amundson

Several large wildfires totaling over 130,000 acres occurred in 2012, including the Arapaho Fire (Laramie Range), Cow Camp Fire (Laramie Range), Guernsey State Park Wildfire (human-caused), and Squirrel Creek Fire (Snowy Range). Time was spent assessing fire severity and coordinating with federal agency partners and private landowners to discuss fire rehabilitation efforts. Efforts are on-going to evaluate risk of noxious weed invasion and erosion throughout the wildfires (Figure 21). Some positive signs were seen post-fire including excellent aspen regeneration throughout the Arapaho Fire area (Figure 22), and a general lack of high fire severity/intensity throughout most of the Squirrel Creek Fire area (Figure 23).



Figure 21. Areas impacted by higher fire intensities were also prone to large erosion by wind and water post-fire. This site is scheduled for re-seeding in 2013 with grasses and legumes, and will be partially funded through the WGFD's Legume Seeding Program.



Figure 22. The Squirrel Creek Fire exhibited excellent mosaic burn patterns. With normal precipitation, recovery post-fire is expected to be excellent for winter mule deer habitats.



Figure 23. Aspen regeneration in areas burned in the Arapaho Fire was immediate and outperformed our expectations.

Laramie Regional Information and Education Efforts (Goal 4) – Al Langston

Al Langston covers Laramie Region I&E duties, as well as numerous statewide duties. Most of his habitat related involvement during 2012 involved the Platte Valley Mule Deer Working Group and the Platte Valley Habitat Partnership. He attended numerous meetings, facilitated working groups, participated in a habitat tour with landowners and group members, and produced statewide and local news releases on this effort. He also worked with Christina Barrineau on developing interpretive signs for the Laramie River Greenbelt, which involves riparian habitat along the river. These signs are now completed and will be installed along the greenbelt this spring.

Wildlife Habitat Management Areas (WHMA) and Public Access Areas (PAA) (Goal 2) – Habitat and Access Personnel

- In Albany County, 31 acres of WGFD PPAs were treated for noxious weeds.
- In Carbon County, 25 acres of WGFD PPAs were treated for noxious weeds.
- **Red Rim - Daley WHMA**, 49 miles of crucial winter range fence were maintained. 1,964 AUMs of livestock grazing were used under a forage reserve and habitat improvement program. A contractor converted 4 ½ miles of woven wire fence into four wire wildlife friendly fence.
- **Springer WHMA**, 116 acres of warm season grasses and 10 acres of cool season grasses were irrigated under a pivot irrigation system by the contract farmer. The farming contractor also planted, irrigated, and harvested 170 acres of corn and irrigated 20 acres of small grain food plots that were left standing for wildlife forage.
- **Red Rim - Grizzly WHMA**, 88 miles of boundary fence were maintained and 3,658 AUMs of livestock grazing were utilized for forage reserve and habitat improvement.
- **Forbes WHMA**, 4 miles of boundary fence were maintained and Albany County Weed and Pest sprayed one acre for noxious weeds.
- **Pennock Mountain WHMA**, 68 acres of hay meadow were irrigated and 29 miles of crucial winter range boundary fence were maintained. A contractor completed 25 acres of noxious weed control. Two water troughs were installed to provide water for wildlife.

- **Wick WHMA**, 653 acres of hay meadows were irrigated to provide forage for wintering wildlife. A total of 254 acres of noxious weed control was completed by a contractor and 20 miles of crucial winter range fence were maintained. The livestock operator used 220 AUMs on the existing grazing lease. The WGFD crew rebuilt one irrigation diversion structure on the Wick-Olsen ditch (Figure 24).



Figure 24. Wick – Olsen diversion structure.

- **Laramie Peak WHMA**, 6 miles of crucial winter range fence were maintained and Albany County Weed and Pest sprayed one acre for noxious weeds.
- **Thorne-Williams WHMA**, 7 miles of boundary fence were maintained, fencing supplies were purchased for three miles of woven wire fence conversion, and 4 acres of noxious weed control were completed by a contractor.
- A noxious weed contractor sprayed 62 acres on the **Springer, Bump Sullivan, and Mac's 40 WHMAs**. 11 goose blinds were re-leveled and rip-rapped at Bump Sullivan Reservoir to prevent erosion and improve public access (Figure 25). Goose nesting structures were repaired and re-bedded with assistance from the Two Shot Goose Hunt volunteers. 6 miles of boundary fence was maintained and the WGFD crew repaired and rip-rapped 1,600 feet of wetland dikes at the Wellnitz ponds (Figure 26).



Figure 25. Goose pit with rip rap.



Figure 26. Wellnitz pond dike with rip rap.

- **Table Mountain WHMA**, 50 acres of food plots were planted, irrigated through flood irrigation, and left standing for wildlife propagation. Goshen County Weed and Pest sprayed 10 acres of noxious weeds. 10 miles of boundary and pasture fence were maintained and 297 livestock AUMs were used by the BLM livestock grazing permittee.
- **Cottonwood Draw WHMA**, 3 miles of boundary fence were maintained.
- **Rawhide WHMA**, noxious weed location mapping was initiated for control efforts in 2013 and 7 miles of boundary fence were maintained.

PINEDALE REGION HIGHLIGHTS

- Coordinated extensively, internally and externally, to develop a vegetation restoration plan following the 64,000 acre Fontenelle Wildfire.
- Planted approximately 150 willows, 20 cottonwoods, and 10 dogwoods in one of the newer Huff Creek exclosures.
- Coordinated with the BLM to implement and monitor the Smithsfork allotment management plan (AMP) and to develop a willow restoration plan.
- Prepared and submitted a draft EA to the BLM for the Coal Creek Sediment Reduction and Stabilization Project.
- Provided input on the USFWS Management Plan for Cokeville Meadows Refuge and for the proposed Bear River Watershed Conservation Area plan. Treated cheatgrass on 1,140 acres in the Boulder Lake area including 150 acres on the Fall Creek WHMA.
- Monitored reclamation and mule deer habitat treatments per Pinedale Anticline Project Office (PAPO) and Jonah Interagency Office (JIO) Mitigation Office plans.
- Initiated NEPA process for the Wyoming Range mule deer habitat project so that treatments can hopefully start in 2014.

Pond and Holding Tank Development at the Boulder Rearing Station (Goal 2) – Ray Bredehoft, Matt Miller, Kade Clark, and Breanne Thiel

The Pinedale Habitat and Access crew along with assistance from the statewide crew and hatchery personnel constructed a new pond at the Boulder Rearing Station (Figure 1). A new entrance road was also constructed to provide vehicle access to the pond. The pond will be used as a water source for the newly constructed fish holding tanks that were installed next to the pond (Figure 2). The tanks will hold salvaged bluehead and flannelmouth suckers from the Big Sandy River while chemical treatments to remove non-native species are occurring.



Figure 1. Construction of new pond dike.



Figure 2. Installed holding tanks.

USFWS Bear River Watershed Conservation Area Program (Goal 1) – Floyd Roadifer

The USFWS continued to hold public meetings to discuss potential benefits and concerns associated with their proposed Bear River Watershed Conservation Area program. If approved, the program could make Land and Water Conservation Fund money available to support the purchase of CEs from willing sellers throughout the Bear River watershed. The USFWS is continuing their efforts to complete an EA for the project with the goal of having a final draft released for public comment by May 2013. The AHAB and other WGFD personnel provided

comments and information at public meetings and formally commented on the EA regarding potential wildlife and fisheries benefits.

Pygmy Rabbit Habitat Occupancy (Goal 2) – WLCI, Jim Wasseen

Infrared-activated cameras will be placed on the Pinedale Anticline near known pygmy rabbit burrow complexes exhibiting various levels of sign. The cameras will record rabbit activity to develop relationships between habitat quality and rabbit presence and abundance. Field work for this project has not begun, but is scheduled for September, October, and November 2013, due to the increased ability to detect rabbits at their burrows in the fall months.

Fontenelle Wildfire Monitoring (Goal 5) – Jill Randall and Floyd Roadifer

The Fontenelle Wildfire started on June 24, 2012 in the LaBarge Creek drainage and moved in a northeasterly direction along the east front of the Wyoming Range. The fire burned in a mosaic pattern across 64,000 acres, largely in the Piney Creek watersheds, before it was contained in late July. With proper follow up management over the next several years this event has the potential to provide both short-term and long-term benefits to wildlife habitat diversity, livestock forage production, and overall watershed health and stability. However, without proper management, risks of negative impacts to these values and resources are substantial. Significant funding has been secured to implement various restoration actions including weed control, fence reconstruction, and fireline rehabilitation. Additionally, to rest the ten affected federal allotments, alternative pasture needs to be secured for some of the permittees. A WGFD Trust Fund proposal was submitted targeting funds specifically to assist several permittees with the costs of leasing alternative private land pasture. Livestock use is expected to resume on these allotments once quantified monitoring of key vegetation indicates proper restoration of vegetation has occurred. This large scale restoration effort is part of a coordinated partnership between BTNF, Pinedale BLM, NRCS, WGFD, Sublette County Conservation District (SCCD), federal permittees and private landowners.

Monitoring the positive vegetation response of the Horse Creek Wildfire which occurred in 2007, and the numerous other prescribed fires conducted in the Wyoming Range since 1997, provided a template to set vegetation objectives for restoration of vegetation in this wildfire. Federal lands will have monitoring established for quantified aspen objectives in 2013. Additionally, 5 photo points were established on BLM land and 21 photos on USFS land (Figure 3). Most of these were photos taken in 2009 as part of the Mule Deer Habitat Assessment or existing range monitoring sites.

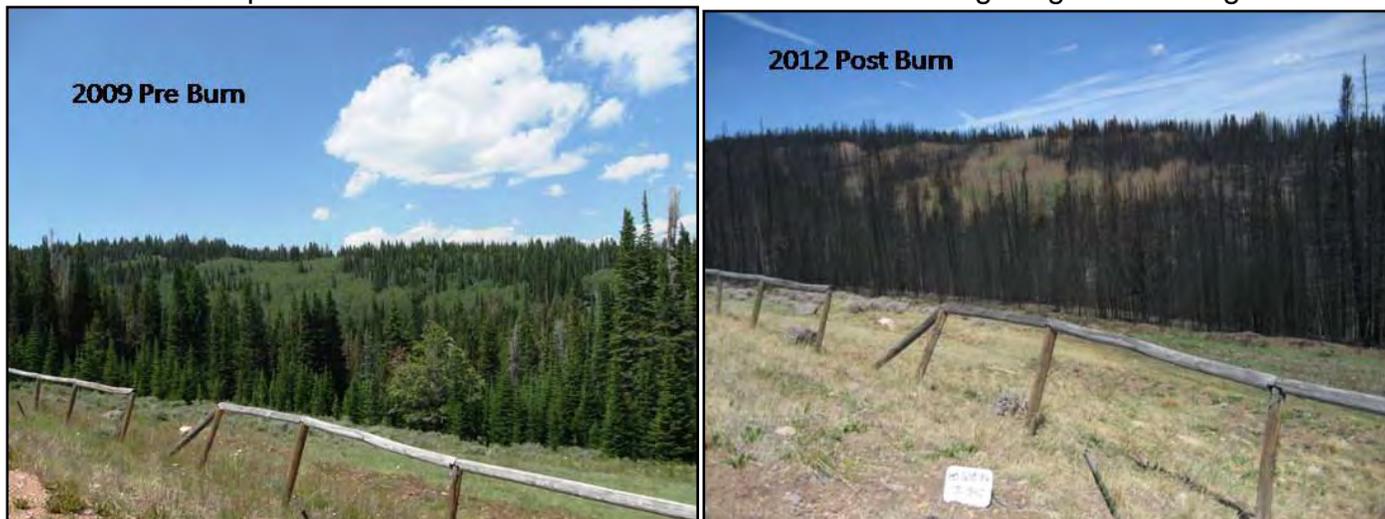


Figure 3. Example of photo point in the Fontenelle Wildfire that was taken in 2009 (pre-wildfire) and retaken in 2012 (post-wildfire) to help managers understand the long-term effects of vegetation changes due to the wildfire.

