

CODY REGION

HABITAT PROJECTS

Wyoming Habitat Assessment Methodology (WHAM) Level I surveys in the Sunlight Creek watershed

Surveys were conducted on Gravelbar and Little Sunlight Creeks, tributaries to Sunlight Creek in Cody's second highest priority aquatic basin. A key component of these surveys examined Yellowstone cutthroat trout habitat and potential movement barriers.

Gravelbar Creek was inventoried from its confluence with Sunlight Creek to the headwaters, totaling 3.9 miles. From downstream to upstream, the valley transitions from flat-bottomed to steep-walled canyon with high gradient (Figures 1 and 2). Due to the geology and erosive environment, the gravel-dominated streambed is loose and active, resulting in an unstable and braided channel with few pools. These naturally occurring conditions are not favorable for fish to provide the habitat they require. The riparian area is either narrow or absent, and sediment inputs from upland areas likely occur during precipitation events. Few large-scale anthropogenic impacts were observed.



Figure 1. Flat-bottomed valley with active and braided stream channel.

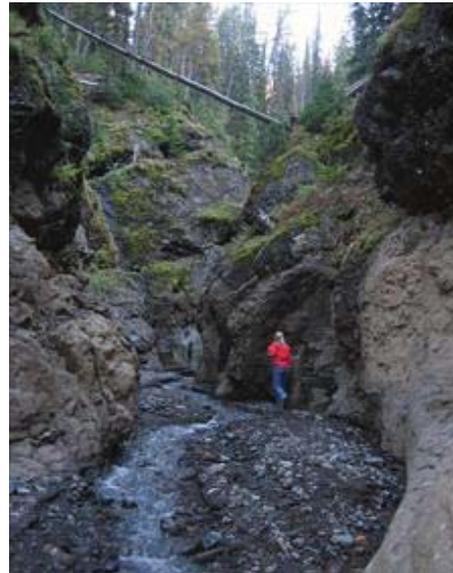


Figure 2. Steep-walled canyon with no riparian area in the headwaters.

Little Sunlight Creek was inventoried from its confluence with Sunlight Creek to the headwaters, totaling 4.6 miles. The creek passes through four different valley types, and changes in stream channel, channel units, and riparian area are visible. Although not as erosive as Gravelbar Creek, portions of Little Sunlight Creek have active and braided stream channels with minimal fish habitat, especially pools. Herbaceous vegetation and shrubs dominate the riparian area, and conifers dominate the upland. No beaver activity was observed; food supply and building materials are inadequate and likely have never supported many beaver. Elk, deer, and moose browsing was clearly evident in the riparian and upland areas. Observed impacts include invasive vegetation (Russian olive), recreation (campsites, trails, road, and road crossings), and cattle grazing.

- Rx burned 350 acres of elk winter range and mule deer transitional range in Grass Creek.
- Mechanically and chemically treated 150 acres of Russian olive and saltcedar dominated riparian habitat on the lower Shoshone River.
- Rx burned 185 acres on Polecat bench for sage-grouse habitat improvement.
- Rx burned 230 acres of conifer encroachment on elk and mule deer winter range on Heart Mountain.
- Chemically treated over 400 acres of Russian knapweed and saltcedar on Yellowtail WHMA.
- Collected 272 “training points” as part of landcover mapping effort for the Big Horn Basin.

Although both stream systems are functioning properly and naturally do not support high Yellowstone cutthroat trout densities, opportunities exist to improve watershed health. Fire suppression and conifer encroachment have limited aspen regeneration throughout the watershed and should be addressed. Management options include suppressing Russian olive, working with the United States Forest Service (USFS) to identify current and historic aspen stands and their potential for rejuvenation and enlargement, setting back succession in aspen and riparian willow stands encroached by conifer by initiating burn, cut, or chemical treatments, and coordinating with agencies concerning let burn areas within their fire control plans.

