

Part III: Detailed Narratives of Local Project Development Team Conservation Priorities and Actions

Part III of this plan addresses the issues identified by each Local Project Development Team (LPDT) and their past, current, and proposed conservation actions and projects at geographic priority areas where LPDTs intend to focus their work over the next five to 20 years. These locations range from narrow riparian areas along river reaches to entire watersheds and even larger areas such as aspen (*Populus tremuloides*) communities or sage-grouse (*Centrocercus urophasianus*) core areas. Part III of this plan is divided into four sections based on each Wyoming Landscape Conservation Initiative (WLCI) local project development team (Carbon, Lincoln/Uinta, Sublette, and Sweetwater). During the planning phase of this report, each team was responsible for identifying issues and predominant geographic areas where conservation actions and their interests would be focused over the next five or more years. Part III also provides the necessary project level details that will enable WLCI managers to evaluate the effectiveness of conservation actions at meeting each team's conservation objectives and landscape level priorities. Each LPDT section is divided by each geographic priority area and its environmental setting, conservation issues and actions, and its relationship to existing management plans and other actions. Some geographic areas are subdivided into smaller priority areas where similar issues and priorities are being addressed.

Part III will be updated annually based on accomplishments and annual reports. Each local team should review Part III annually to ensure the changes in priorities are reflected and that accomplishments not only by WLCI participants but also by other entities and organizations are comprehensively documented.

Lincoln/Uinta Local Project Development Team Priority Areas and Actions

The Lincoln/Uinta Local Project Development Team has identified four geographic priority areas (figure 3-1). Two of the four areas (Bear River and Wyoming Range West) include smaller areas that share many of the same issues across the landscape but have differing objectives to reach their goals. The Bear River addresses the creation, enhancement, and maintenance of wetlands; improvements to the riparian ecosystems, fish passage, and invasive species. The Wyoming Range West priority area deals with maintaining and enhancing crucial habitats for fish and wildlife and their migration routes; increasing age class structure and density of aspen, sagebrush (*Artemisia* spp.), and mountain shrub species; improving watershed function to aid the restoration of the Bonneville cutthroat trout (*Oncorhynchus clarkii utah*); and invasive plant control. All four priority areas have projects designed to address invasive weed species across the landscape. The Blacks Fork & Muddy Creek Geographic Priority Area has identified improvements to riparian areas, as well as controlling invasive weed species. The RCCN (Rock Creek, Carter Lease, Cumberland, and Nugget Canyon) Geographic Priority Area addresses improvements to benefit wildlife (aspen, mountain shrub, and sagebrush treatments; connectivity between various ranges, maintaining and enhancing migration corridors and crucial habitats).

The Lincoln/Uinta LPDT has addressed all of WLCI's focal communities (aspen, aquatic, sagebrush, riparian, and mountain shrub) in these four priority areas, and will use a number of methods (mechanical, chemical, biological, or a combination of the three methods) to achieve their goals. The team has identified elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), sage-grouse, Colorado River (*Oncorhynchus clarkii pleuriticus*), Bonneville and Snake River cutthroat trout (*Oncorhynchus clarkii carmichaeli*), and leatherside chub (*Lepidomeda copei*) as species to benefit from the treatments; they have targeted cheatgrass (*Bromus tectorum*), tamarisk (*Tamarix ramosissima*), thistle species, dalmatian toadflax (*Linaria dalmatica*), Dyer's woad (*Isatis tinctoria*), perennial pepperweed (*Lepidium latifolium*), and black henbane (*Hyoscyamus niger*) as vegetative communities to control.