The relatively large scale of the Fontenelle Wildfire combined with more than 13,000 acres of other recent natural and prescribed treatments in the northern Wyoming Range (i.e. the 2002 Mule Fire, the 2005 Horse Creek Fire, and the 2007 Triple Peak Fire) is expected to provide abundant and widely distributed forage. This should greatly reduced potential impacts from excessive browsing by wild ungulates, ultimately increasing the likelihood of long-term successful restoration of healthy and desirable key plant communities such as aspen.

Legume Seeding, Sommers and Grindstone Ranches (Goal 2) – Jill Randall and Ray Bredehoff

In May 2012, 10 acres were inter-seeded with five species of legumes using a Lawson aerator operated by WGFD Habitat and Access personnel (Figure 4). The project was developed with two private landowners to enhance forage quality for sage grouse and mule deer. The areas selected for seeding were adjacent to irrigation ditches, which provide additional moisture required for birdsfoot trefoil, small burnet, sainfoin, cicer



Figure 5. Emergence of legumes occurred on both sites, in spite of drought conditions in 2012.



Figure 4. Lawson aerator inter-seeding legumes into upland habitat.

milkvetch, and falcata alfalfa. The project was designed as a cooperative trial and monitoring was done in 2012 by NRCS to determine if plant emergence occurred (Figure 5). In 2013, follow-up monitoring will determine the success or failure of each species in both locations. If this proves to be successful, this could be an option for private landowners to incorporate into ranch management plans where wildlife goals are a priority.

Lynx Habitat Assessment (Goal 2) – WLCI, Jim Wasseen

This assessment of lynx habitat will help the BLM gain an understanding of pre- and post-treatment impacts to localized snowshoe hare populations from aspen regeneration treatments. The information garnered from the assessment will allow for a greater understanding of when and where to thin forested areas in the Wyoming Range. Work completed included 50 permanent snowshoe hare pellets plots within the Camp Creek prescribed fire 1-year post burn area and 50 permanent snowshoe hare pellets plots within the proposed Miller Mountain prescribed fire area. Additional data collected at each of the above locations included stand measurements, snowshoe hare browse, horizontal cover, and photo points. In the Camp Creek prescribed fire area the plots were split among: slashed but unburned; burned; and un-slashed unburned.

Winter Range Shrub Monitoring (Goal 5) – Jill Randall

The growing conditions were extremely poor in 2012 due to lack of precipitation in the spring and preceding winter. The drought conditions of 2012 were widespread and severe. Precipitation data from the NOAA weather station near Big Piney documented this to be the driest April through June since 1895, when monitoring started at this site. Many shrubs were simply unable to produce any leaders and leaves were even stunted in many cases (Figure 6). Ephemeral leaf drop occurred in August on many plants, just one of many response mechanisms to the extremely dry conditions. Seed production was very minimal for all species due to lack of resources available to the plants.

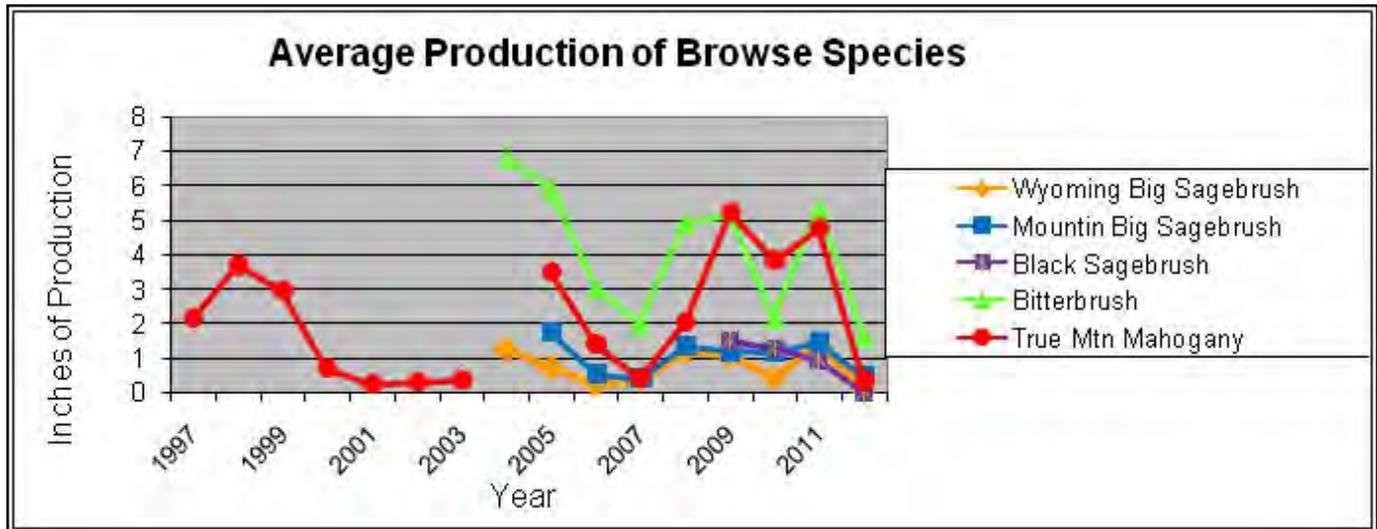


Figure 6. Average leader production on winter range transects monitored in 2011 throughout the Pinedale Region. These data include measurements from 33 transect locations monitored by wildlife biologists, game wardens and habitat biologists.

The amount of production in 2012 is of great concern going into winter for mule deer and pronghorn. Very poor production will require animals to use second and third year growth as a major component of their diet. Older growth is much poorer quality and will not produce the required level of nutrition for many animals. We can expect to see considerable mortality of mule deer even without severe winter conditions. An additional management concern is that summer use was noted on many shrubs, particularly in the Wyoming Range Mule Deer Herd. This was presumably due to lack of herbaceous production which resulted in a dietary shift by domestic and wild animals this summer.

In 2012, 8 additional monitoring locations were established on big sagebrush sites in the Wyoming Range Mule Deer Herd in conjunction with an upcoming research project that will collar 70 mule deer during the winter of 2012/13. The project will include correlating mule deer body condition with vegetation conditions to better understand a habitat based carrying capacity or objective for this herd. The total number of transects in the Pinedale Region has been increased to 33 with this effort.

Shrub hedging categories and age class data are collected at our monitoring locations on a 3-5 year basis. These variables are highly significant influences on the vigor of important browse species and the ability of these plants to be resilient in years of drought. Hedging classes are divided into three categories: severe, moderate and light. The hedging categories of each separate transect are represented in the graph below (Figure 7). Unfortunately the data indicates an overwhelming condition of severe hedging. These conditions inhibit shrub productivity, vigor

and seed production that in the long run can result in reductions of long-term big game population sustainability. Mountain big sagebrush transects have the least amount of severe hedging. However, these transects are found at higher elevations in areas less likely to serve as crucial winter range, particularly on winters with more extreme conditions. The species is noted on each transect label (WY=Wyoming big sagebrush; MTN=Mountain big sagebrush; BIT=Bitterbrush; MAHOG= True Mountain Mahogany and BLACK=Black sagebrush).

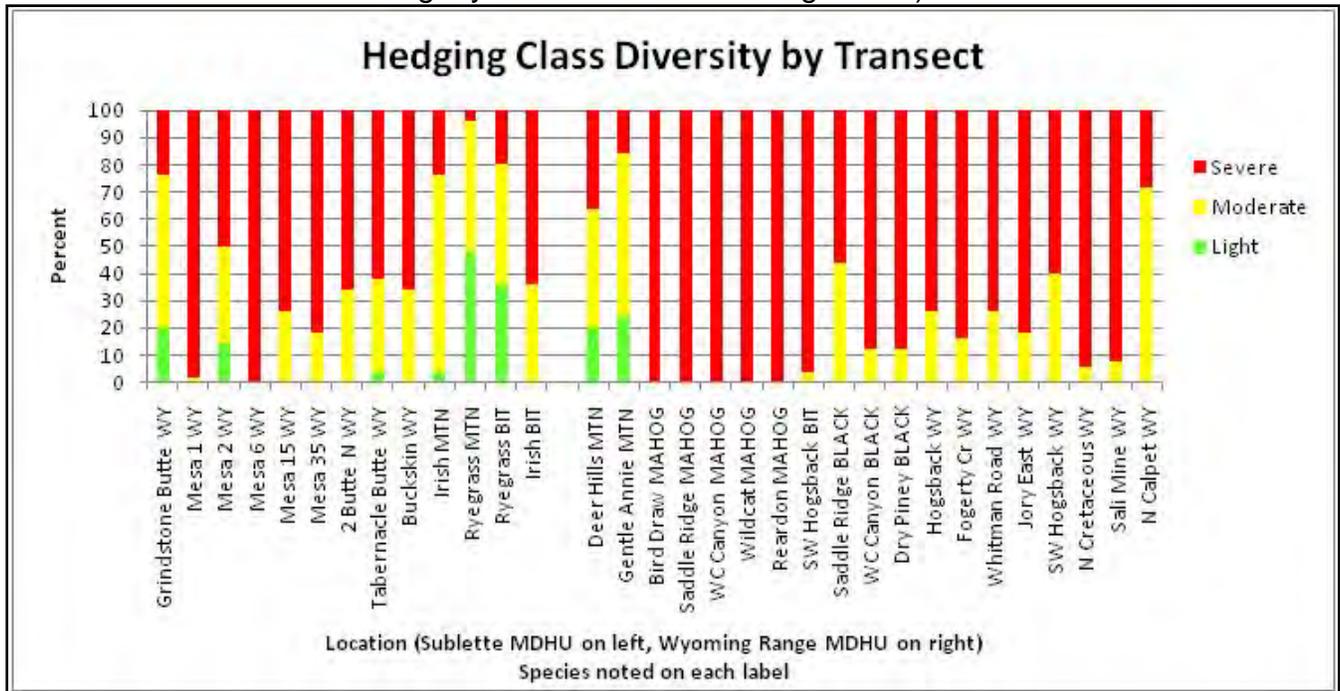


Figure 7. Hedging class diversity throughout all transects in the Pinedale Region.