Cooperative Prescribed Fire/Mechanical Treatment Projects with the Bureau of Land Management and Forest Service

The WGFD cooperated in planning, funding and/or conducting several prescribed fire and mechanical treatments with the federal land management agencies in the Cody Region including:

Upper Grass Creek Prescribed Burn: Approximately 350 acres of sagebrush and limber pine/juniper were treated with prescribed fire on BLM, state and private lands in the upper Grass Creek drainage (Figure 3). Objective of the burn was to reduce the threat of conifer encroachment in sagebrush communities. In addition, 50 acres of aspen in the same area were mechanically treated by saw crews to eliminate conifers and promote aspen suckering. The project was funded by the WWNRT, RMEF and the BLM.



Figure 3. Prescribed burning limber pine encroachment to maintain sagebrush communities on Grass Creek.

Upper Clark's Fork Aspen Enhancement: Department and Shoshone Forest personnel planned mechanical and prescribed fire treatments for aspen communities in the Upper Clark's Fork drainage. The terrestrial habitat biologist walked aspen stands to determine potential for using fire or mechanical treatments. Over 40 acres were identified for mechanical treatment using a Gyro-Trac mulching machine and 10 acres were identified to have conifers dropped by a saw crew in preparation for prescribed burning in 2009. Funding proposals were submitted to the WGFD Trust Fund, WGBGLC, and RMEF.

Breteche Creek Prescribed Burn: Approximately 50 acres were treated with prescribed fire on the BLM Stonebridge Allotment west of Cody. The objectives were to set back conifer encroachment and maintain sagebrush communities for the benefit of mule deer and elk. The project was funded by RMEF and the BLM.

Polecat Bench Prescribed Burn: 185 acres of dense sagebrush were treated with prescribed fire on Polecat Bench north of Powell. An excellent mosaic was achieved using intensive ignition strategies and careful timing of ignition with weather conditions. The burns were conducted by the BLM Cody Field Office with assistance from WGFD. The objective was to provide patch diversity in sagebrush communities to primarily benefit sage-grouse.

Big Horn Basin Remote Sensing Based Habitat Mapping Project

A project contracted with Wyoming Geographic Information Science Center (WyGIS) to map habitat types using satellite imagery continued into a second year. Satellite imagery for the entire Bighorn Basin has been acquired and the Bighorn Basin has been divided into five geographic priority areas for completion of mapping. The first priority area was defined as the Absaroka Front, bound by the Shoshone National Forest on the west and roughly by the eastern boundaries of Park and Hot Springs Counties on the east. A two man crew consisting of Chicago Botanical Gardens students supervised by the BLM Cody Field Office collected vegetative cover data at 272 “training points” during the 2007 field season to supplement data collected by WGFD personnel in 2006. A final habitat map for the first priority area is scheduled to be complete by December 2008. The project is being funded by WGFD Trust Fund, BLM, Big Horn Basin Sage-grouse Local Working Group, State Wildlife Grants and RMEF.