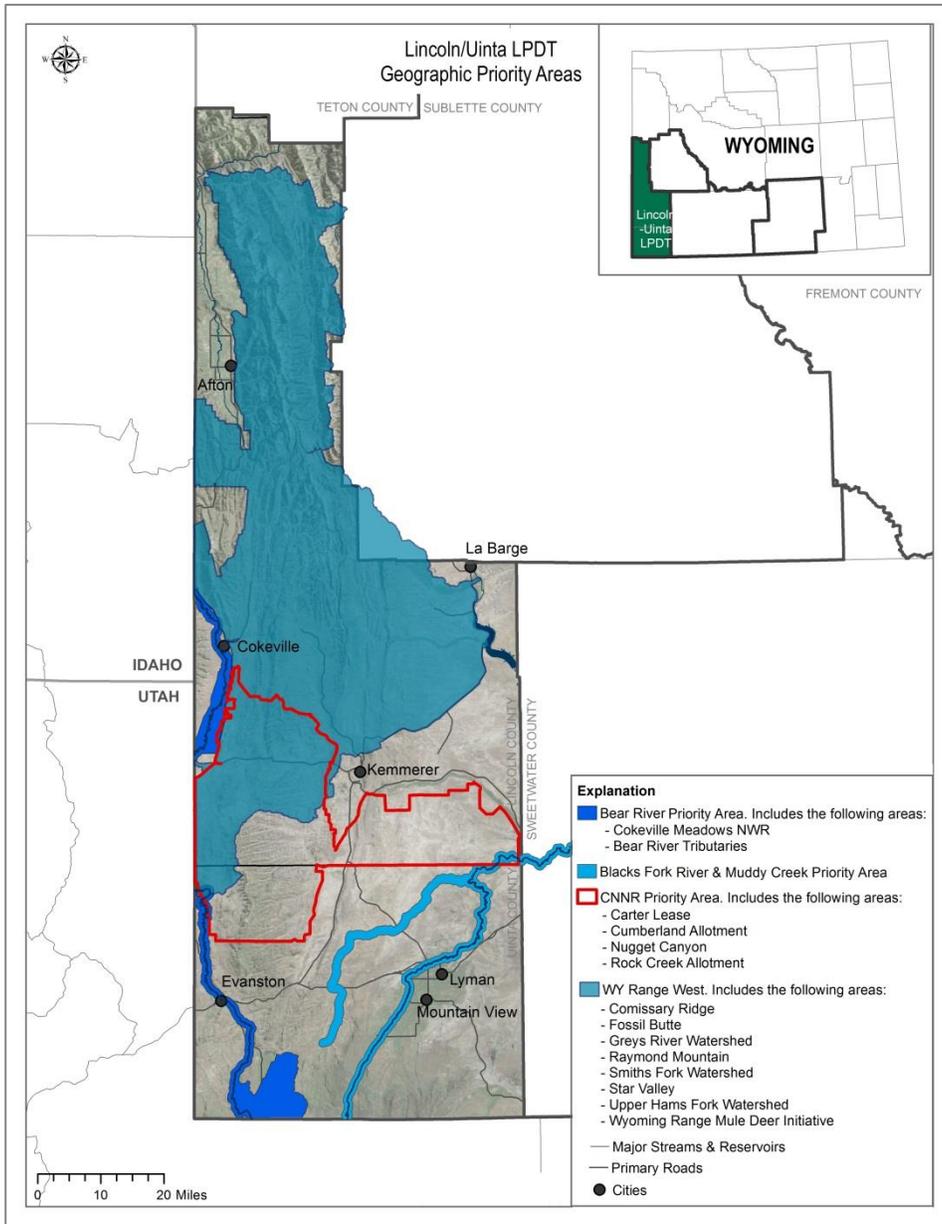


Figure 3-1. Lincoln/ Uinta LPDT geographic priority areas

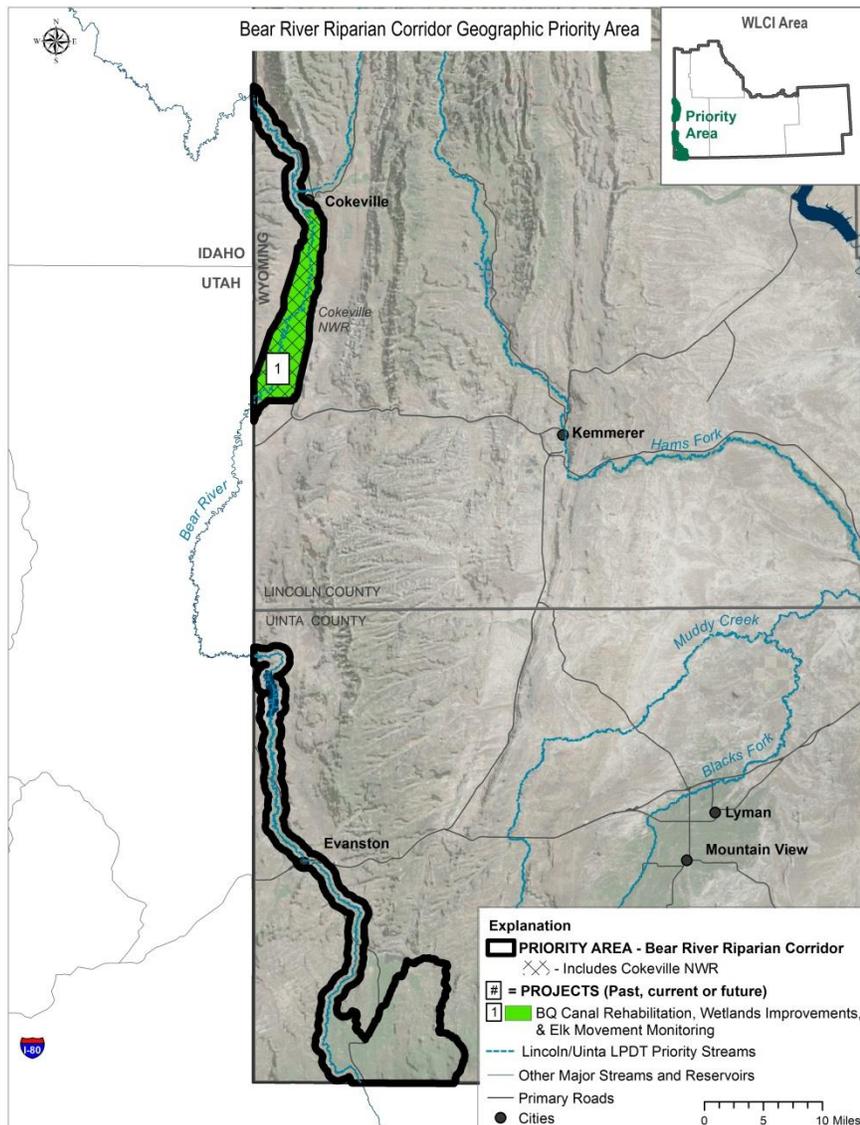
Bear River Geographic Priority Area

Environmental Setting

The Bear River Geographic Priority Area is located in western Lincoln and Uinta counties, encompassing Cokeville National Wildlife Refuge, all additional reaches of the Bear River within Wyoming, and tributaries identified for sensitive native fish species conservation. The river is the largest tributary of the Great Salt Lake, rising in northeastern Utah and draining a mountainous area and farming valleys northeast of the lake and southeast of the Snake River Plain. Agricultural water use occurs extensively along the floodplain of the river throughout the drainage. The Bear River and several of its tributaries support sensitive native Bonneville cutthroat trout, leatherside chub, and bluehead suckers (*Catostomus discobolus*). Cokeville National Wildlife Refuge (NWR)'s wetlands provide excellent habitat for a variety of migratory and resident birds and other wildlife species. The refuge supports one of the highest densities of nesting waterfowl in Wyoming, and big game species including elk, mule deer and pronghorn.

The Bear River area has been identified as a priority for conservation efforts by numerous organizations including

the U.S. Fish and Wildlife Service (USFWS Partners for Fish and Wildlife Program and Cokeville Meadows NWR), Natural Resource Conservation Service (NRCS), Wyoming Game and Fish Department (WGFD Strategic Habitat Plan), the Wyoming Bird Habitat Conservation Partnership, and the Intermountain West Joint Venture. The Bear River Geographic Priority Area has one WLCI-funded project activity (figure 3-2) and numerous partner activities which address the issues described below.



Issues

- Sensitive native fish species:** The Bear River and several of its tributaries support sensitive native species including Bonneville cutthroat trout, leatherside chub, and bluehead suckers. The Bonneville cutthroat trout is native only to tributaries of the Great Salt Lake. These Species of Greatest Conservation Need (SGCN) warrant protection because their populations have and continue to experience declines throughout their historic range as a result of hybridization and competition with non-native species, habitat degradation, and habitat loss (Wyoming Game and Fish

Figure 3-2. Bear River Geographic Priority Area and projects

Department, 2011). Specific and ongoing threats to these species include stream modification, urban expansion, declining riparian health, and de-watering (U.S. Fish and Wildlife Service, 2012).

- **Fish passage:** Partners have identified diversion structures as an issue for the Bear River, which entrain fish and act as passage barriers. Diversions may prevent sensitive fish species from migrating upstream or downstream in order to meet different life stage requirements.
- **Water quality/quantity:** Numerous aquatic issues have been presented by WLCI partners, including water temperature, sedimentation, degraded riparian habitat, and water conveyance systems (irrigation). Water depletion is the most important habitat issue that limits fisheries productivity in the river (Wyoming Game and Fish Department, 2009). Partners have identified issues of diversion structures and canals/irrigation systems in need of rehabilitation. The 7 miles of the BQ Canal running east of the Bear River has degraded. Much of the Bear River is devoid of native woody vegetation, which contributes to increased sedimentation and water temperature fluctuation.
- **Wetland, riparian and aquatic habitat degradation:** The Wyoming Department of Environmental Quality (WYDEQ) has listed the Bear River as a 303(d) impaired water body due to habitat modification and sedimentation issues (Wyoming Department of Environmental Quality, 2012). Riparian plant communities are degraded and result in streambank instability and excessive sediment inputs. Urban expansion and the removal of traditional water rights from the area are ongoing and pose a future threat to wetlands in the area that provide breeding and migratory habitat for a diversity and abundance of waterfowl, shorebirds, and waterbirds. The area's extensive wetland complex is mostly maintained by flood irrigation practices, and it has been prioritized for conservation efforts by numerous groups, including the USFWS (Cokeville Meadows NWR and Partners for Fish and Wildlife Program), Wyoming Bird Habitat Conservation Partnership, and the Intermountain West Joint Venture.
- **Invasive plant species:** The Bear River Geographic Priority Area intersects two Cooperative Weed Management Areas (CWMA's). Partners have identified perennial pepperweed, cheatgrass, Dalmatian toadflax, Dyer's woad, and saltcedar as targeted invasive species in the Bear River Divide and Highland CWMA's.

Conservation Actions and Intended Outcomes

1. B-Q Canal Rehabilitation, Wetlands Improvement, and Elk Movement Monitoring

This 2009 proposal included three separate projects that provide for improved ecosystem function at a landscape scale. The primary objective of the first project was to rehabilitate 7 miles of dike for the B-Q Canal system, which is crucial for providing dependable water flows for migratory birds, wetlands, and grazing lands on Cokeville Meadows NWR (1.2 miles) and private lands (5.8 miles). Prior to project implementation the canal system was at risk for blowouts that could disrupt water flows and erode land. The second project aimed to restore 1,300 acres of irrigated hay meadows on the refuge that were unproductive prior to project implementation. With improved irrigation efficiency and improved wildlife habitat, the area can be used as a grass bank to reduce livestock pressure on adjacent big game winter ranges. The third project was monitoring of elk movement in the West Green River elk herd. This effort initially began in 2005 by the U.S. Geological Survey (USGS), and some valuable information has been collected about habitat use. However, a larger sample size has improved the confidence levels needed to make decisions about what areas require treatments, such as temporarily shifting grazing onto the refuge's proposed grass bank.

These projects were completed in 2011 and have addressed the Bear River Geographic Priority Area issues of water quality/quantity, and wetland, riparian and aquatic habitat degradation. Rehabilitation of the BQ Canal has permitted stable, dependable water conveyance and expanded migratory waterfowl and shorebird nesting habitat as well as wetland management options. It has conserved wetland habitat by preventing erosion of the canal-dike structure and the consequential draining of approximately 5,000 acres of wet meadows located on the east side of the Bear River. The restoration of irrigated hay meadows and elk movement monitoring contributed to efforts to reduce brucellosis transmission. Overall, the three projects have taken a landscape level approach, implementing treatments that benefit various species of wildlife over a large area of southwest Wyoming. Multiple parties were involved in various aspects of these projects, including local landowners, grazing associations, WGFD, USGS,

USFWS, Bureau of Land Management (BLM), National Park Service (NPS), Rocky Mountain Elk Foundation (RMEF), and Wyoming Audubon Society.