Age class diversity is another indication of the health of the shrub community. Diversity in age class indicates the shrubs are reproducing and will be able to maintain productive plants into the future. Age class categories include young, mature, decadent and dead. When the shrub community has a majority of decadent plants the annual production is far less than potential, particularly in years with lower precipitation conditions. Decadent plants dominate many transects (Figure 8). The lack of young plants, regardless of species is of great concern for long-term productivity of the winter ranges for wildlife. In many cases a dominance of decadent plants can indicate that a disturbance or treatment may benefit the quality of habitat for wildlife.

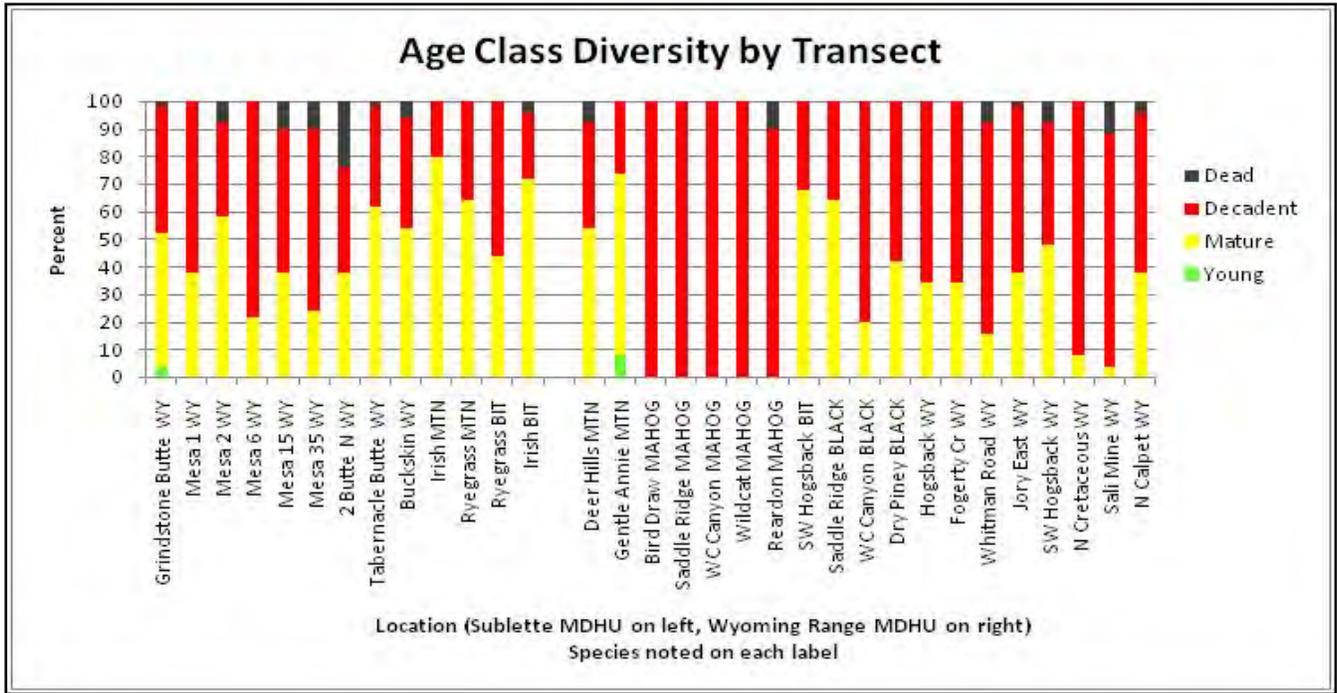


Figure 8. Age class diversity throughout all transects in the Pinedale Region.

Pinedale BLM Field Office Noxious Weeds (Goal 2) – WLCI, Jim Wasseen

This is an annual, on-going project to survey and treat noxious weeds on BLM lands within the BLM Pinedale Field Office. In 2012, 24,035 acres were spot treated for noxious weeds. Species treated included: leafy spurge, perennial pepperweed, whitetop, Dalmatian toadflax, Russian knapweed, spotted knapweed, musk thistle, Canada thistle, and others.

Thomas Fork Tributaries - Riparian / Willow Restoration (Goal 2) – Floyd Roadifer

With assistance from habitat and access personnel, maintenance was completed in July on the two recently constructed Huff Creek exclosures, Lower, Upper, and Middle Little Muddy Creek, and the Klein Creek exclosures. Willows (~150), cottonwoods (~20), and dogwoods (~10) were planted in the lower of the two newest Huff Creek exclosures in May. The need for follow up maintenance was monitored at the lower end of Little Muddy, upper end of Coal Creek, and all Huff Creek exclosures in June and July. No maintenance was needed at those times. However, by the end of the season a gate was broken at the lower Huff Creek exclosure and planted willows and other vegetation had been heavily browsed.

Squaretop Allotment, Jonah Interagency Mitigation (Goal 5) – Dan Stroud

One of the first mitigation projects funded by the JIO was the upgrading of several water wells and drilling of a new one. Each of these three sites had an area fenced from livestock with a pond and/or overflow from the water well to enhance vegetation within the enclosure (Figure 9). These protected areas with added water provide vegetation diversity and greater insect abundance (Figure 10).



Figure 9. Overflow on one well site.



Figure 10. Increased vegetative cover due to overflow.

Cameras were installed at each of the areas to monitor wildlife use. Since 2009, hundreds of photos have documented a range of wildlife use including sage grouse, pronghorn, various passerines and raptors, badgers, coyotes, fox, pygmy rabbits, cottontail rabbits, jackrabbits, and ground squirrels (Figure 11).



Figure 11. Sample photo from monitoring cameras.

One highlight of these projects is seasonal use by sage grouse (both hens and chicks) from May through September. On at least one of these sites, hens with chicks have been documented for the past two years.

Following hatching, the first three weeks are critical for sage grouse chick survival and the need to meet protein requirements (in the form of insects) is extremely important. Taller vegetation, greater vegetative diversity, added wet areas, and mulch all play a part in increasing insect abundance. Photo documentation suggests these areas provide added diversity which attracts many different types of wildlife. More of these types of projects have been funded, and, in addition, some fenced areas in wet meadow complexes are being proposed in the future to benefit to sage grouse and numerous other wildlife species.

Mesa Fertilization (Goal 2) – Dan Stroud

In 2010 and 2011, two fertilization projects were implemented on crucial mule deer winter range within the boundaries of the Pinedale Anticline Project Area (PAPA) (Figure 12). A more rigorous data collection need had been identified and in 2012 Wyoming Wildlife Consultants was contracted to collect and summarize the data (Figures 13 and 14). A preliminary report should be forthcoming in 2013 and a final report will be provided by March of 2014.



Figure 12. Aerial application of fertilizer in 2011.

LOCATION	PERCENT OF LEADERS UTILIZED	
	2010-2011	2011-2012
2010 CONTROL	17	9
2010 40# TREATMENT	43	10
2010 80# TREATMENT	28	15
2011 CONTROL	NA	5
2011 TREATMENT 40#	NA	4

Figure 13. Shrub utilization on fertilized areas for the winter of 2010-12 and 2011-12.

LOCATION	HERBACEOUS PRODUCTION - LBS/ACRE	SHRUB PRODUCTION (LEADERS - INCHES)
	2010-2011	2011-2012
2010 CONTROL	GRASSES - 236.5	0.79
	FORBS - 123.7	
2010 40# TREATMENT	GRASSES - 249.8	1.93
	FORBS - 54.2	
2010 80# TREATMENT	GRASSES - 239.5	1.34
	FORBS - 86.1	

Figure 14. Shrub and herbaceous production collected in 2011 (2010 treatment).

Trumpeter Swan Summer Habitat Enhancement (Goal 2) – WLCI, Susan Patla

This project includes construction and restoration of shallow water wetland ponds on private lands to enhance summer habitat for Trumpeter Swans and other waterfowl, water birds, and wildlife in the Green River Basin. At the Swift Ranch, island construction for nesting, headgate installation on a feeder to the pond, and site reclamation and cleanup work were completed in 2012. At the Sullivan Pond, project planning for construction of two ponds was completed in 2012. At Rimfire Ranch, eight pre-planted vegetation mats were installed which completes work at this site.

Wyoming Front Aspen Restoration Project (Goal 2) – Eric Maichak and Jill Randall

In 2012, on-the-ground progress, research opportunities, and unexpected benefits continued for the Wyoming Front Aspen Restoration Project (WFARP). During two days in late May, about 450 acres of conifer-aspen slashed in 2010 were burned without incident by BLM, USFS, and WGFD personnel on the Upper Billies allotment. Post-treatment data were collected by WGFD, BLM, and University of Montana personnel from Upper Billies and Red Canyon (August), as well as those and all other previously treated allotments (October) as part of a University of Montana masters student forestry project.



Figures 15 A and B. Interior of a conifer-encroached aspen stand on the Upper Billies allotment prior to (A) and three months after (B) prescribed fire, western WY.

On the Upper Billies allotment, burning consumed most fuels and initiated regeneration (Figures 15 A and B), however full stocking and seasonal use by domestic cow-calf pairs was permitted in the same year as the prescribed burn. We found 36% terminal leader use, 9,300 stems/acre, and most stems 0-1 foot tall compared to 5% use, 480 stems/acre, and 1-3 feet tall pre-treatment. Based on use of terminal leaders and previous experience (i.e., Maki Individual allotment, 2009, 45% use and full stocking of yearling steers permitted same year as the prescribed burn), the BLM will erect a temporary fence across the lower portion of the Upper Billies allotment in 2013 to prevent livestock use for two years. In Red Canyon, 2-yr post-burn monitoring showed good recovery of aspen averaging 14,200 stems/acre, 5% terminal leader use, and most stems 1-3 feet tall (Figure 16). This compares to pre-treatment data of 526 stems/acre, 13% terminal leader use, and most stems 1-3 feet tall.



Figure 16. Two-year, post-burn aspen regeneration on the Red Canyon common allotment, in western WY.

As a result of the 64,000 acre 2012 Fontenelle Wildfire, over 75% of the remaining conifer/aspen stands identified for slash/prescribed burn treatments in the WFAWP project area were “treated”. A monitoring plan drafted by WGFD, BLM, and SCCD will assess short and long-term recovery of these stands, and in conjunction with BLM policy, determine future livestock turn-on for affected allotments. With NEPA complete and most of the Fontenelle burn occurring in an adjacent Lynx Analysis unit, remaining treatment operations in the South LaBarge allotment (slash/pile/burn) and Camp Creek allotment (burn) have been scheduled for 2013.

Ruby: Assessment of Springs and Reservoirs (Goal 2) – WLCI, Jim Wasseen

In 2012 additional springs, seeps, and reservoirs within the priority areas as set by WLCI’s Ruby Project sub-committee were assessed for their ability to provide water and habitat for livestock and wildlife. The 209 reservoirs and springs that were assessed last year have been prioritized in the order of importance and repair needs. Those reservoirs and springs that are in need of repair and require minimal NEPA work will be proposed projects in 2014.