Kirby Watershed Wildlife Habitat Enhancement Project

The Kirby Creek Coordinated Resource Management (CRM) group is continuing to plan and implement projects that focus on restoring ecological functions within the watershed. This project is paired with a comprehensive effort to enroll the majority of the creek upstream of the project site into Continuous Conservation Reserve Program (CCRP). Existing CCRP projects on Kirby Creek are showing a tremendous vegetative response and are providing quality habitat for beaver, mule deer, sage grouse, and migratory songbirds. Serious grazing trespass incidents within the riparian buffer of one of these projects have been addressed. The Kirby Watershed Wildlife Enhancement Project is being expanded to restore riparian habitat and stream form and function and improve range conditions within the 250,000 acre Kirby Creek drainage. Work thus far has focused on removal of grazing pressure on riparian areas, extensive water development, removal of invasive Russian olive and salt cedar, and experimental weed control of white-top. A large project has been initiated to install in-stream structures to slow water velocity and decrease the massive erosion events that are occurring. Two new in stream structures were installed in the upper reaches of Kirby Creek on Linda Reed’s property in 2007 funded by a 319 Grant and WWRNRTF. A proposal was submitted to WWRNRTF for another large in stream structure to check the velocity and sedimentation of Kirby Creek at Stan’s Folly. This project is temporarily on hold due to a lack of funding for engineering and design. Two new CCRP contracts were completed and one was initiated for landowners in 2007 that focus on riparian restoration within the drainage. Additional maintenance was completed on a check dam on Lucy Moore’s property. Permanent vegetative transects and photo points on various properties were visited, monitored and photographed. Three large scale livestock water pipelines were completed utilizing Wyoming Water Development funds. Cooperators for all projects on Kirby Creek include WGFD, BLM, NRCS, Resource Conservation and Development (RC&D), Wyoming Department of Environmental Quality (DEQ), Wyoming Water Development, Hot Springs County Weed and Pest, Hot Springs County Conservation District, and private landowners. Total project cost for this drainage thus far is \$1,286,274, excluding a portion of new contracts. The primary funding sources for this watershed include DEQ 319 funds, CCRP, WWRNRTF, Hot Springs County Weed and Pest, WGFD, EQIP, Private Grazing Lands Initiative, and private landowners.

Nowood River Riparian Enhancement Project

In November of 2007, a project was initiated to begin work to improve the riparian areas within the Nowood River Watershed. All landowners owning property adjacent to the Nowood River were contacted to determine whether there was sufficient landowner support to warrant such a project. A total of 20 contracts were initiated to control Russian olive and salt cedar on over 2,200 acres within the Nowood watershed. These contracts are for the single practice of Pest Management- initial control of Russian olive and salt cedar- however, all landowners are encouraged to implement managed grazing of riparian areas, and re-establishment of native woody species through future farm bill contracts or technical assistance. The primary funding source for this project thus far is U.S. Department of Agriculture (USDA), Agriculture Management Assistance (AMA) funds. Additional funding is being sought through WWNRTF. Cooperators for this project include: NRCS, WGFD, Washakie County Conservation District, Big Horn County Conservation District, Washakie and Big Horn County Weed and Pest, and private landowners.

Yellowtail Area Coordinated Resource Management

The Yellowtail Area CRM group continues to seek solutions to a growing invasive plant problems in the Lower Shoshone and Bighorn River corridors. The CRM consists of the four land managers on the Yellowtail WHMA National Park Service (NPS), WGFD, BLM, and Bureau of Reclamation (BOR), neighboring private landowners, the Bighorn County Weed and Pest (BCWP), NRCS, and other interested parties.

Fire Trax, Inc., Sheridan, WY, was contracted to mechanically treat 150 acres of Shoshone River riparian area dominated primarily by Russian olive. The treatments were accomplished using a Gyro-Trac mulching machine. (Figure 4).



Figure 4. Gyro-Trac machine mulching Russian olive.

Approximately 70 acres were treated in March 2007 on NPS lands within the Yellowtail WHMA (Figure 5a and Figure 5b). Additionally, the NPS and WGFD treated five acres of Russian olive with a skidsteer and Fecon Bullhog mulching attachment. Trees larger than 8" dbh were cut with a chainsaw crew. Another 80 acres on NPS lands and private lands were mechanically treated with the Gyro-Trac in October 2007.



Figures 5a and 5b. Cottonwood gallery with Russian olive before (left) and after treatment (right).