Additional Conservation Actions Conducted by WLCI Partners

- The U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program (PFWP) provides technical and financial assistance for landowners within designated priority areas for on-the-ground habitat development. The Partners for Fish and Wildlife Program: Mountain Prairie Strategic Plan 2012-2016 (U.S. Fish and Wildlife Service, 2012) identifies the following five year targets for the Bear River Focus Area:
 - Stream enhancement: 10,000 feet
 - Riparian enhancement: 10 miles
 - Wetland restoration/enhancement: 500 acres
 - Upland enhancement: 2,000 acres
 - Fish passage: 8 units
- Several WLCI partners have identified riparian planting as a method to improve water quality and quantity for the Bear River area. Planting native vegetation along the Bear River and its tributaries would improve water quality by reducing sediment, offer better thermoregulation of water temperatures, and provide riparian habitat for fish and wildlife.
- The Conservation Districts have implemented watershed plans and water quality monitoring along the Bear River. See the Upper Bear River Watershed Management Plan (Uinta County Conversation District, Upper Bear River Water Quality Steering Committee, 2005) for specific issues, objectives and action items identified to improve and maintain water quality.
- Trout Unlimited and the PFWP have done work in the area to improve irrigation diversion structures to allow fish passage. The USFWS Cokeville Meadows NWR has made improvements to the refuge's irrigation system.
- Cooperative Weed Management Area (CWMA) strategies are being used to control the invasive weed species in the area through a variety of measures including chemical, mechanical, and biological controls. Planting of native grasses and forbs has been proposed as a measure to combat invasive species.

Timeframe

Many of these proposed actions will occur throughout the life of the WLCI Conservation Action Plan timeframe of five years and well into the future.

Relationship to Existing Plans and Other Actions

- BLM Kemmerer Resource Management Plan (Bureau of Land Managemet, 2010)
- Cokeville Meadows National Wildlife Refuge Comprehensive Conservation Plan (U.S. Fish and Wildlife Service, 2013)
- Lincoln County Conservation District annual plan and long range plan - 2010-2015 (Lincoln Conservation District, 2010)
- Partners for Fish and Wildlife Program: Mountain Prairie Strategic Plan 2012-2016 (U.S. Fish and Wildlife Service, 2012)
- Uinta County Conservation District annual plan and long range plan - 2010-2015 (Uinta County Conservation District, 2010)
- Upper Bear River Watershed Management Plan (Uinta County Conversation District, Upper Bear River Water Quality Steering Committee, 2005)
- U.S. Fish and Wildlife Service Land Protection Plan - Bear River Watershed Conservation Area (U.S. Fish and Wildlife Service, 2013)
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009)

Blacks Fork & Muddy Creek Geographic Priority Area

Environmental Setting

The Blacks Fork drainage is located mostly in eastern Uinta County and flows into a portion of Lincoln and Sweetwater counties. Using a half kilometer buffer around the streams the ownership is comprised of 60% private and 40% public. Colorado River cutthroat trout can be found in the upper reaches of the Blacks Fork drainage. As the streams flow north off of the Uinta Range the water warms and flannelmouth sucker, bluehead sucker, and roundtail chub (*Gila robusta*) are known to occur in the various streams.

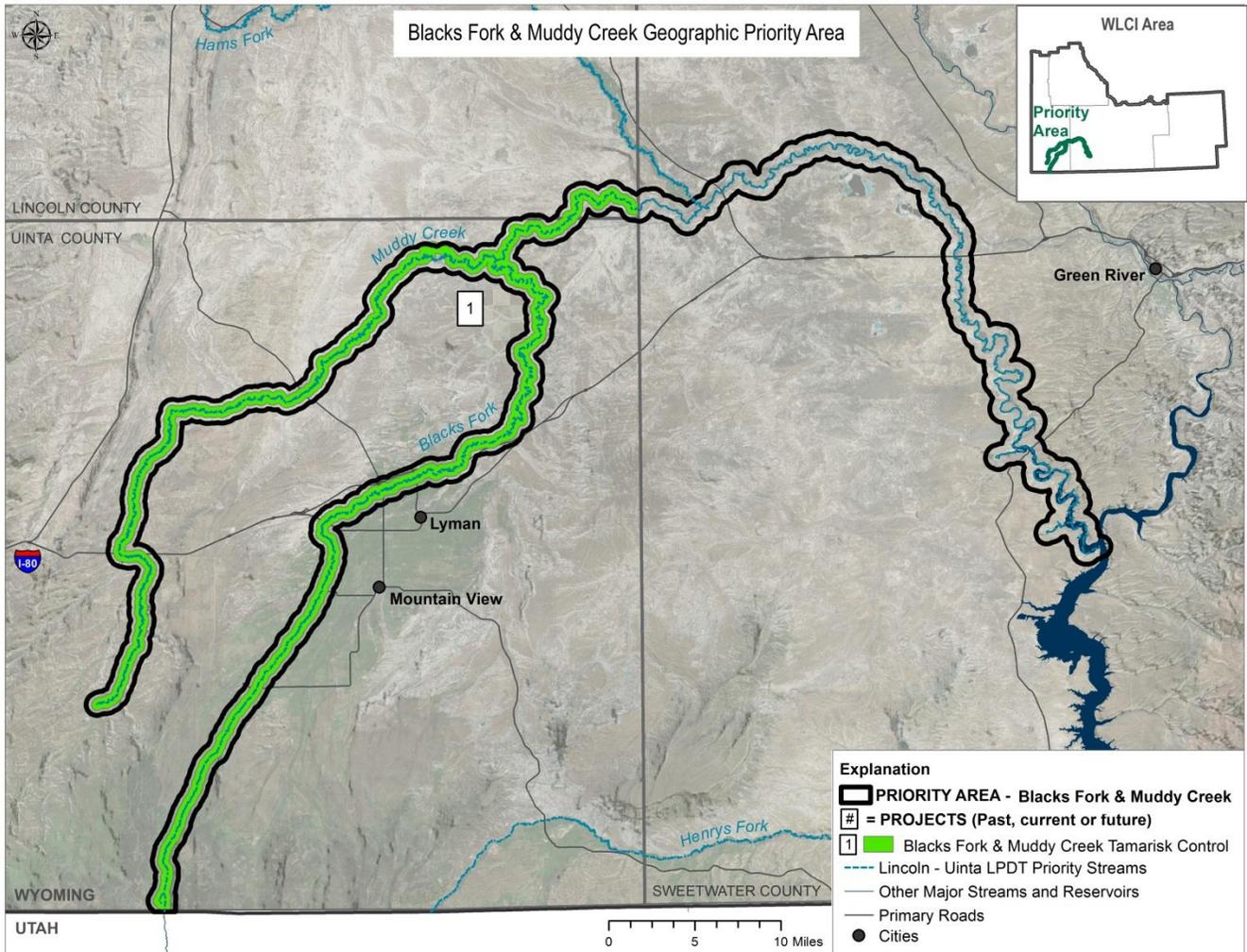


Figure 3-3. Blacks Fork & Muddy Creek Geographic Priority Area and projects

Issues

- **Invasive plant species:** Tamarisk and perennial pepperweed are common in the Blacks and Smiths Forks, Cottonwood, Gilbert, Muddy, and Willow creeks. Fortunately there is not much Russian olive (*Elaeagnus angustifolia*) and the pockets of Russian olive that do exist were planted by landowners. It has been difficult to convince these landowners to remove the Russian olive because Uinta County Weed & Pest District (UCWPD), at this time, does not have the resources to replace them with comparable sized native tree species.
- **Water quantity/quality:** Portions of the Blacks Fork drainage are listed as 303d impaired water bodies by the WDEQ due to high levels of sediment and e. coli bacteria.
- **Sensitive fish species:** Colorado River cutthroat trout (CRCT), flannelmouth and bluehead suckers, and roundtail chub are found in limited numbers throughout the drainage. The CRCT are found in a handful of streams in the upper reaches, and as the streams flow off the Uinta Range onto the sagebrush steppe the other three species are also found in limited quantities in the Blacks Fork.
- **Woody species health:** WLCI partners have reported over utilization of riparian vegetation by livestock and wildlife. The loss of healthy aspen stands to conifer encroachment has deteriorated overall watershed productivity and function, and those stands found in or near riparian areas have deteriorated or eliminated suitable beaver (*Castor canadensis*) habitat.