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

The aquatic habitat biologist coordinated closely with Kemmerer BLM to collect, analyze and interpret trend and seasonal use data, and establish guidelines and objectives for 2013 and 2021 as per the 2008 Settlement Agreement. These objectives and guidelines will be partially based on Multiple Indicator Monitoring (MIM) implemented in 2011, including limits on trampling impacts and utilization.

A cooperatively developed, allotment-wide, stream temperature monitoring plan involving 18-20 year-round temperature loggers is pending final approval of a categorical exclusion document. Assistance was also provided to the BLM with collecting end-of-season, short-term MIM data (bank alteration, stubble height, and willow use) at eleven key monitoring locations on the Smithsfork Allotment. Locations included North Corral, Mill Creek State, Mill Creek Federal, First Creek, Muddy Creek, Upper Coal Inside, Upper Coal Outside, Upper Little Muddy, Little Muddy Inside, Little Muddy Outside, and Stoner Creek. BLM completed similar data collection at an additional three sites on Huff Creek. Data from sites outside of exclosures indicated that stubble height criteria established in the AMP were met at one of eleven sites. At the six sites that support willows the percentage of leaders browsed ranged from 64% to 92%. Stubble height inside the Coal Creek exclosure averaged 18.9” compared to 3.4” at the comparable site outside the exclosure. The summarized monitoring data were reviewed and discussed with the BLM, and they presented it to the Smithsfork Grazing Association at their annual fall meeting in November and discussed its relevance to the Settlement Agreement. A plan to inventory willows in the Smithsfork Allotment was developed cooperatively with the BLM and assistance was provided with these inventories on upper Coal Creek. Individual willows and willow patches were mapped using a GPS unit (Figure 17). BLM completed similar inventories across most of the allotment and then plotted the data. Various methods and strategies to protect some of these areas to accelerate willow restoration efforts were discussed with the wildlife biologist, range specialist, and environmental coordinator.



Figure 17. Numerous patches of low stature willows were documented throughout the Coal Creek drainage.

A series of exclosures is being considered and may be approved through a categorical exclusion, or possibly included in the EA for the Coal Creek Stabilization project. Kemmerer BLM recently received wildlife funding (\$44,000) through their Budget Planning System (BPS). Current plans coordinated and discussed with the BLM are to use a portion of this money to hire the Utah Conservation Corps (UCC) to complete maintenance on all exclosures in the Field Office area in the spring of 2013. Smithsfork Allotment exclosures will be the highest priority. UCC will also be hired to implement a large scale willow planting effort in existing exclosures in the Coal Creek watershed in the fall of 2013.

Little Colorado Ditch Fish Screen (Goal 2) – USFWS Partners, WLCI, Jim Wasseen

The goal of this 2011 project was to eliminate fish entrainment from Pine Creek into the Little Colorado Ditch. Pine Creek is a tributary to the New Fork River, a tributary of the Green River. TU used electro-fishing equipment before and after construction, and found a significant reduction in the number of trout found in the irrigation ditch. To date the screen is working properly without too much required maintenance. The total cost of the project was \$88,940 with partner contributions from state TU, Upper Green Chapter TU, WGFD, WVNRT, USFWS Partner's Program, and WLCI.

Maki Creek Prescribed Burn Monitoring (Goal 2) – Erik Maichak and Jill Randall

Year three of post-burn monitoring was completed on the 1,450 acre Maki Creek aspen enhancement project on the east slope of the Wyoming Range. In July 2012, WGFD and University of Montana personnel collected density, height, and terminal leader browse use of aspen suckers from stand MACB-2. Monitoring photos show conifer encroachment prior to slash/burn treatment, followed by complete kill of conifer and excellent recovery of aspen 1- and 3-year post-burn (Figures 18 A, B and C). Mean density of suckers in MACB-2 has risen steadily since pre-treatment (Figure 19), and at 3-years post treatment is similar to density observed in stand MACB-1 in 2011. Most suckers encountered in MACB-2 were 1-3' tall, however over 30% and 5% were 3-6' and 6-10' tall, respectively. Increases in sucker heights may be attributed to low browse use of terminal leaders (7%). Fifth-year post-treatment monitoring is scheduled for MACB-1 in 2013 and MACB-2 in 2014.



Figures. 18 A, B and C. Pre-burn (A), 1-year post-burn (B), and 3-years post-burn (C) photos from aspen stand MACB-2 of the Maki Creek Aspen Enhancement Project, western WY.

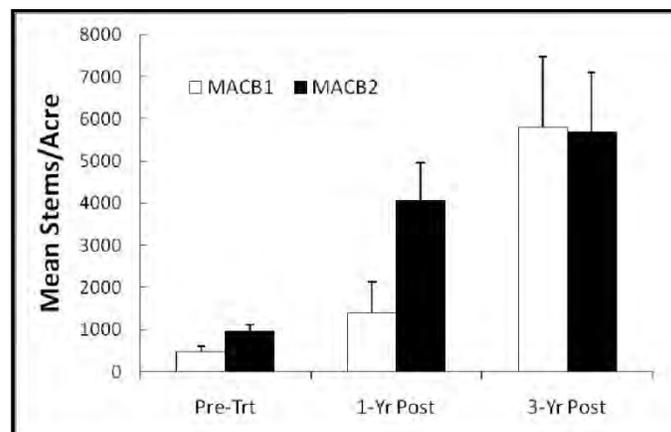


Figure 19. Mean sucker density (+ SE) during pre-, 1-year post-, and 3-years post-treatment from aspen stands MACB-1 and MACB-2 of the Maki Creek Aspen Enhancement Project, western WY.

Cottonwood II Aspen Regeneration (Goal 2) – Jill Randall and Eric Maichak

In 2012, the first of several aspen enhancement units was treated on the east slope of the Wyoming Range with prescribed fire after mechanical preparation in previous years. One hundred acres was burned in the spring in a unit located just north of North Cottonwood Creek on USFS lands. This unit demonstrated that the fuel bed created by mechanical preparation was conducive to excellent fire behavior and meeting vegetation objectives for aspen regeneration (Figure 20). Remaining units are planned for prescribed burning in spring and fall of 2013.



Figure 20. Prescribed fire in a conifer encroached aspen stand to promote regeneration of aspen.

Coal Creek Sediment Reduction and Stabilization (Goal 2) – Floyd Roadifer

Coal Creek is a tributary to the Thomas Fork River in western Wyoming and provides important habitat for Bonneville cutthroat trout. Conceptual plans to address the large amounts of sediment contributed into the stream at eleven key sites along a two mile stretch of Coal Creek were developed in 2010. Proposed solutions included new road crossings (Figure 21), stream and road re-alignments, and re-contouring/re-vegetating back slopes and toe slopes.



Figure 21. Little Muddy Creek Bridge (Site 1). The preferred option is to replace the old bridge and reclaim the low water crossing at this location.

An overview of the entire project was presented to the Lincoln County Conservation District and NRCS in Cokeville in January 2012. Specific portions were also discussed with the OSLI, and a letter was prepared and sent to OSLI outlining all portions of the project proposed on state lands. A power point presentation was developed cooperatively with the BLM to provide an overview to the permittees at the fall Smithsfork Grazing Association meeting in Cokeville. The land will need to be rested from grazing to successfully reclaim the unstable /disturbed sites. Strategies to provide that rest will present some challenges. Alternatives to address this

issue and fully analyze the overall project will be included in an EA expected to be released for public comment in April or May, with final approval anticipated in June 2013. Archaeological surveys were completed in October and the associated report was provided to the BLM.

Assistance was provided to the BLM with completing and submitting a Wyoming Native Trout Initiative funding proposal including a WGFD letter of support in October.

Pinedale Wildlife Habitat Management Areas (Goal 2) – Ray Bredehoft, Matt Miller, Kade Clark, and Breanne Thiel

- 26 miles of crucial winter range elk fence was maintained on and around the **Soda Lake WHMA**. Elk fence was constructed through contract labor. Approximately 1,000 elk posts were replaced, all wildlife gates were replaced, one new elk jump was constructed, and over one mile of fencing was rebuilt.
- 1.25 miles of crucial winter range elk fence was maintained on **Muddy Creek Feedground**.
- 3.3 acres of noxious weeds were sprayed in Sublette County on PAAs, WHMAs, and Feedgrounds.
- Grazed 500 domestic cattle yearlings on the **Black Butte Feedground** from July 1st – August 31st to improve the nutritional quality of forage and overall rangeland health.
- Drilled a new water well on the **Soda Lake WHMA**.
- Developed new public hunting easement northwest of Kemmerer called **V-Cross Cattle Company PAA**. A new parking area and road were developed along with new signing and fencing.
- A new public fishing access area near Pinedale called **Remmick PAA** was developed. A new road and parking area was constructed.

New Fork River Restoration and Wetland Enhancement (Goal 2) – Floyd Roadifer

The aquatic habitat biologist coordinated closely with the SCCD, USFWS, the landowner, and his consultant on this proposed bank stabilization/potential meander cut off prevention project on Olsen Ranch on the New Fork River (Figure 22). This proposal seeks to address an immediate threat to stream, riparian, and wetland habitats at an outside bend of the river that is migrating laterally. If not addressed the river will eventually cut off a meander, decreasing its length by 1 mile and dewater an irrigation diversion. The proposed solution is to restore approximately a quarter of a mile of river bank by constructing three or four rock j-hook vanes and a riparian vegetated bankfull bench. Also, approximately eight acres of adjacent seasonal floodplain wetlands will be created or enhanced through construction of a series of rock and/or earthen "check dams" designed to control the gradient, store overbank flood flows, and prevent further down cutting of gullies across the floodplain. WGFD involvement included several site visits, reviewing and commenting on design plans, and assisting with measurement to estimate wetland pond elevations and area as well as elevations of bankfull indicators. Assistance was also provided with the preparation of a WVNRT project proposal submitted through the SCCD and with development of a WGFD letter of support.



Figure 22. The landowner proposes to stabilize the New Fork River bank to prevent the river from cutting through the meander. Stream habitat conditions will be improved and adjacent riparian and wetlands habitats will benefit.

store overbank flood flows, and prevent further down cutting of gullies across the floodplain. WGFD involvement included several site visits, reviewing and commenting on design plans, and assisting with measurement to estimate wetland pond elevations and area as well as elevations of bankfull indicators. Assistance was also provided with the preparation of a WVNRT project proposal submitted through the SCCD and with development of a WGFD letter of support.

North LaBarge and Ryegrass BLM Grazing Standards (Goal 1) – Jill Randall

The Pinedale BLM Office is undergoing landscape planning efforts to include livestock permit renewals and potential changes to grazing management among other actions. The North LaBarge and Ryegrass areas were assessed in 2012 to determine if BLM Standards for Rangeland Health are being met. This qualitative effort will inform managers of areas that need further attention in

the upcoming permit renewal process. Due to the critical nature of these areas as wildlife habitat, WGFD participated on these field assessments and provided input particularly on vegetation components. Overall range conditions in Wyoming big sagebrush communities were lacking in shrub age class diversity, had more sagebrush cover than desirable, and had a disproportionate amount of rhizomatous grass on many sites. The mountain big sagebrush communities in higher precipitation zones had similar issues with excess canopy cover but support a more diverse herbaceous component.