Chemical treatments of noxious weeds were conducted on approximately 400 acres within the CRM area during 2007. Spot treatments for saltcedar accounted for approximately 200 acres and the remaining areas involved Chemical treatments of noxious weeds were conducted on approximately 400 acres within the CRM area during 2007. Spot treatments for saltcedar accounted for approximately 200 acres and the remaining areas involved treatments of Russian knapweed, Russian olive, whitetop and Canada thistle. Saltcedar spot-spraying treatments were conducted in low-density infestations along the north side of the Shoshone River through a contract with a commercial applicator. Individual saltcedar plants were treated with a mixture of triclopyr and basal bark oil applied with a backpack sprayer. Also, under this contract, triclopyr stump treatments were conducted on 150 acres of Russian olive and tamarisk immediately following mechanical treatment (Figure 6). The remaining chemical treatments were conducted by BCWP and primarily targeted Russian knapweed utilizing a spray truck in various locations throughout the CRM. Chemical stump treatments were conducted on 150 acres of Russian olive and tamarisk immediately following mechanical treatment.



Figure 6. Treating cut stumps of Russian olive with triclopyr and basal bark oil.

In February 2007, 230 head of cattle were grazed in two pastures as part of a winter grazing program initiated in 2002. Cattle are confined with electric fence to small pastures strategically located throughout the Shoshone River bottom. Pastures are designed to be no wider than $\frac{1}{4}$ - $\frac{1}{2}$ mile and stretch from the river to dry upland habitat. The primary objectives are to reduce the risk of wildfire by removing fine fuels, rejuvenate grass/forb communities, and create higher quality brood-rearing habitat for upland birds.

The saltcedar biocontrol program in the Yellowtail CRM using the insect, *Diorhabda elongata* (Figure 7) continues to be monitored by the Agricultural Research Station (ARS). As of 2007, 11% of marked saltcedar plants were determined to be killed by insect herbivory. Insects have dispersed over 50% of the CRM area.



Figure 7. *Diorhabda elongata* larvae feeding on saltcedar leaves.

Boer goats have been used annually to control invasive plants since 2004. Six areas were treated with 1,040 goats in 2007. With the exception of one area that was fenced with permanent electric fence, goats were confined to designated areas through intensive herding. Areas were selected that contained a high proportion of invasive species, particularly Russian olive and Russian knapweed. The same areas are targeted each year so that repeated browsing will place stress on targeted plants.

Lovell High School, as part of their “CRM in the Classroom” program, undertook several research/monitoring projects associated with invasive plant management on the CRM area. Projects included a Russian knapweed seed viability study (Figure 8), permanent vegetative trend studies, and chemical effectiveness monitoring of Russian olive and saltcedar tamarisk treatments.



Figure 8. Lovell High School students separating Russian knapweed seed from goat pellets as part of a seed viability study for the “CRM in the Classroom” program.

Hheart Mountain Habitat Enhancement

The terrestrial habitat biologist worked with managers of TNC’s Heart Mountain Ranch and the grazing lessee to revise a grazing strategy employed on the BLM Heart Mountain Allotment and private lands. Assistance was given to the BLM Cody Field Office in conducting 230 acres of prescribed burns on the Heart Mountain Allotment (Figure 9). The objectives of the burns were to reduce conifer encroachment into sagebrush communities and to create diverse age classes of sagebrush. The burns will benefit mule deer, elk and sage-grouse.



Figure 9. Prescribed burning in conifer-encroached sagebrush communities on Heart Mountain Ranch.

Devil's Canyon Bighorn Sheep Habitat Enhancement

Approximately 70 acres of sagebrush and juniper were treated with prescribed fire in the Devils Canyon/Little Mountain area by the BLM Cody Field Office with assistance from WGFD. Treatments were located in areas where bighorn sheep use is likely to occur. The burns were funded by WBGGLC, WWNRT and BLM. Maintenance was conducted on a pipeline system delivering water to two tanks placed along the rim of Devil's Canyon. The tanks were installed in 2006 as sheep-specific watering sites and can be shut off during the cattle grazing period. The area has received two supplemental transplants of bighorn sheep from Oregon and Montana in 2005 and 2006 in an effort to boost the seemingly stagnant population of sheep originally transplanted in the 1970's. The terrestrial habitat biologist assisted the wildlife biologist in retrieving dropped VHF/GPS collars that had been placed on transplanted sheep. Locations from the collars will provide data for building a habitat selection model for this bighorn sheep population (Figure 10).