Proposed Actions and Intended Accomplishments

1. Blacks Fork and Muddy Creek Tamarisk Control

The WLCI has provided the UCWPD funds to chemically treat the tamarisk throughout the Blacks Fork drainage, a headwater drainage to the Colorado River. This is a long-term project with objectives to 1) minimize tamarisk from encroaching on the stream banks, 2) preserve existing riparian habitat, and 3) improve native vegetation capacities.

The UCWPD has been actively treating tamarisk on both private and public lands for three years and expects to continue to treat the species for another two. The area treated for invasive species and tamarisk consists of Uinta County and parts of Lincoln and Sweetwater counties, along portions of the Blacks Fork River, Dry Creek and Cottonwood Creek. During 2014, the Uinta County Weed and Pest (UCWP) in collaboration with a private contractor treated over 85 acres of tamarisk within a 3,803-acre area, and they additionally treated 141 acres of perennial pepperweed, Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), black henbane and hoary cress (*Carduus nutans*) within 1,775 acres. The UCWPD does not presume to fully eradicate tamarisk from the ecosystem; however they feel that they can control the species to levels where they don't necessarily have to budget for the control measures. The UCWPD has a monitoring program in place where they are monitoring past treatments and are continually looking for any new outbreaks. Private landowners have been cited as a great resource for the tamarisk monitoring program.

In addition to addressing the geographic priority area's invasive species issue, this project is also expected to enhance game corridors and crucial habitats by reducing competition between invasives and desirable native vegetation. Weed management also reportedly assists with the enhancement of sagebrush communities by limiting competition for moisture, nutrients and sunlight.

Need for Future Actions to Address Water Quality/Quantity and Sensitive Fish Species

WLCI and its partners need to develop economical alternative sources of water for the agricultural producers in the area. Southeastern Uinta County is an agricultural community with most ranchers producing hay. Those haying operations use large volumes of water, from streams, to irrigate their fields. These operations have the capacity to deplete the Blacks Fork of any water. This dewatering has negative effects on the three warm water fish species (flannelmouth and bluehead suckers and roundtail chub). The CRCT populations are also limited in numbers; however the cause is due to introduction of fish species that have outcompete the CRCT for resources. The WGFD has re-introduced CRCT into a couple of streams in the Uinta Range, but because of the expense of the treatments

to eradicate non-native fish species and installation of barriers to prevent upstream migration of non-natives, there aren't any plans to re-introduce CRCT into other drainages in the near future.

Additional Conservation Actions Conducted by WLCI Partners

- The Uinta County Conservation District (UCCD) has developed watershed plans for the Blacks Fork, Smiths Fork and Bear River to improve water quality using a cooperative, community-wide approach. They are also engaged in education and assistance components for small acreage landowners and livestock producers about Best Management Practices to improve water quality.
- Vegetative production on riparian areas is usually higher and more palatable longer than the vegetation found in the uplands. This value of riparian areas has led to over-utilization by livestock and wildlife. The UCCD is actively assisting producers to lessen the impacts to riparian areas by livestock.
- Perennial pepperweed is the UCWPD's second highest priority within the Blacks Fork drainage, and the program for pepperweed is much the same for tamarisk.
- Prescribed burns are the preferred method to increase aspen and reduce the fuel load caused by pine bark beetles. The WLCI's partners have advocated for efforts to enhance watershed segments that maintain potential for restoring aspen, willow, and other woody riparian vegetation.

Timeframe

All of the issues and methods to reduce the associated impacts will take considerable time to overcome. The non-native vegetation species will be an on-going issue that once the outbreak has been controlled will carry into the future more as an early detection and rapid response situation. Water Quantity and Quality will take time to increase, due to the public's perceptions and knowledge will take repeated educational efforts to change. The costs associated with changing an operation also have to weigh into the equation. Currently the WGFD does not have any plans to re-introduce native fish assemblages into the drainage, due to increased demands on the department for other matters and the costs associated with the treatments. Increasing the health of aspen and riparian communities will also be a long-term project because of the large amounts of land that it takes to reduce the browse pressure on both systems.

Relationship to Existing Plans and Other Actions

- Blacks Fork & Smiths Fork Rivers Watershed Management Plan (Uinta County Conservation District, Blacks Fork/Smiths Fork Water Quality Steering Committee, 2005)
- Uinta County Conservation District annual plan and long range plan - 2010-2015 (Uinta County Conservation District, 2010)
- UCWPD CWMAs
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009)
- USFS Ashley National Forest Land and Resource Management Plan 1986, revisions 2009 (U.S. Forest Service, 2009)

CCNR Geographic Priority Area (Carter Lease, Cumberland Allotment, Nugget Canyon & Rock Creek)

Environmental Setting

The CCNR Geographic Priority Area is composed of mixed federal, state and private lands in both Lincoln and Uinta counties. It includes three priority BLM grazing allotments (Carter Lease, Cumberland Allotment and Rock Creek) and Nugget Canyon, an important section of a big game migration route. Numerous big game migration routes, transitional ranges and crucial winter ranges exist within the area. It overlaps with the Wyoming Range West Geographic Priority Area and supports the Wyoming Range Mule Deer Herd. It has been identified as high quality sage-grouse habitat and the majority of it is designated as sage-grouse core area. CCNR lies within Ruby

Pipeline priority areas, which are used to help minimize potential impacts to the sage-grouse and pygmy rabbit (*Brachylagus idahoensis*) that arise from the construction and operation of the Ruby Pipeline Project.