East Fork River Bank Stabilization (Goal 2) – Floyd Roadifer and Chip Moller

Regional aquatic habitat and fish management personnel assisted Boulder Rearing Station personnel with developing design plans to stabilize ~300 feet of bank along the East Fork River where it was threatening to cut into the lower settling pond (Figure 23). Bankfull indicators above and below the project site were identified and evaluated and a suitable elevation identified for construction of a bankfull bench. The AHAB also coordinated with the contractor to ensure the rock source was appropriate and with the adjacent ranch manager regarding concerns about potential effects of the project on downstream livestock water gaps. The project was completed October 29, 2012 (Figure 24).



Figure 23. Bank along the East Fork River near the Boulder Rearing Station settling pond before project implementation.

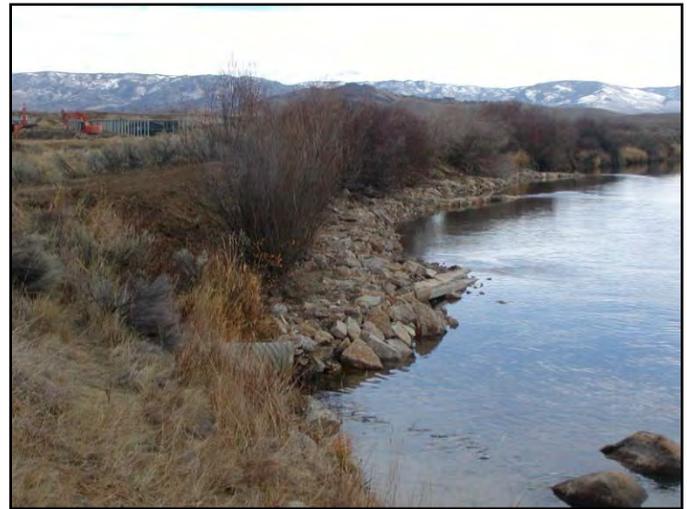


Figure 24. Bank along the East Fork River near the Boulder Rearing Station settling pond after project implementation.

Boulder Cheatgrass (Goal 2) – Jill Randall and Ray Bredehoff

The Sublette Invasive Species Taskforce, a partnership with Sublette County Weed and Pest, BLM, WGFD, WLCI, SCCD, Upper Green River Basin Sage Grouse Local Working Group, and TNC, contracted Wyoming Helicopters to treat 1,140 acres of cheatgrass in early October 2012. Included in the 1,140 acreage was a retreatment of 150 acres in the Fall Creek WHMA with the chemical Matrix due to failure of the 2011 Matrix treatment for unknown reasons. For the additional 990 acres of treatment with the chemical Imazapic on BLM, State, and private land, we added two new photo monitoring points, one north, and one south of Boulder Lake.

Additionally, survey efforts for cheatgrass and other noxious weeds were conducted in 2012 on 5,324 acres and along 1,610 miles of road. These areas were prioritized and some treated as part of the 2012 acreage, and others will be treated as funding allows in future years.

Pinedale Anticline and Jonah Field Reclamation (Goal 2) – Therese Hartman

WGFD and Department of Agriculture staff with the PAPO have conducted reclamation monitoring in the PAPA since 2009. Surface disturbance must be reclaimed following reclamation criteria set out in the Record of Decision (ROD) which includes interim reclamation. Industry is encouraged to minimize the surface disturbance of a drilling pad location once drilling is completed and the pad is converted to a longer term production phase. Successful interim reclamation is key to providing functioning habitat for wildlife during



Figure 25. Reclamation trending towards ROD criteria.

the production phase of gas field development which can last for many decades. Monitoring results for 2012 identified 365 pads in various stages of reclamation in the PAPA gas field. Of 136 pad locations monitored by the PAPO in 2012, 40 pad locations appear to be trending towards the ROD criteria (Figure 25) and 96 were identified as needing additional measures if they were ever going to achieve successful reclamation according to the ROD requirements. Another 30 locations were not compliant with the ROD requirements and actions have been taken to bring them into compliance. Monitoring found potential issues inhibiting successful reclamation could be improper soil preparation, mixing of top soil with sub-soil, soil in need of amendments, and seeding when soil is frozen or compacted. Seed sources and unavailability of seeds for certain plant species have been reported as an issue by industry.

One operator has implemented the use of straw or wood chip mulch which appears to aid in holding soil moisture and reducing wind erosion. They have also incorporated innovative methods to reduce the pad size. Top soil intended for later use in final reclamation (after the production phase is complete and the well is plugged and abandoned) is spread and seeded in areas of the pad to provide additional interim reclamation (Figure 26).



Figure 26. 30 acres put into interim reclamation on a 34 acre pad. Green indicates the area reclaimed around well pad.

Sublette Mule Deer Habitat Mitigation Plan (Goal 4) – Dan Stroud

In 2010, mule deer winter populations on the Pinedale Anticline decreased 20%, exceeding the 15% threshold, as outlined in the Record of Decision for Oil and Gas Exploration and Development. The 15% threshold is considered a trigger for increased mitigation efforts. In 2011, following a field habitat assessment, a 10 year mitigation plan was prepared to address the winter population decline. The plan includes treatments identified during 2011 as well as more recent habitat assessments (Figure 27). All habitat work will be performed within mule deer winter range and/or spring/fall range and migration corridors (Figure 28).

Since this area lies within a sage grouse core area, a Density Dependent Calculation Tool was completed, which resulted in identification of just under the 5% disturbance threshold. Various types of projects were identified including: mixed shrub/aspens enhancement (Figure 29); wet meadow enhancement, improvement of existing reclamation; drainage stabilization and sagebrush specific

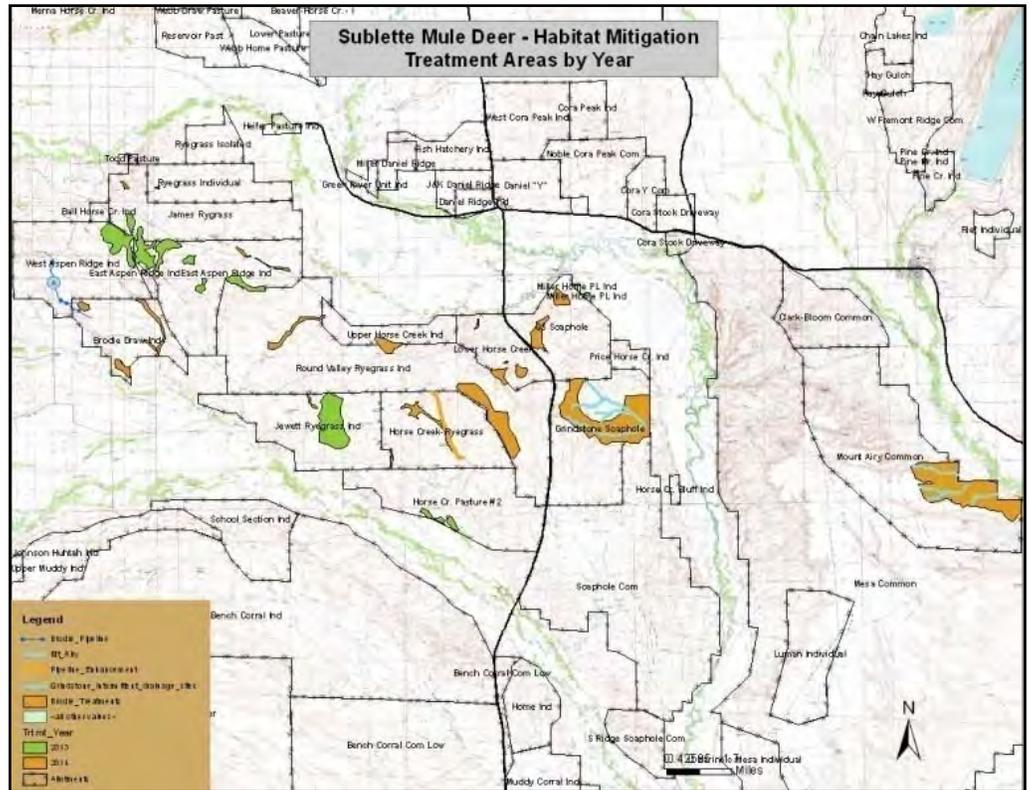


Figure 27. Areas identified for habitat enhancement efforts.

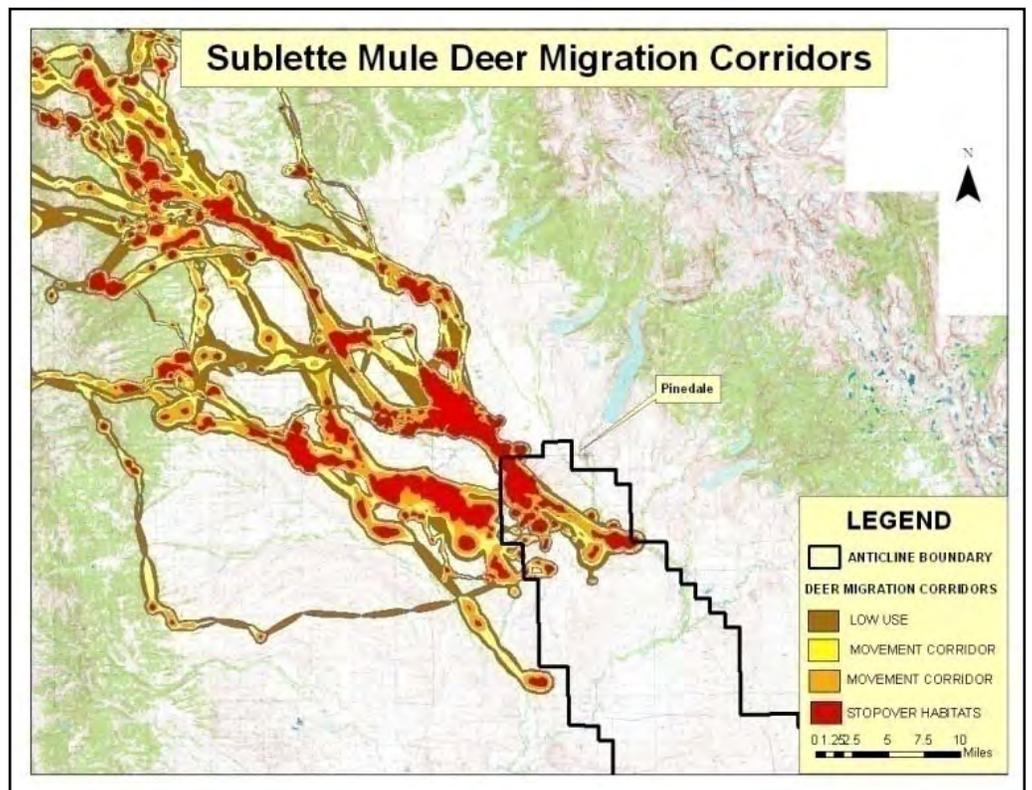


Figure 28. Mule deer migration corridors identified by Hall Sawyer.