Figure 10. Radio-collared ram amongst a group near Devil's Canyon .

Gooseberry Watershed Enhancement Project

Work was continued on the Gooseberry Watershed Enhancement. This is an ongoing project in the 500,000 acre Gooseberry drainage to restore and enhance 1,750 acres of riparian habitat and stream form and function. The primary focus is the removal of invasive Russian olive and tamarisk and the restoration (Figures 11 and 12) of native woody communities through a cooperative watershed-wide effort. Approximately 9 stream miles (400 riparian acres) were mechanically treated with chainsaws and foliar treatments in the fall of 2007 as a follow up treatment to areas first treated in 2004. This was accomplished through a cooperative effort including personnel from the WGFD, NRCS, RC&D, Washakie County Weed and Pest Districts, BLM, and several private landowners.



Figure 11 and 12. Gooseberry Creek 2007 fall work days resulted in 9 stream miles of Russian olive and tamarisk re-treatment.

In the winter of 2007 a timber ax implement was used on five previously untreated private properties totaling 744 acres. All timber ax treatments were followed by a 3:1 chemical cut-stump application of Imazapyr; all foliar treatments were accomplished with a 1.5-2% solution of Imazapyr. Contracts were initiated with 2 new landowners in this drainage in 2007 including 2 EQIP contracts that total 261 untreated riparian acres. Permanent vegetative transects and photo points on various properties were visited, monitored and photographed. The total cost for projects implemented in the calendar year 2007 was \$194,697, excluding a portion of new contracts. The total project cost for the entire watershed thus far is \$1,002,024. The CCRP Riparian Buffer program has been the primary funding source used to plan, implement and complete this project. Other funding sources include EQIP, Washakie County Weed and Pest, WGFD, BLM, Washakie County Conservation District, WGBGLC, WWNRT, and private landowners.

Production/Utilization Surveys
 Regional wildlife personnel collected production and utilization data at ten sagebrush transects during April 2007 (Figure 13). Utilization at all transects has been light, only exceeding 35% of leaders browsed once at two locations in the last three years. While pointing to evidence that populations are in balance with the amount of winter forage, this may also reflect the fact that the Cody Region has experienced mild winters with big game distributed more widely over winter ranges rather than concentrating animals on crucial winter ranges where utilization studies are located. Light utilization has occurred in spite of extremely poor sagebrush production in 2004 and 2006 due to drought conditions (Figure 14).