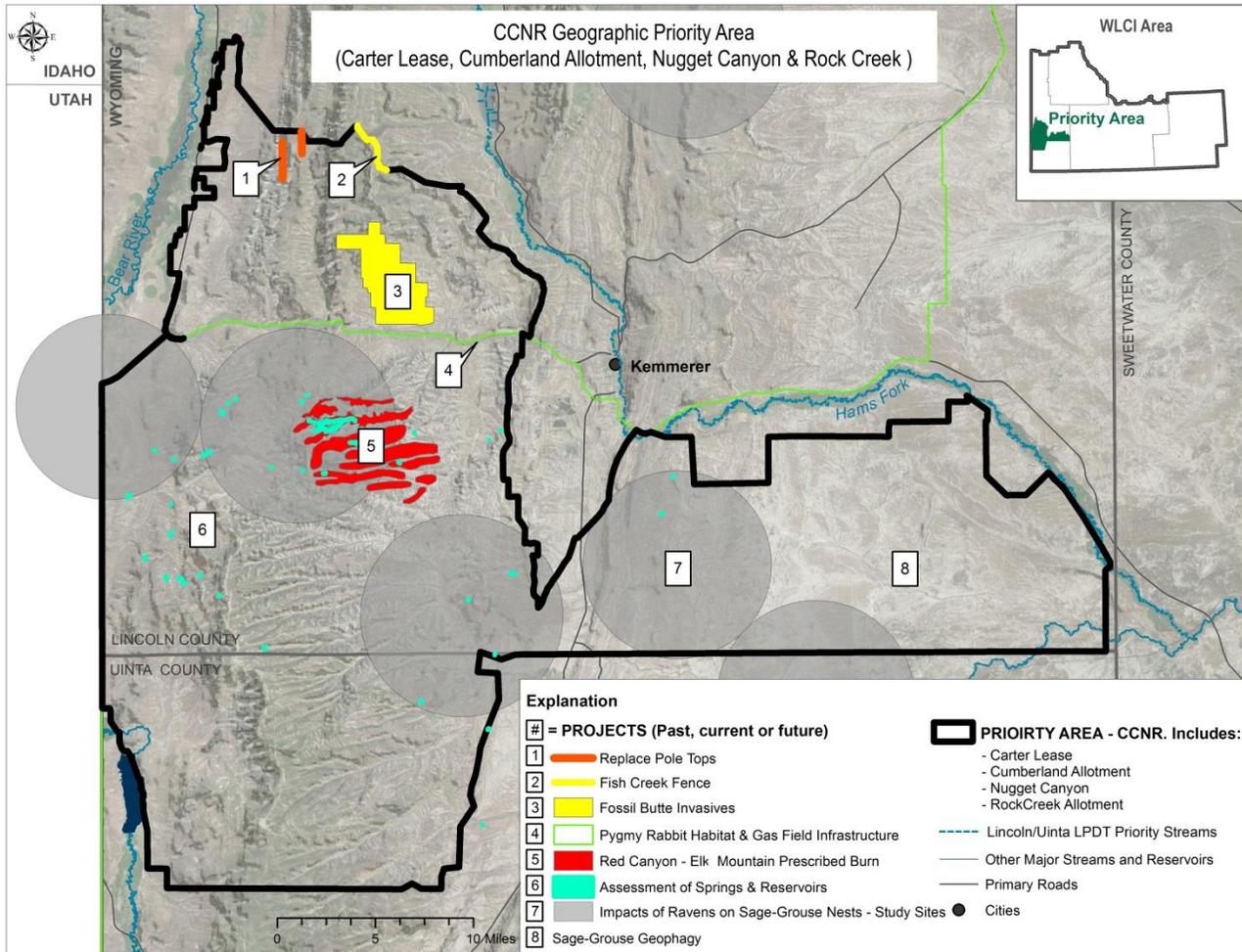


Figure 3-4. CCNR Geographic Priority Area and projects

Issues

- Migration corridor maintenance and big game passage:** The CCNR Geographic Priority Area includes migration corridors used by mule deer, elk, moose and pronghorn. Older fences in this priority area were not typically designed for safe and efficient passage for wildlife. Many noncompliant fences impede big game passage causing wildlife stress, injury, and mortality. Road crossings and energy development fragment important habitats and threaten the ability for big game to migrate seasonally between crucial habitats. Partners have identified a need to address the high number of vehicle-wildlife collisions U.S. Highway 189 with the construction of highway overpasses and underpasses. **Big game habitat degradation:** The quality of certain transitional and crucial winter ranges for elk, mule deer, and pronghorn have been identified as issues by LPDT members. Aspen and mountain shrub communities reportedly lack age class diversity.
- Invasive plant species:** Numerous invasive species are competing with native vegetation in the CCNR Geographic Priority Area. Eleven species are targeted on Fossil Butte National Monument including Canada

thistle, bull thistle (*Cirsium vulgare*), musk thistle, cheatgrass, flixweed (*Descurainia sophia*), spotted knapweed, yellow sweetclover (*Melilotus officinalis*), and henbane.

- **Sensitive wildlife species:** Sage-grouse and pygmy rabbits (*Brachylagus idahoensis*) inhabit the area and factors contributing to population declines include habitat loss, fragmentation and degradation. Raven depredation of sage-grouse nests is also a potential issue for the grouse. Partners have identified the need for a better understanding of these species' habitat requirements, behavior, and responses to energy development. WLCI is supporting several research projects in the area to address this need.

Conservation Actions and Intended Outcomes

1. Replace Pole Tops (BQ Pole Top Fence)

This completed project entailed replacing approximately 1.5 miles of pole top fence on the Rock Creek Allotment between the Beaver Creek pasture and Antelope pasture. The original top wire of this fence was removed and replaced with a wooden pole top years ago because wildlife was getting caught in the wire. The fence modification successfully allowed for better wildlife movement and passage, but the old poles rotted to the point that new poles were needed to make the fence functional.

The BLM Kemmerer Field Office used WLCI funding to purchase 495 (16-foot) poles in 2014, and permittees provided the labor for this project. After BLM purchased the poles, the permittees picked them up, hauled them to the site, removed the old top poles and successfully installed the new poles on 1.5 miles of fence. This pole replacement project addresses the CCNR Geographic Priority Area's issues of migration corridor maintenance and big game passage by helping to control livestock while allowing for free movement of wildlife species within a migration route.

2. Fish Creek Fence

The objective of this completed project was to improve migration corridor barriers for elk as well as pronghorn, moose and deer populations moving through the southwestern boundary of the Kemmerer BLM Field Office. Specifically, this project converted 3 miles of sheep wire with two top strands of barbed wire to BLM wildlife friendly fence standards. Prior to project implementation, the Fish Creek Fence entangled big game species and impeded their migration.

WLCI partners worked collaboratively to meet objectives for the Fish Creek fence. The BLM used WLCL funds to purchase materials in 2011 and permittees provided labor. This fence conversion project addresses the CCNR Geographic Priority Area's issues of migration corridor maintenance and big game passage. It provides habitat connectivity between seasonal ranges for elk and other species, reducing injury, stress and mortality during migration.

3. Fossil Butte Invasives

See the Wyoming Range West Geographic Priority Area narrative (Conservation Actions and Intended Outcomes section) for project details.

4. Pygmy Rabbit Habitat & Gas Field Infrastructure

The three main objectives for this study are to 1) relate pygmy rabbit spatial distributions to variation in habitat structure, 2) characterize habitat composition at heavily used, seldom used, and unused areas, and 3) relate pygmy rabbit site occupancy to gas well, well pad, and road densities on the Moxa Arch gas field and other areas within the Ruby Priority Area. Surveys were completed at 28 sites in 2012, 50 sites in 2013, and 82 sites in 2014. USGS used field data to develop and refine a statistical habitat model for the Kemmerer Field Office area, and validated its efficacy by surveying sites in 2014. The tools, products and information generated from this project

include an up-to-date habitat map (including marginal habitat and non-habitat), a map predicting current distribution, and information on levels of gas field development that are compatible with continued pygmy rabbit site occupancy. A paper was published in the *Journal of Fish and Wildlife Management* in 2014 containing an empirical statistical description of the habitat relationships of pygmy rabbits. A final report will be submitted to WLCI and to BLM during 2015.

This project addresses the CCNR's sensitive species issue, particularly the need for a better understanding of pygmy rabbit habitat and its relation to energy development infrastructure. The pygmy rabbit habitat map may be used to identify and conserve areas of habitat when any developmental action is planned. The map may also identify areas where habitat enhancements are expected to aid colonization and occupancy. Information resulting from this project may be used during new gas field planning by helping guide the spatial location and compatible densities of well pads and roads in areas where pygmy rabbit conservation is a management priority.

5. Red Canyon - Elk Mountain Prescribed Burn

The primary objective of this project was to improve vegetative communities in the Elk Mountain area of the Cumberland Allotment and Red Canyon area of the Twin Creek Allotment. Prescribed burning was conducted in a mosaic pattern to rejuvenate mountain shrub communities and decadent aspen stands. A total of 10,000 acres were burned within a 20,000-acre project area on federal, state and private lands. A monitoring plan has been developed to evaluate the success of this project. This plan includes photo points, and vegetation monitoring transects that have been established in the key vegetation types throughout the project area. Although this project has been completed, partners have identified an additional area south of this project location that could benefit from prescribed fire treatments.

The Red Canyon – Elk Mountain Prescribed Burn included a special emphasis on improvement of the age class and diversity of plant communities. Historically, some of this area has been classified as transitional and yearlong range for mule deer, elk, and pronghorn. Healthy aspen, mountain shrub, grassland/forb and riparian communities are important parturition and fawn rearing areas for big game. Improving transitional habitat may help hold pronghorn and deer in transitional areas, saving crucial areas for more critical periods during the winter. As other treatments are initiated in crucial winter range areas, this project may help relieve the issue of loss of forage by providing it in transitional areas. Other wildlife expected to benefit from this treatment include small mammals, and a variety of birds including brood rearing areas for sage-grouse. Therefore, this project addresses the CCNR Geographic Priority Area's sensitive species and big game habitat issues. Other prescribed fire treatments in the area have improved habitat and benefited sage-grouse as shown in the master's study completed by Steve Slater "Sage grouse use of different aged burns in southwest Wyoming".

6. Assessment of Springs and Reservoirs

This project initially focused on the mapping and inventory of springs, seeps and reservoirs in sage-grouse core habitat within the Ruby Priority Area. In recent years, efforts have expanded across a larger landscape and data analyses have been initiated to guide future conservation efforts. All data gathered is being used, in combination with sage-grouse leks, wintering areas, concentration areas, severe winter relief, brood-rearing habitat and vegetation modeling, to prioritize areas for spring or reservoir development to aide in sage-grouse habitat conservation.

Since 2011, WLCI funds have supported an intern to locate natural water sources, map the perimeter, and document the species using each water source. As of 2014, 262 reservoirs, comprising 156 acres, have been mapped and inventoried. In addition, 71 springs and seeps, comprising 123 acres, have been mapped and inventoried within the priority area. Monitoring and inventory was focused in one allotment within the Ruby Priority Area as well as two allotments outside the priority area in 2013. Using data collected from this project, in combination with USGS sagebrush models, existing BLM data and WGFD wildlife observations, BLM was able to create a brood-rearing habitat model. Adding new information to the model will increase model accuracy and allow for more informed future decisions. USGS plans to contribute to inventory and mapping efforts in future years.