Figure 29. Aspen stand and adjacent area to be treated under the Sublette Mule Deer Habitat Mitigation Plan.

projects (Figure 30). A combination of tools will be used including: mechanical with seeding; prescribed burning; exclosures in wet meadows; and small dike structures in drainages. Work is expected to commence during the fall of 2013 and last approximately 5-6 years covering approximately 6,000-7,000 acres.



Figure 30. Typical lower elevation sagebrush community and intermittent drainage.

Ruby: Impacts of Ravens on Sage Grouse Nests (Goal 2) – WLCI, Jim Wasseen

This study compared sage grouse nesting success and productivity in raven removal and non-removal study sites. The goal of this study was to identify a method to mitigate some of the adverse impacts of anthropogenic development of sage grouse. In 2012, 180 sage grouse were tracked using radio collars, 109 sage grouse nests were found, data of survival rates during the breeding season were collected and a paper was submitted for review.

Wyoming Range Mule Deer Habitat Plan (Goal 4) – Jill Randall and Ben Wise

The Wyoming Range Mule Deer Habitat Plan has continued on schedule with a proposal presented to Pinedale and Rock Springs BLM personnel in 2012. This proposal was well received and an Interdisciplinary Team was developed to work on completing NEPA through a third party contract. Due to the vast scope of the proposed action including nearly 40,000 acres of treatment (Figure 31), NEPA is not expected to be complete until 2014 with the first anticipated treatments to be implemented in the fall of that year. The anticipated projects include sagebrush mowing, Lawson aerator, Spike and inter-seeding as well as aspen enhancements through prescribed fire and mechanical disturbance. This proposal includes treatments in 20 allotments, requiring considerable coordination and discussion with many livestock permittees to develop the project in a way to work with the multiple uses on the landscape. WGFD biologists believe this project has potential to positively affect the sagebrush communities used by Wyoming Range mule deer and other

sagebrush obligates long into the future. This project was a direct result of actions requested from the public through the Wyoming Range Mule Deer Initiative which was completed in 2011.

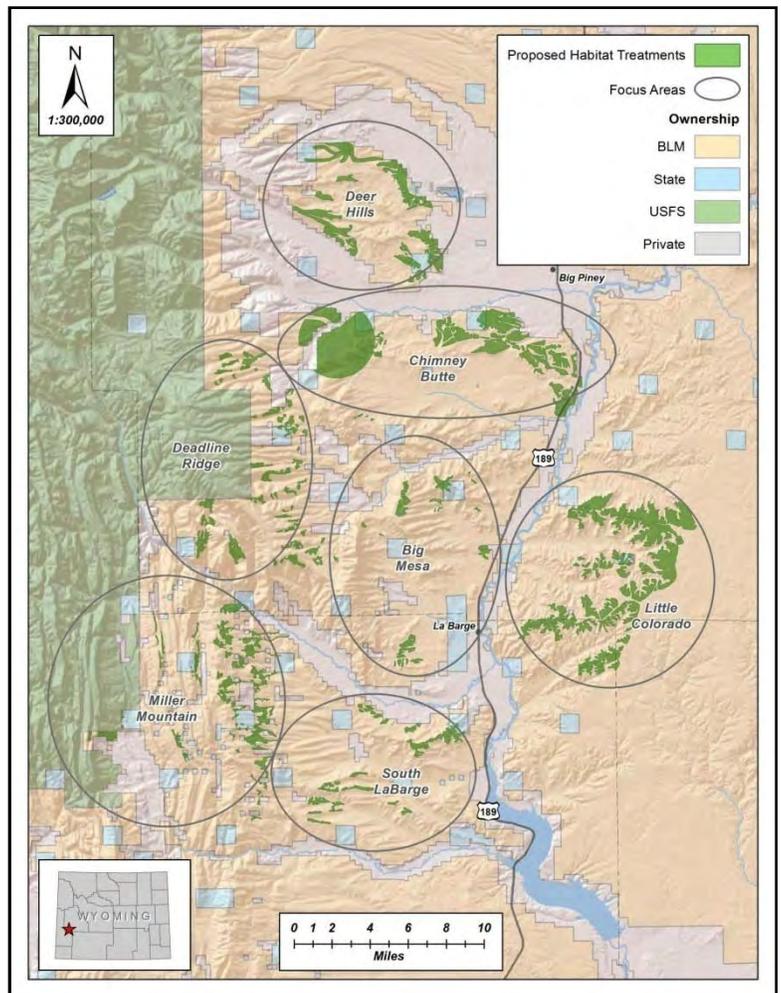


Figure 31. Map of the proposed treatments associated with the Wyoming Range Mule Deer Habitat Project.

Cokeville Meadows Refuge (CMR) Management Plan (Goal 5) – Floyd Roadifer

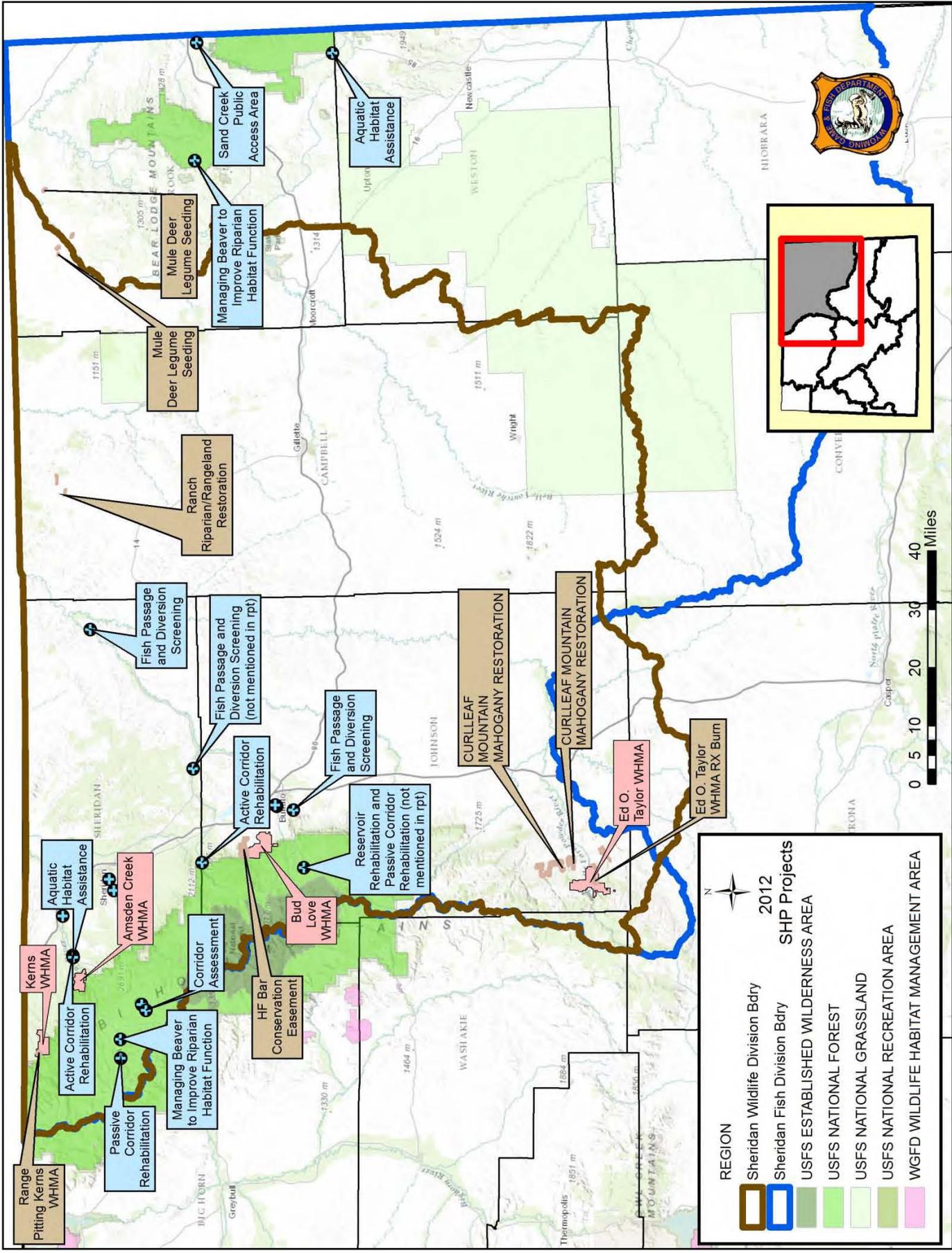
WGFD personnel provided wildlife and habitat data to USFWS to support development of a long-term management plan for CMR. Comments included support for a variety of management recommendations to benefit wildlife and habitat and a commitment to continue to assist with the cooperative implementation of management strategies and vegetation monitoring. An updated draft plan was recently sent to USFWS administrators for review, and a final draft is expected to be released for public comment in May 2013.

Opportunities, methods, and strategies to restore woody vegetation on CMR were coordinated with the CMR manager. Assistance was provided with site selection and planting of several hundred small, containerized willows and cottonwoods in April. A local Boy Scout troop and leaders assisted with this effort.

South Fork LaBarge Creek and Clear Creek Culvert Replacements (Goal 2) – USFWS Partners, WLCI

These two culvert replacements are in conjunction with the efforts to restore Colorado River Cutthroat trout in the upper LaBarge Creek watershed. The BTNF replaced the South Fork LaBarge Creek and Clear Creek culverts with bottomless arched culverts to improve fish passage. The new culverts have reconnected 19 additional miles of habitat for the native fish species to complete their life cycles. The total cost of the South Fork LaBarge Creek project was \$136,099 with contributions from the USFS, USFWS, and WLCI. The Clear Creek project cost was \$187,000 with partner contributions from the USFS, USFWS, WGFD, and WLCI.

SHERIDAN REGION



SHERIDAN REGION HIGHLIGHTS

- Established 6 willow L-D index monitoring sites in the South Tongue River watershed.
- Assisted partners with 4 fish passage and screening, 2 active and 2 passive stream corridor rehabilitation projects, responded to 41 new aquatic technical assistance requests, and developed partnerships on 10 new projects requesting cost share assistance or services.
- Inventoried or monitored 11-miles of stream and riparian corridors.
- Treated 183 acres with a range pitter on Kerns WHMA.
- Maintained fences along 53 miles of crucial winter range on WGFC WHMAs.
- Treated noxious weeds with herbicide on 123 acres in WGFC WHMA/PAA.
- Added 2 new PAAs south of Buffalo.
- Competitive conifers were removed from approximately 1,347 acres of curleaf mountain mahogany within crucial mule deer winter range.
- TNC in Wyoming and RMEF partnered to protect a northeast Wyoming landmark with two CEs totaling 2,166 acres. WGFC and local WGFD staff participated in getting this easement funded.
- Responded to 61 new terrestrial habitat technical assistance requests and provided input on 43 new projects. One project concerned 23,500 acres of burned sage grouse habitat that were treated with herbicide to control cheatgrass and leafy spurge infestations.
- Over 2,900 students were presented with information on habitat values, opportunities and issues.