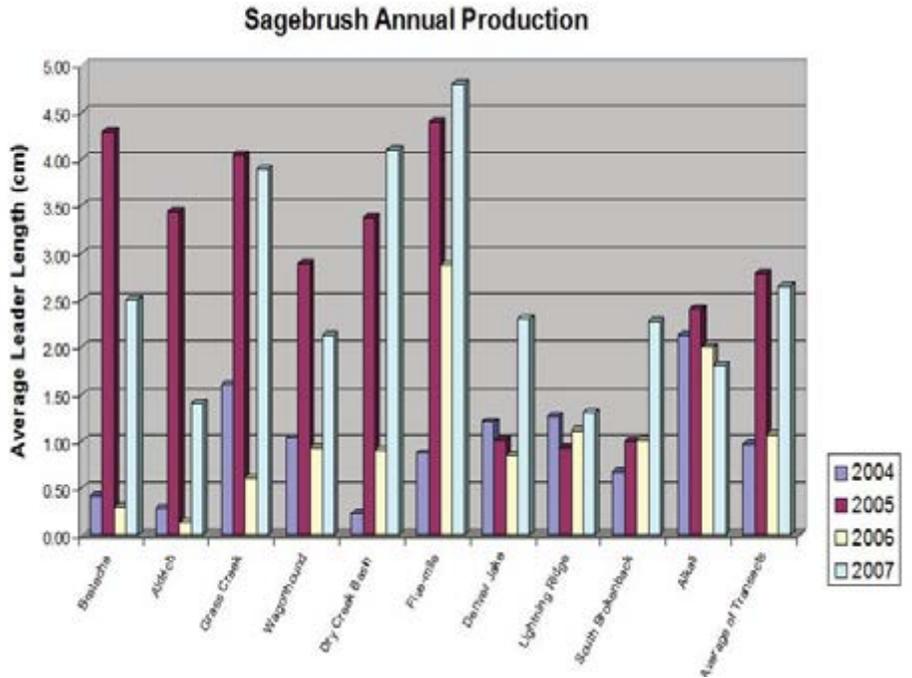


Figure 13. Utilization of sagebrush expressed as percent of that years annual leaders browsed at ten locations in the Cody Region.

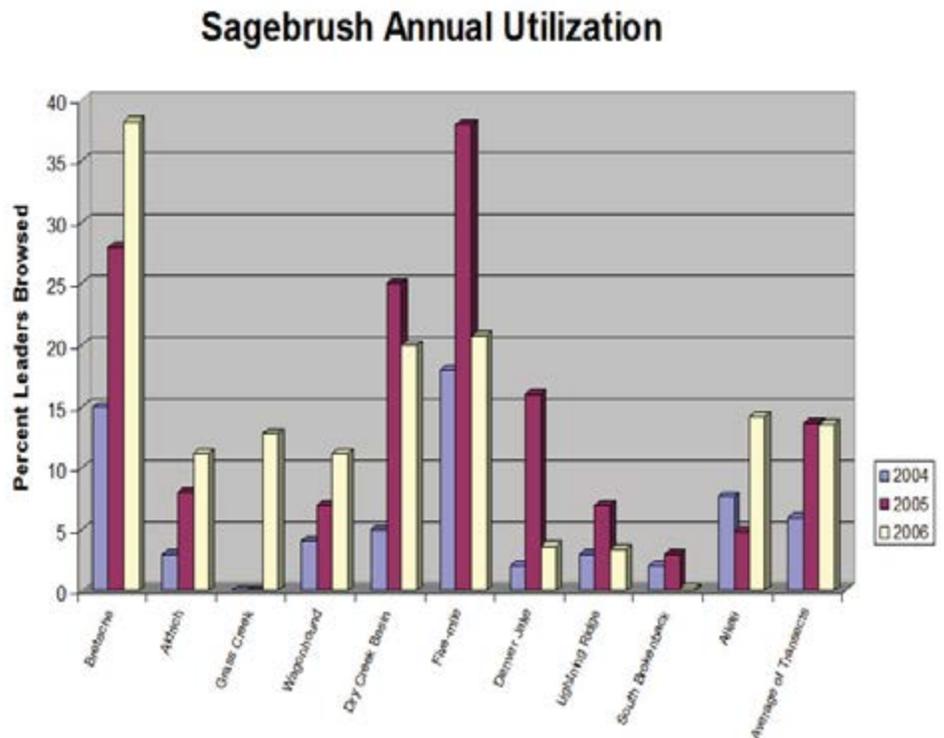


Figure 14. Annual production of sagebrush at ten locations in the Cody Region. Note the poor production in 2004 and 2006 due to extremely poor spring moisture conditions.