This project addresses the CCNR Geographic Priority Area's sensitive species issue because it helps to protect critical sage-grouse brood rearing habitat. Reducing or eliminating the possibility of losing water sources helps to ensure the sustainability of numerous fish and wildlife populations in the area in addition to sage-grouse. For example, there are a few known locations of northern leopard frogs within the project area. The identification of water sources and the species using that source could reveal new population locations, and could eventually help keep species from federal listing. Understanding water use in the area may allow the BLM to work with other groups and landowners/permitees to develop strategies that encourage responsible water use for all species.

7. Impact of Ravens on Sage-Grouse Study

This study compared sage-grouse nesting success and productivity in raven removal and non-removal study sites. Increased anthropogenic development (energy development and urbanization) was suspected to have a negative impact on sage-grouse nesting success and productivity as a result of increased raven populations and raven depredation of sage-grouse nests. The goal was to identify a method to mitigate adverse impacts of anthropogenic development on sage-grouse. Over the course of this study, 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.

The Impacts of Ravens on Sage-Grouse study addresses the CCNR Geographic Priority Area's sensitive species issue by examining a potential factor contributing to declining sage-grouse populations. It helps to provide a better understanding of the threats faced by the species.

8. Sage-Grouse Geophagy (Enhancing Fitness or Gizzard Envy: Are Sage-Grouse Selecting Winter Habitats in Southwestern Wyoming with an Eye Towards Eating Dirt?)

Sage-grouse geophagy, or intentional ingestion of dirt, was documented in Sublette County, Wyoming during the winter of 2012-2013. While it is well-known for a variety of other birds and mammals, it has never before been described for sage-grouse. The objectives for this project are to 1) determine if soil characteristics in areas where geophagy has been documented differ from those of other available soils and food items, and 2) document and verify additional geophagic locations in southwestern Wyoming frequented by sage-grouse through the use of motion-activated or video cameras to verify geophagy use at potential locations. Ruby pipeline funds, administered by the WLCI, are supporting this project. The study area encompasses the Kemmerer, Pinedale, and Rock Springs BLM field offices.

In 2014, nine sites were verified and soil samples were collected and analyzed; eight random samples were collected and tested. Initially, 12 female sage-grouse were to be trapped and equipped with GPS radio-transmitters; however, four of the radio transmitters had problems and were sent back to the supplier for upgrades. These four transmitters and 5 game cameras were deployed in Fiscal Year 2015. The sample size of GPS equipped sage-grouse expanded by ten through the information sharing by another project aimed at understanding the sage-grouse's summer use of National Forest Service Lands. The winter locations of the ten additional sage-grouse will be shared with this project. Future plans include further investigating how to map geophagy sites in a GIS for use in spatial modeling. Conclusions and products from this project may benefit the assessment and identification of sage-grouse winter concentration areas throughout southwest Wyoming.

The landscape priorities addressed by this project are Sagebrush Maintenance, Enhancement and Restoration and Maintenance of Quality or Crucial Habitats. Products will support further development of a transparent, scientifically-rigorous and defensible approach to the spatial identification of crucial seasonal habitats. Direct application of this information within the WLCI project area includes development of the Normally Pressured Lance (NPL) formation. This project aims to further understand a component of sage-grouse winter habitat selection that has never been studied prior to these efforts. This research could identify ecological and behavioral components that may result in better knowledge of the species and its habitats—information critical for informing future conservation actions.

Timeframe - Projects are planned to continue for the duration of the Conservation Action Plan and into the future.

Relationship to Existing Plans and Other Actions –

- BLM Kemmerer Resource Management Plan (Bureau of Land Management, 2010)
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009)

Wyoming Range West Geographic Priority Area

Environmental Setting

The Wyoming Range West Geographic Priority Area encompasses 1,650,895 acres of Lincoln and Uinta counties. It includes several smaller areas identified as priorities including Commissary Ridge, Fossil Butte National Monument, Raymond Mountain, the Greys River, Smiths Fork, and Upper Hams Fork watersheds, and Wyoming Range mule deer habitat prioritized by the Wyoming Range Mule Deer Initiative. It provides important habitat for the threatened lynx (*Lynx canadensis*) and crucial winter and year-long habitat for big game including elk, mule deer, moose (*Alces alces*), and bighorn sheep (*Ovis canadensis*). Commissary Ridge supports the southernmost stand of whitebark pine (*Pinus albicaulis*) in Wyoming. The Greys River, Hams Fork and Smiths Fork watersheds contain three sensitive cutthroat trout species, the Bonneville (*Oncorhynchus clarki utah*), Colorado River (*Oncorhynchus clarkii pleuriticus*), and Snake River (*Oncorhynchus clarki behnkei*) cutthroat trout. WY GAP data classifies a large portion of the Greys River Watershed as the highest ranking for species diversity (gapanalysis.usgs.gov/gap-analysis).

The Wyoming Range West overlaps portions of two other priority areas: 1) CCNR (Carter Lease, Cumberland Allotment, Nugget Canyon & Rock Creek), and 2) Wyoming Range East. Eighteen WLCI-funded projects have been initiated in the Wyoming Range West, nine of which are discussed in the narratives of the overlapping priority areas.