Curleaf Mountain Mahogany Restoration Project (Goal 2) – Bert Jellison

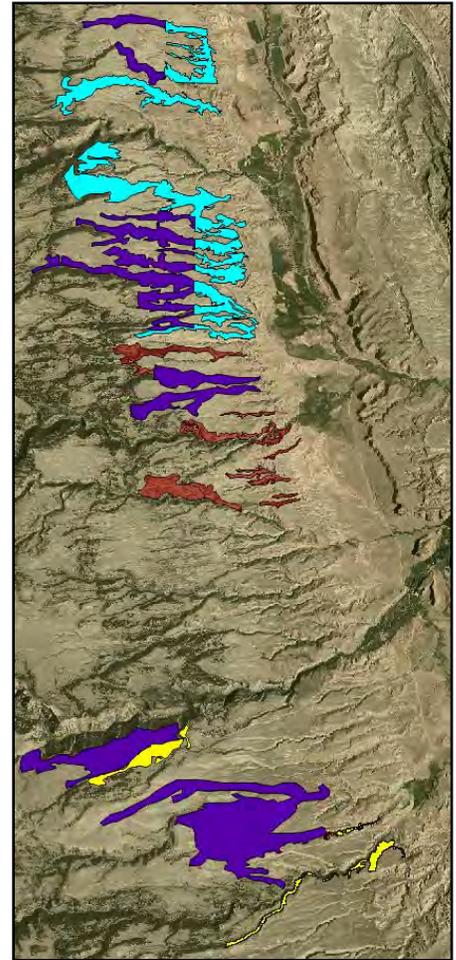
Curleaf mountain mahogany (mahogany) is a drought tolerant, slow growing, and long-lived evergreen shrub that exists on well drained nutrient poor soils. The preservation of functional mahogany habitats is essential for maintaining the diversity and abundance of wildlife in the region. Mahogany benefits 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.

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 loss of entire mahogany stands. To help prevent conifers from replacing stands of mahogany, two projects are underway:

- Lost Creek - The BLM's Casper field office initiated this vegetative treatment project in coordination and partnership with the WGFD, WWNRT, RMEF, and the MDF. The project area is located in the southern Big Horn Mountains of northern Natrona County. Approximately 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 (Natrona County Road 110). In 2012, a 150 acre block of mahogany was mechanically treated for a grand total of 430 acres treated so far.

- Barnum Area - WGFD initiated this vegetative treatment project, since it occurs on WGFD, private, State, and BLM lands. Funding partners include the WWNRT, MDF, WGBGLC, WGFD Trust Fund, BLM and Wyoming Conservation Corps who were financially sponsored by Devon Energy Corporation. These sites are located along the eastern foothills of the southern Big Horn Mountain range near Barnum. The town of Kaycee is approximately 17 miles east of the project area (Figure 1).

Figure 1. The prescribed method of removing conifers from mountain mahogany patches varied and was based on landowner preferences. For instance, within blue polygons, small age classes (of conifer) were cut and scattered while larger age classes were girdled and left standing. Within red polygons, loppers were used to remove smaller age classes and larger trees were not treated. Yellow polygons involved cutting and scattering all but the very largest age classes. Larger trees were de-limbed (up to five feet) to allow more sunlight to reach the mahogany. Purple polygons will be treated in future years.



In 2012, funding partners spent \$68,500 to remove competitive conifers from approximately 1,197 acres of curleaf mountain mahogany that exists within crucial mule deer winter range (Table 1).

Table 1. Curleaf Mountain Mahogany Restoration achievements to date and for 2012.

Conservation Practices	2012 Achievements	Achievements to Date
Lost Creek Project - Mechanically remove limber pine from mahogany stands.	150 acres treated.	430 acres treated.
Barnum Area Project - Mechanically remove limber pine, ponderosa pines, and juniper from mahogany stands.	1,197 acres treated.	2,010 acres treated.

A contractor was hired to mechanical remove conifers from curleaf mountain mahogany stands using hand crews (Figure 2).



Figure 2. Mechanical treatment is accomplished using hand crews with chain saws and pruning loppers. The above “before and after” pictures shows the results of conifer removal.

Fish Passage and Diversion Screening (Goal 2) – Travis Cundy

Cost share assistance was provided through the WGFD’s habitat trust fund and fish passage program to help partners’ complete four diversion rehabilitation projects. Each project included design elements to improve diversion infrastructure, and benefit aquatic wildlife and anglers by improving upstream fish passage or screening fish from the diversion ditches. Completed projects included two headgate replacement and fish screening projects on French Creek (Figure 3). The landowner previously added a coarse fish screen to another diversion, and added stepped structures to provide fish passage at all three diversions. Other completed projects were one upstream fish passage and diversion screening project on Clear Creek (Figure 4), and one upstream fish passage and diversion screening project



Figure 3. Fish screen added to an irrigation diversion on French Creek.

on Big Goose Creek (Figure 5). The project on Big Goose Creek included some additional stream rehabilitation treatments above the diversion. Many thanks are extended to the landowners, ditch companies, and Sheridan County and Lake DeSmet Conservation Districts for participating in these partnerships.



Figure 4. Coanda diversion screen and fish return channel serving a 29.5 cubic feet per second irrigation ditch on Clear Creek.



Figure 5. Stepped diversion structure provides upstream fish passage along a 3.5 mile segment of Big Goose Creek.

WGFD biologists continued assessing fish use at the Kendrick Dam bypass channel by placing passive inductive transducer (PIT) tags in sauger, channel catfish, and shovelnose sturgeon caught below the dam in Clear Creek and the Powder River, and monitoring if the fish were detected ascending the bypass at PIT tag antenna arrays placed in the bypass channel (Figure 6). Channel catfish were frequently found ascending the bypass.



Figure 6. PIT tag antenna array placed in the Kendrick Dam fishway to detect use by native fishes from lower Clear Creek and the Powder River.

Managing Beaver to Improve Riparian Habitat Function (Goal 2) – Travis Cundy

In recent years, beaver have been transplanted to headwater streams on both the Black Hills and Bighorn National Forests. The ponds established by beaver colonies detain runoff in the streamside water table and then slowly release the detained water as streamflows throughout the year, deposit sediments that allow new willow plants to develop through either seedling establishment or sprouting from branch segments partially buried in the sediments, and provide moist and diverse habitat conditions for a variety of fish and wildlife species. Recent aerial imagery of transplanted beaver colonies are displayed for a tributary of Blacktail Creek (Figure 7) on the Black Hills National Forest southeast of Hulett, and Big Willow Creek (Figure 8) on the Bighorn National Forest (BNF) west of Burgess Junction to illustrate how beaver ponds function to expand riparian water tables and detain water on the land longer.



Figure 7. Beaver colony found on Hershey Creek in the Black Hills National Forest.



Figure 8. A beaver dam on Big Willow Creek is elevating the riparian water table and supplying flow to two stream channels below the dam. Only one channel flowed yearlong before the beaver colony became established.

Transplant goals were not achieved in 2012 due the lack of an abundant beaver supply (i.e. making it profitable for a trapper) and a reliable contract trapper. Monitoring of riparian habitat conditions resulting from beaver activities continued in areas of previous beaver releases. Beaver activity appeared to be stable or expanding in those watersheds. Colony increases are desired in the target watersheds, particularly on the BNF where more abundant riparian resources and streamflow conditions are available to sustain beaver.

Passive Stream and Riparian Corridor Rehabilitation (Goal 2) – Travis Cundy

Passive rehabilitation involves identifying land use management deficiencies that are causing declines in habitat values and improving management practices to trigger natural improvement processes. Improved management practices coupled with natural environmental resiliency may then allow desired habitat conditions to recover over time.

North Tongue River

Riparian plantings, which began in 2010, continued along segments of the North Tongue River under the lead of the BNF. Partners include the WGFD and volunteers from the Little Bighorn Chapter of TU. Goals are to use riparian plants to stabilize the bankfull channel margin (greenline) where no floodplain currently exists, encourage riparian floodplain development behind the greenline, and reduce sediment inputs into the stream over the long-term. Willow cuttings and sedge rootstock cores were planted along a 300 foot eroding segment that had some surviving plantings remaining from a previous planting. Volunteers planted about 500 new willow cuttings, about half of these using the WGFD's water jet stinger, and about 100 new sedge root stock cores. Photo comparisons over time indicated some of the largest and deepest-placed cuttings are surviving. Most of the sedge root stock cores are surviving. Riparian greenline response at the planting sites has occurred and is encouraging (Figure 9). Significant riparian floodplain development behind the greenline is not yet obvious.



Figure 9. Plantings are helping a riparian greenline to develop (B) along the channel margin of previously unvegetated streambanks (A) on the North Tongue River.

South Tongue River Watershed

Streambank erosion and extensive lateral channel migration, in-part due to declining woody riparian vegetation, is a problem along some tributary and mainstem stream segments in the South Tongue River watershed. To begin addressing these problems, the WGFD is collaborating with the BNF to build management exclosures along segments of the West Fork South Tongue River and Sucker Creek. Upon completion, willow plantings are planned inside the West Fork exclosure, while existing willow stands are expected to regenerate inside the Sucker Creek exclosure, to test alternatives for managing lateral stream channel migration. In 2012, WGFD and USFS personnel retrofitted half of the Sucker Creek exclosure to exclude big game (Figure 10). Maintenance of the other half of the existing Sucker Creek livestock exclosure and construction of the West Fork big game exclosure are planned during 2013. Willow plantings will begin at a larger scale in 2014.



Figure 10. Seven acre buck and pole exclosure completed on Sucker Creek.