HABITAT EXTENSION SERVICES

Water Quality Workshop

The NRCS, Powell-Clark's Fork Conservation District, and WGFD provided a public water quality workshop in Powell this year (Figures 15 and 16). Thirty-two (32) people attended presentations concerning water quality, erosion, basin management plans, and cumulative effects on people's health, the water table, stream dynamics, fish populations, and other wildlife. Best management practices were discussed for septic systems, vegetation management (including farming and grazing), irrigation diversions, canals, and return flows. Personnel to contact for assistance were identified and potential assistance programs were discussed and provided in handouts. The workshop concluded with an on-site tour of local projects. Highlighted were: 1) a properly installed septic system in a high water table situation; 2) riparian fencing; 3) shrub and tree plantings for shelterbelts, erosion control, and wildlife habitat; and 4) a water quality/habitat improvement project involving a filter strip to clean irrigation water returning to the Shoshone River, development of fish ponds, and associated wildlife habitat. Workshop success was demonstrated by favorable comments, the number of additional tours requested, and by the number of landowners contacting NRCS and WGFD personnel expressing interest in undertaking similar projects.



Figure 15. Public listening to presentations at the Powell water quality workshop.



Figure 16. Water quality workshop tour stop at White Drain.

Terrestrial Extension Services

Forty-three landowner contacts were made, and of these contacts twenty-four resulted in contracts. Twenty contacts along the Nowood River resulted in AMA funded contracts for Russian olive and salt cedar control. Other contacts resulted in the initiation of 2 Conservation Reserve Program (CRP) contracts, and 2 completed EQIP contracts, follow-up on 4 CCRP contracts in Hot Springs, Washakie, and Big Horn Counties, assistance on 3 EQIP Wildlife Initiative contracts, and follow-up on 1 Wildlife Habitat Incentive Program (WHIP) contract.

WILDLIFE HABITAT MANAGEMENT AREAS

Medicine Lodge Conservation Easement

209 Acres were sold to Alm Ranch with the property retaining a conservation easement. The property was signed to inform the public that hunting access is allowed, along with other area specific regulations. The easement was monitored for compliance.

Sunshine WHMA Water Transport Pipeline

One-quarter mile of transport pipe was installed and buried in the Dick Creek ditch in an area prone to seepage and water loss. The ditch is the primary water source for pond filling and watering sources at Sunshine. Efficient water delivery is especially important during the current drought conditions.

Sunlight Basin WHMA Forage Utilization and Production

The utilization chart shows the average utilization of forage over the winter/spring on the irrigated meadows (Figure 17). Data for this is collected from 13 sites during late April, early May.

The meadows production chart shows average forage production in the irrigated meadows (Figure 18). Data is collected in September from 16 sites, 3 enclosure cages, and 13 sites for utilization rates to compare with production.

The natural production chart indicates production levels of non-irrigated sites above the irrigated meadows (Figure 19) from 7 sites. Data is being collected to determine optimum production to achieve maximum utilization in irrigated meadows. We are also looking at production/utilization off the irrigated meadows to see what is happening over time and to assist with the elk ecology study with Doug McWhirter.

Yellowtail WHMA Food Plots

A pea/oat/barley mixture was planted on 65 acres on the North side of Yellowtail. Twenty percent of the mixture that was planted into the farm fields was left standing along the edges or ends of the fields to provide winter forage. This same mixture is utilized in thousand pound forage bales, which are placed for winter wild turkey supplemental feeding.

OTHER SIGNIFICANT ACCOMPLISHMENTS

- Battle Park Allotment: The terrestrial habitat biologist worked closely with the Bighorn Forest range and fire staff to develop an allotment management plan and prescribed burn plan for the Battle Park Allotment.
- Sage Grouse Working Group Meeting
- Attended Big Horn County's Russian olive and salt cedar removal demonstration in Shell.
- Led wildlife habitat discussion for Worland Boy Scout Troop.
- Assisted with Washakie County SCD Bat Weekend for Worland High School students and led students on a habitat walk along Nature Conservancy trails.