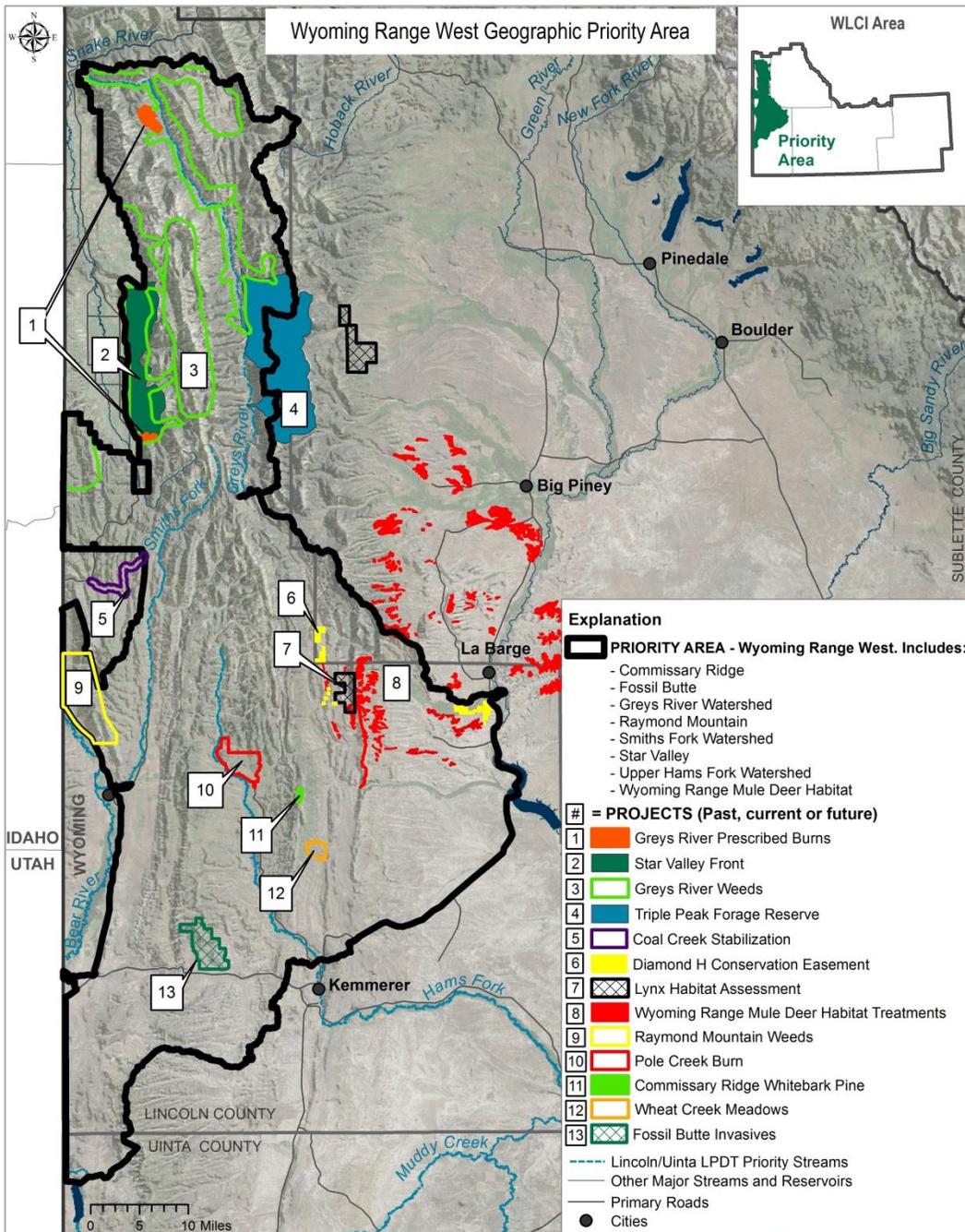


Figure 3-5. Wyoming Range West Geographic Priority Area and projects

Issues

Invasive plant species (*Fossil Butte and Raymond Mountain*): A myriad of invasive plant species are found throughout the Wyoming Range including black henbane, cheatgrass, Dalmatian toadflax, Dyer’s woad, leafy spurge (*Euphorbia esula*), perennial pepperweed, spotted knapweed (*Centaurea maculosa*), thistle species, yellow clover (*Melilotus officinalis*), and yellow toadflax (*Linaria vulgaris*). Dalmatian toadflax and Dyer’s woad are decreasing wildlife forage on Raymond Mountain and spotted knapweed (over 2,000 acres documented) is the primary invasive species issue on the Bridger-Teton National Forest lands within the priority area. Eleven different species are targeted on Fossil Butte National Monument.

- **Watershed health (*Greys River, Hams Fork, and Smiths Fork Watersheds*):** The Greys River, Hams Fork and Smiths Fork watersheds contain three sensitive cutthroat trout species, the Bonneville(BCT), Colorado River (CRCT), and Snake River(SRCT). Sediment contribution from the Coal Creek road is an important issue for BCT (Wyoming Game and Fish Department, Bureau of Land Management, 1979). All three watersheds are contending with beetle killed timber, aspen and mountain shrub communities are in advanced succession, fish passage is an issue, increased sediment is reaching the streams due to unstable banks, and beaver habitat is limited. The Hams Fork below Kemmerer, the Smiths Fork, and the Salt River are on the WYDEQ 303(d) list of impaired water bodies due to high levels of coliform (Wyoming Department of Environmental Quality, 2012). The Star Valley area is experiencing increased development in the form of subdivided ranches, which is contributing to water quality and quantity issues since zoning does not prohibit people from building close to aquatic resources.
- **Woody species health:** Commissary Ridge supports whitebark pine, an Endangered Species Act candidate species, and the area is in need of restoration. Subalpine fir (*Abies lasiocarpa*) is competing with the keystone species, and mature stands of whitebark pine face issues of extensive (over 70%) mountain pine beetle infestation and white pine blister rust. The USFS completed an assessment of aspen health in the Star Valley area and have prioritized those stands which also are in need of restoration efforts. **Declining mule deer populations:** WGFD has reported no sustainable growth of the Wyoming Range mule deer population since the late 1990's. This stagnation is likely due to a combination of changes in habitat conditions, harsh winters, and current land use (habitat fragmentation due primarily to energy development) on core winter ranges. In the 18 years prior to the release of the Wyoming Range Mule Deer Plan (1992-2009), overwinter losses have been above normal on one or more winter ranges every 2 to 3 years (Wyoming Game and Fish Department, 2011). The plan identifies winter ranges as a limiting factor for mule deer and a priority for habitat enhancement. Habitat loss and fragmentation has occurred within the focus areas as a result of energy development, recreation, and other intensive land uses.
- **Big game crucial winter range habitat degradation:** The Wyoming Range Mule Deer Habitat Management Plan (Damm & Randall, 2012) reports that sagebrush communities within the plan focus areas lack recruitment and age class diversity. Moderate to excessive hedging of shrubs occurs within many areas, and particularly on crucial winter ranges. Mixed mountain shrub recruitment is very low in these communities. La Barge and Fontenelle crucial winter habitats have been identified by partners as areas of concern, which overlap the Mule Deer Focus Areas. The BLM has identified the North La Barge area as a priority to address issues of riparian health. Riparian vegetation in this area is grazed heavily from May through October. Invasive species including cheatgrass and halogeton have been identified as an issue in the Wyoming Range Mule Deer Habitat Management Plan. Partners have also identified declining winter range habitat (aspen, mountain shrub and sagebrush communities) conditions in the Star Valley. The area reportedly lacks age-class diversity and sufficient frequency and extent of fires.

Conservation Actions and Intended Outcomes

1. Greys River Prescribed Burns

In 2008, the USFS proposed a multi-year project consisting of several prescribed burns within the Greys River Ranger District of the Bridger Teton National Forest. The primary objective of the project was to restore aspen habitat on one of the most important elk calving areas for the Afton herd, improving habitat for big game and other aspen dependent species.

An aspen assessment was funded by the WLCI in 2008 to 1) determine locations and distribution of aspen stands in the district in need of treatment, and 2) prioritize stands relative to level of risk. Assessment information gathered was used to formulate an aspen treatment schedule. The Lower Cottonwood Creek burn was conducted over a two year period, with 400 acres of aspen and juniper treated in 2008 and 260 acres completed in 2009. The Bradley Mountain prescribed burn treated 4,610 acres in September of 2009. In 2010, the Weiner Creek burn reportedly restored 1,500 acres of aspen habitat. Additionally, 30,000 acres of aspen habitat were assessed. Prescribed burning was implemented as described in USFS burn plans. To meet the resource objectives of burn plans, mechanical

treatments were used to support and supplement prescribed burning. Mechanical treatments were used to support black-lining efforts, increase the amount of ground fuels to improve fire spread, increase mortality of conifer trees and aspen stems, and to reduce or eliminate conifer trees within aspen stands with a high risk of loss.

The Greys River prescribed burns addressed the Wyoming Range West priority area issues of woody species health, declining mule deer populations, and crucial winter habitat degradation. Aspen restoration occurred in important transition and winter ranges for big game including mule deer, elk and moose. Partners include the BLM, USFS, WGFD, NPS, RMEF, Wyoming Wildlife and Natural Resources Trust, (WWNRT), Wyoming Sportsmen for Fish and Wildlife, Western Wyoming Resource Conservation and Development, and Star Valley Conservation District (SVCD).

2. Star Valley Front

This multi-year prescribed burn project aims to improve the condition of mountain shrub, sagebrush and aspen communities along the Star Valley Front. The USFS-led effort began in 2012 and is planned to continue through 2033, burning approximately 1,000 to 2,000 acres per year for a total treatment area of 36,792 acres. The project plays a part in a larger effort initiated by WGFD in the early 1980's to improve big game winter range on the Star Valley Front. Partners have reported adverse impacts of declining habitat conditions on several migratory bird species in addition to mule deer, elk and moose. Mountain shrub, sagebrush and aspen communities lack age-class diversity and have been impacted by an insufficient frequency and extent of fire in the area.

The Star Valley Front project is currently in the planning phase, and WGFD has contributed funding for the required NEPA analysis. Project management plans are being developed with a goal of achieving the long-term desired condition as outlined within the Greys River Landscape Scale Assessment (U.S. Forest Service, 2004) and the Middle Greys River Watershed Assessment (U.S. Forest Service, 2005). The Teton Fire Effect crew will conduct pre- and post-burn monitoring.

The Star Valley Front project addresses the Wyoming Range West priority area issues of big game crucial winter habitat degradation, woody species health, watershed health, and declining mule deer populations. Intended accomplishments of the project include increased vigor of mountain shrub, sagebrush and aspen communities, and an increase in plant cover of these communities by reducing conifer encroachment. Treatments are expected to benefit numerous aspen-dependent species including elk, mule deer, moose, and migratory birds.

3. Greys River Weeds

This project entailed treatment, inventory and monitoring of noxious weeds within the USFS Greys River Ranger District from 2012 to 2014. The highest priority for noxious weed treatment was road and trail corridors where spotted knapweed, leafy spurge, and yellow toadflax could quickly infest south-facing rangeland slopes. A second priority was backcountry rangelands where small, scattered patches of leafy spurge and yellow toadflax could spread into surrounding mountain big sagebrush, mountain shrubland, and tall forb communities. Project objectives included:

- Preventing the establishment of noxious weed species not yet established on National Forest System lands in the Greys River Ranger District.
- Preventing the establishment of new infestations of spotted knapweed, leafy spurge, yellow toadflax, and Dyer's woad beyond existing perimeters along roads, trails, and adjoining lands, and either eliminating existing patches or reducing the density of noxious weeds.
- Preventing the establishment of new infestations of spotted knapweed, leafy spurge, yellow toadflax, and Dyer's woad beyond existing perimeters in the backcountry of the Spring Creek drainage, along the Star Valley Front, and at higher elevations in the Wyoming Range and Salt River Range, and either eliminating existing patches or reducing noxious weed densities.
- Reducing the distribution and densities of other noxious weed species (musk thistle, houndstongue, black henbane, Canada thistle).