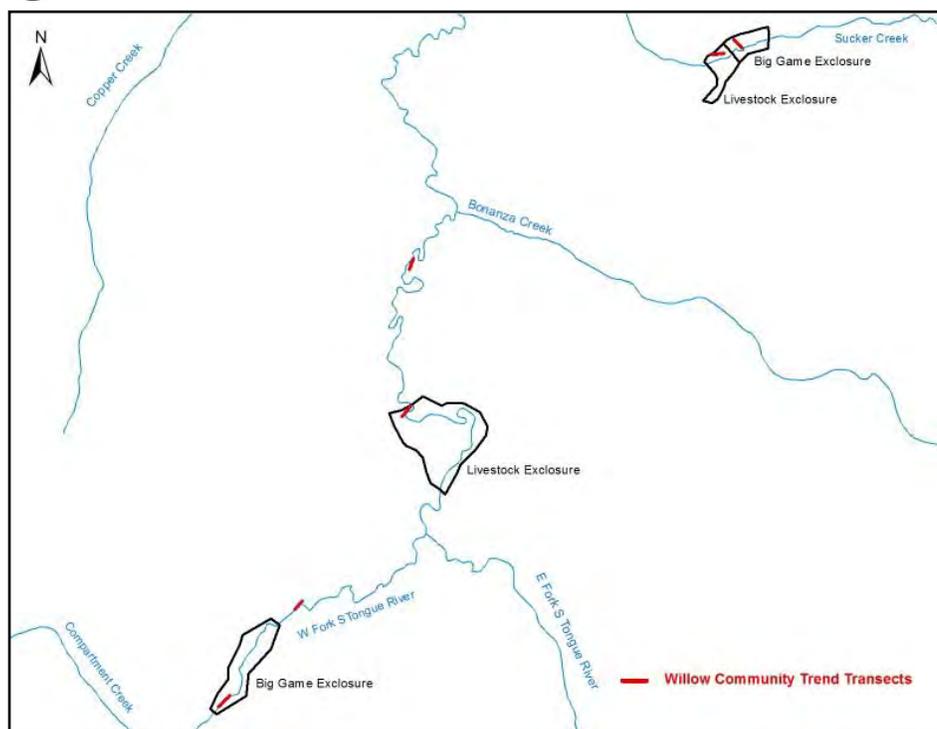
East Slope Big Horn Mountain Conservation Easement (Goal 1) – Bert Jellison

TNC and RMEF partnered to protect a northeast Wyoming landmark with two CEs totaling 2,166 acres. The HF Bar Ranch, the second oldest guest ranch in the country, supports a family business, working ranchlands, and crucial wildlife habitat. The WGFC and local WGFD staff participated in getting this easement funded, since it borders the Bud Love WHMA and involves crucial habitats for mule deer and elk. For more details concerning these CEs, TNC and RMEF news release can be viewed at:

<http://www.rmef.org/NewsandMedia/PressRoom/NewsReleases/NEWyomingLandmark.aspx>

<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/wyoming/wyoming-hf-bar-ranch.xml>

Stream and Riparian Corridor Assessment (Goal 2) – Travis Cundy



The passive stream corridor rehabilitation treatments occurring in the South Tongue River watershed provided an opportunity to begin monitoring declining willow communities. Monitoring to assess willow growth and use trends was established inside and outside exclosures (Figure 11). Our hope is to determine what the threshold or “trigger point” is when willow use by various ungulates becomes too much and willow communities begin to decline. Monitoring will continue over the next 3 to 5 years.

Figure 11. Management exclosures and willow monitoring sites located in the South Tongue River watershed.

Factors other than ungulate use may also be contributing to declining willow communities. By isolating the confounding effects of browsing, the exclosures also provide opportunities to assess if other factors (i.e. hydrology, disease, and shading) are affecting willow growth potential.

Active Stream and Riparian Corridor Rehabilitation (Goal 2) – Travis Cundy

Active rehabilitation involves identifying where natural channel and floodplain characteristics are outside the range of functional conditions observed in natural settings, and in turn, reconstructing features to emulate more functional stream and riparian conditions. Similar to passive rehabilitation, where improved land use management practices provide improved natural function, improved management practices often need to accompany active rehabilitation treatments to sustain or increase the functional improvements derived from the treatments.

Dayton Tongue River Rehabilitation

Partners including the WGFD, Town of Dayton, Sheridan County Conservation District, and WWNRT completed the Scott Bicentennial Park stream rehabilitation project on the Tongue River in Dayton. Goals were to actively improve the function of the stream and the quality of the fishery available to anglers. Rehabilitation along the one third mile long reach included placing nine channel-spanning structures to direct streamflows and improve riffle to pool habitat features, narrowing and deepening the channel along portions of the reach, and placing some streambank revetments. Based on pre- and post- rehabilitation photos, the channel was narrowed and deepened, and riffle to pool features defined to improve stream function and increase cover for fish (Figure 12).



Figure 12. A comparison of pre (A) and post (B) rehabilitation conditions on the Tongue River inside Dayton's Scott Bicentennial Park.

South Piney Creek Rehabilitation

A feasibility assessment and concept design project was undertaken at the Mead Coffeen Crossover Diversion on South Piney Creek. The dam augments streamflows to Spring Creek, which is the primary flow-through water supply for the Story Fish Hatchery. If affordable, a fish passage will be included in any future design to improve stream function at the dam.

Aquatic Habitat Assistance, Information, and Education (Goal 5) – Travis Cundy

The AHAB consulted with landowners and other agency representatives on 41 new requests for information or assistance. Ten project partnerships involving cost share or services from the WGFD are developing from either new or previous year's requests. Six additional requests are being considered for future action pending further investigation of the potential for cooperative win-win partnerships. New projects or phases of on-going projects include a cooperative stream and riparian corridor assessment along the Tongue River above Dayton, a phase-2 block grant with the Sheridan County Conservation District to make fish passage and screening objectives affordable at five diversion rehabilitation sites on the Tongue River and Big Goose Creek, a streambank rehabilitation project on the Tongue River below Rancheater, a fish passage and screening project on Piney Creek, a fish passage and stream rehabilitation project on South Piney Creek, and additional beaver transplants in the Black Hills. The six other requests being considered for future attention include fish passage or screening, and stream and riparian corridor rehabilitation projects.

Extension Services to Landowners, Organizations, and Agencies (Goal 5) – Bert Jellison

The terrestrial habitat biologist works in partnership with NRCS offices in Sheridan, Buffalo and

Kaycee to help deliver Farm Bill programs and extension services. Sixty-one landowner, consultant, and agency contacts were made this year. The more significant contacts included the following:

- WGFD personnel participated in a group consisting of the Lake DeSmet Conservation District (LDCD), BLM, NRCS and the Johnson County Weed and Pest District (JCWPD) in Johnson County to apply Plateau® herbicide within the boundary of this summer's Cato wildfire. The fire damaged habitats crucial to sage grouse. Thanks to the LDCD, JCWPD and BLM, approximately 23,500 acres were treated to help control cheatgrass and leafy spurge - two plants that threaten the quality of these habitats. In addition, the LDCD cost-shared with ranchers to reconstruct approximately 60 miles of fence.
- The NRCS - Buffalo Field Office prepared contracts to include another 175,000 acres in their SGI. To date, over 325,000 acres have been enrolled on 25 ranches. WGFD works with NRCS and the private landowners on these contracts.
- Assisted the NRCS-Sheridan Field Office with one SAFE-CRP contract. This project restored 318 of cropland to native grasslands and 96 acres to a native sagebrush community. In addition, 298 acres were enhanced by adding a forb and shrub component to native and non-native dryland hay fields. A total of 1,818 acres will be enhanced throughout the contract. All acres must be deferred from grazing for a 10 year period to assure the success of the plantings and to provide wildlife cover.
- Helped the NRCS-Buffalo Field Office and LDCD monitor sagebrush plantings that occurred after a fire in 2010.
- Assisted the Yonkee Ranch with the management of their wooded draw communities. Grants will be prepared to batch dollars for restoring these valuable habitat types.
- Assisted NRCS-Sheridan with an oxbow restoration project on the Tongue River.
- Met with BNF personnel to discuss grazing standards on crucial big game winter ranges. Literature and information were sent to support more restrictive livestock grazing standards.
- Met with BLM personnel that are tasked with reclaiming expired coal-bed natural gas fields within sage grouse habitats. They discussed habitat restoration and funding opportunities, as well as strategies for prioritizing locations.
- Met with Wyoming Army National Guard and NRCS personnel to initiate a habitat management plan process for the Sheridan Local Training Area.

Sand Creek Public Access Area (Goal 5) – Travis Cundy

Three hundred twenty four head of cattle grazed the public access area from May 28th to June 7th. This use equated to about 130 animal unit months, which is slightly above the 123 animal unit month maximum use prescribed by the lease agreement. The agreement provides fishing access on private lands in return for grazing use. The grazing lease agreement is due for renewal in April 2014.

Wildlife Habitat Management Areas (Kerns, Amsden Creek, Bud Love, and Ed O. Taylor) (Goal 2) – Bert Jellison, Seth Roseberry

The Habitat and Access Section used a range pitter to treat 183 acres on the Kerns WHMA (Figure 13). This implement creates large divots that capture moisture and stimulate forage production by breaking up sod-bound grasses. The treatment occurred on the Broderick Flats portion of the habitat area, which is one of the preferred winter foraging areas for approximately 650 elk. This habitat area has always been precariously close to having inadequate winter food supplies.

Prescribed burns were conducted on the Ed O. Taylor WHMA last spring to improve forage for wintering elk and mule deer. More than 930 elk had been counted the previous week on treated acres, so there wasn't much fuel to carry the fire. Still, a couple hundred acres were blackened (Figure 14).



Figure 13. Range pitting on the Kerns Wildlife Habitat Management Area.



Figure 14. New green forage resulting from prescribed burning on the Ed O. Taylor WHMA.

Monitoring Prairie Stream Riparian Buffer Strips (Goal 2) – Bert Jellison

Twelve riparian buffer strips are periodically monitored by terrestrial and aquatic habitat biologists via “before and after” images. These projects are the result of the NRCS, conservation districts and WGFD working with landowners to enroll riparian habitats in Farm Service Agency’s CCRP. Most of these livestock-exclusion projects are near their 15-year expiration date. The differences are miraculous (Figure 15). Because the images communicate an important message concerning the importance of managing livestock in riparian areas, a report will be prepared and distributed via the WGFD’s internet site. A report prepared in 2007 can be viewed at:

http://wgfd.wyo.gov/web2011/Departments/Wildlife/pdfs/HABITAT_RIPARIANBUFFERREPORT0000335.pdf



Figure 15. These images show the changes that have occurred from 13 years of livestock exclusion on Clear Creek, near Buffalo, Wyoming.

Wildlife Habitat Management Areas and Public Access Areas (Goal 2) – Seth Roseberry

- **Kerns WHMA:** Ten miles of crucial winter range elk fence were maintained.

- **Sand Creek PAA:** 62 acres of noxious weeds were controlled by contractor. Livestock grazing was utilized for cheatgrass and Canada thistle control in exchange for two miles of fishing access on Sand Creek.

- **Amsden WHMA:** 50 acres of hay meadow were irrigated and harvested through an AIPA with Amsden Creek Ranch (Figure 16). 10.5 miles of crucial winter range boundary fence were maintained.



Figure 16. Amsden WHMA north of Dayton.

- **Ed O. Taylor WHMA:** 20 miles of boundary fence were maintained. 27 acres of noxious weed control were completed by a contractor, primarily in the Middle Fork of the Powder River Canyon. Two wildlife water facilities were maintained; a natural spring and solar well.

- **Bud Love WHMA:** 12.6 miles of crucial winter range fence were maintained in 2012 and 34 acres of noxious weed control were completed by a contractor. One mile of electric drift fence was installed for trespass livestock control. The 8,189 acre Gilead Wildfire occurred on and adjoining the WHMA. The WHMA was utilized for crew staging. Hand and dozer lines were constructed on the WHMA for backburn purposes (Figure 17).



Figure 17. Gilead Wildfire on Bud Love WHMA west of Buffalo.