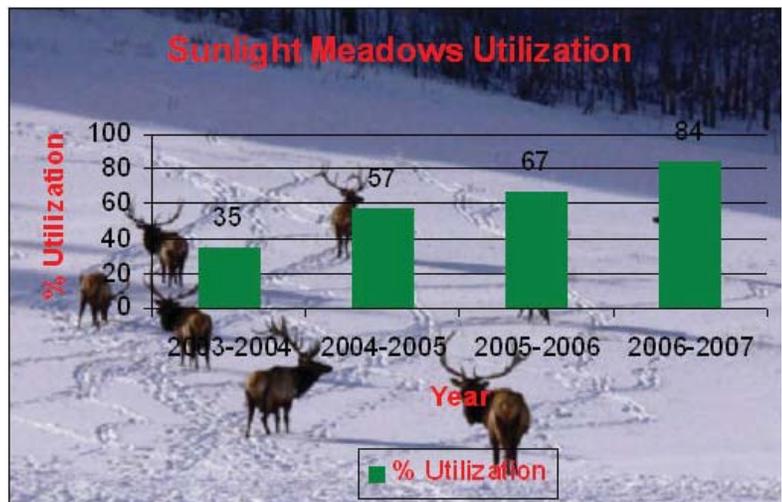


Figure 17. Average irrigated utilization on the Sunlight Meadows Utilization

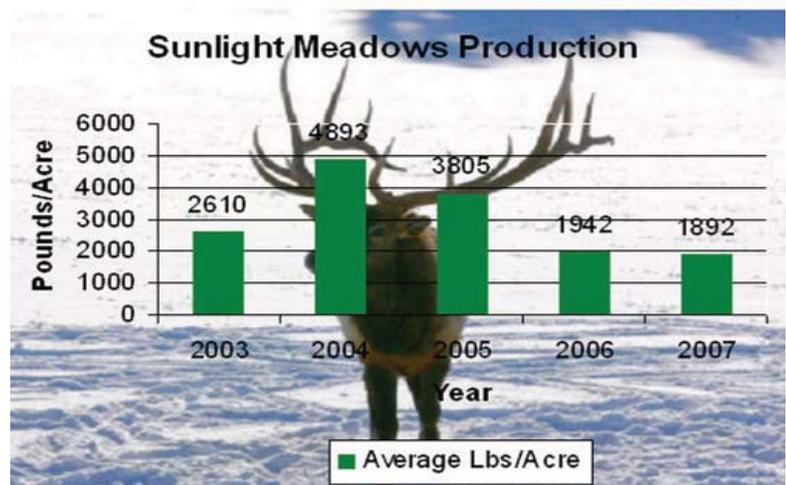


Figure 18. Average forage production on irrigated meadows on the Sunlight Basin WHMA.

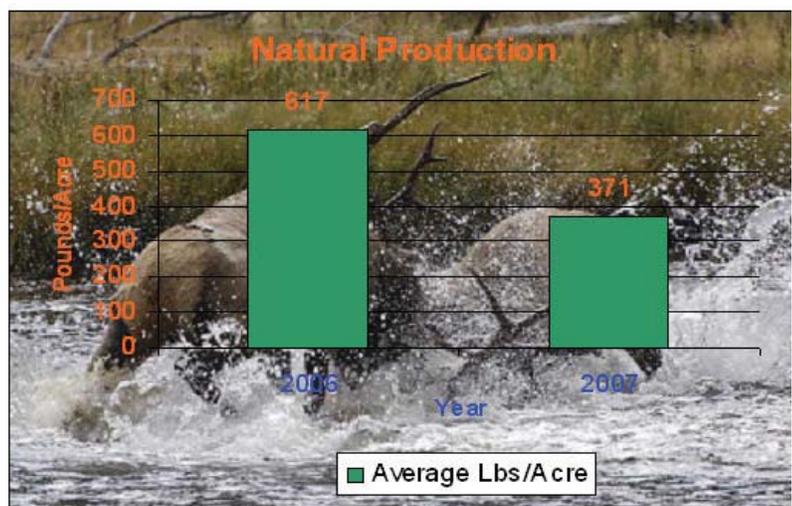


Figure 19. Average forage production on non-meadow areas on Sunlight Basin WHMA.