Approximately 385 acres of noxious weed infestations have reportedly been treated chemically and/or biologically on the Greys River Ranger District. The main weed species treated were spotted knapweed, leafy spurge, yellow toadflax, Dyer's woad, houndstongue (*Cynoglossum officinale*), black henbane, and musk thistle. Project monitoring consists of tracking the distribution and extent of weed infestations, acreages treated, and response of weed infestations in terms of reductions in the density of weeds and size of weed infestations. Upon implementing the Greys River Ranger District's upgraded GIS-based monitoring program, data will contribute to increased effectiveness of future noxious weed control by providing information on the level of success of noxious weed control to date.

The Greys River Weeds project addresses the Wyoming Range West issues of invasive species, watershed health, and big game crucial winter habitat degradation. Benefits of an aggressive noxious weed control program during 2012-2014 (and beyond) include continued important contributions of native herbaceous vegetation to big game during winter, transition periods, and summer; sage grouse nesting and chick rearing; migratory birds and small mammals in riparian areas and rangelands; watershed functioning, water quality, and water available to adjoining landowners; livestock grazing; and economic benefits stemming from big game herds and livestock grazing. Partners include Lincoln County Weed and Pest District (LCWPD), USFS, and WWNRT.

4. Triple Peak Forage Reserve

Please see #2 of the Conservation Actions and Intended Outcomes section of the Wyoming Range East Geographic Priority Area narrative (Sublette LPDT) for project details.

5. Coal Creek Stabilization

The Coal Creek Stabilization project is designed to 1) reduce sediment loading into Coal Creek, 2) improve riparian and aquatic habitats, 3) improve Bonneville Cutthroat Trout habitat at the specific locations identified as well as downstream well beyond the immediate project area, and 4) improve road function at specific locations identified. It is one part of larger, ongoing, landscape-scale efforts in the Lower Bear River watershed focused on the enhancement and restoration of riparian, stream, and upland habitats for all wildlife species that occupy this area. Although the project does not overlap with the aforementioned Bear River Geographic Priority Area, it does overlap with the Wyoming Range West Geographic Priority Area. It addresses sensitive fish species and watershed health issues in both locations.

Conservation actions include replacing two existing low water road/stream crossings with bridges, eliminating a third similar crossing, and stabilizing and reclaiming stream banks. In 2014, final design plans were completed by A.V.I. Inc. and NEPA work was completed for the project. Approximately 375 cubic yards of rock riprap was delivered and stockpiled at a central location in the project area. A Temporary Use Permit was approved by the Wyoming Board of Land Commissioners for a bridge across Little Muddy Creek, and the WGFD Habitat and Access crew is scheduled to construct the footers for this bridge. Bridge installation is planned for 2015. This project is the first phase of a larger plan to address sedimentation issues at 11 key sites along a 2 mile stretch of Coal Creek. Nine additional sites are identified for future habitat improvements.

Reduced sediment loading and improved riparian/stream function in Coal Creek will benefit all native aquatic species (including numerous native fish species) that occupy this 2 mile reach of stream as well as downstream well beyond the immediate project area. Cover, spawning gravels, and food sources for BCT will all be improved. The northern rubber boa (*Charina bottae*) is an NSS3 species present in this area that could benefit. Terrestrial species of concern that will benefit from improved riparian habitats include sage-grouse, moose, and a wide variety of avian species. Increased forage availability and habitat quality in riparian areas will also benefit numerous other terrestrial species including mule deer, antelope, beaver, and elk.

6. Diamond H Conservation Easement

The WLCI contributed funding to the purchase of the Diamond H conservation easement in Lincoln and Sublette counties in 2010. The objective of the project was to preclude development and conserve approximately 3,008 acres of crucial wildlife habitat on private lands.

The Diamond H Ranch is located within several strategic habitat priority areas in the La Barge Creek and Fontenelle Creek drainages. It provides crucial winter range, transitional range, and important migration corridors for the Lincoln Moose Herd, the West Green River Elk Herd, the Wyoming Range Mule Deer Herd, and the Sublette Antelope Herd. The property also provides important habitat for the greater sage-grouse, blue grouse (*Cynoglossum officinale*), ruffed grouse (*Bonasa umbellus*) and mourning doves (*Zenaida macroura*). Riparian areas provide habitat for numerous amphibian and fish species including the sensitive Colorado River cutthroat trout. The conservation easement purchase secures the long-term protection of these valuable habitats and species from subdivision. WGFD is holding and monitoring the easement.

The Diamond H conservation easement addresses the Wyoming Range West Geographic Priority Area issues of watershed health, declining mule deer populations, and crucial winter habitat degradation. These lands not only benefit big game winter, yearlong and migration ranges, but numerous non-game bird, mammal and aquatic species including Colorado River cutthroat trout and other Species of Greatest Conservation Need. Partners include private landowners, WGFD, WVNRT and RMEF.

7. Lynx Habitat Assessment

Please see #3 of the Conservation Actions and Intended Outcomes section of the Wyoming Range East Geographic Priority Area narrative (Sublette LPDT) for project details.

8. Wyoming Range Mule Deer Management and Habitat Treatments

Please see #3 of the Conservation Actions and Intended Outcomes section of the Wyoming Range East Geographic Priority Area (Sublette LPDT) narrative for project details.

9. Raymond Mountain Weeds

The primary objective of this continuing project is to control or eradicate Dalmatian toadflax and Dyer's woad to improve native forage for wildlife and livestock on 6,000 acres in the Raymond Mountain area. The project is located within the Highland CWMA and it provides important winter and summer range for elk. The invasion of noxious weeds has decreased the amounts of winter habitat and forage for elk and mule deer and has a direct impact on the amount of forbs available to sage-grouse. This weed control effort is an expansion of continuing work being conducted on state and federal lands by BLM, the Lincoln County Weed and Pest District, private landowners and other partners. Those lands include 755 acres of state lands and 11,893 acres of BLM lands, which are adjacent to the private lands associated with this project. WLCI has been an important partner in helping to control these invasive plants on BLM-administered lands. The development of a comprehensive weed control plan has contributed to the enhancement of this area for the past several years.

Strategies for weed control on Raymond Mountain include locating and aerially applying herbicide as well as monitoring to determine the effectiveness of treatments. Herbicide application is accomplished primarily through the use of a helicopter equipped to apply herbicide in rugged mountain and canyon lands. Other applications that may be utilized will include ATV, backpack, and horse packs. Where possible, GPS information is collected to inform mapping of weed infestations other than those being treated in this project. In 2010, 500 acres were treated and 250 acres were monitored. In 2011, 192 acres were treated and 250 acres were monitored. In 2012, 150 acres were treated near Raymond Canyon and Border Junction, influencing close to 2,000 acres. Aerial monitoring showed a significant decrease in infestations in the area. In 2013, 192 acres were treated and nearly 1,000 acres were inspected and monitored aerially. An assessment was also conducted to determine treatment progress and to identify funding needs and areas to treat in the future. In 2014, LCWPD again contracted with an aerial applicator

to treat 443 acres on Raymond Mountain and the Hawkins Creek drainage, and monitored over 500 acres. Treatments are planned for 2015 and will continue as new infestations are inventoried.

The Raymond Mountain Weeds project addresses the Wyoming Range West Geographic Priority Area issues of invasive species, declining mule deer populations, and crucial winter habitat degradation. Control of the aggressive targeted invasive species is intended to improve native forage on big game crucial winter and year-long habitat, benefitting the declining Wyoming Range Mule Deer Herd and other wildlife including numerous SGCN species. Partners include BLM and LCWP.

10. Pole Creek Burn

The Pole Creek prescribed burn was conducted in 2010 to promote a more natural vegetative community characterized by a diversity of age classes of aspen and upland woody shrub species. The objectives of the project were to 1) rejuvenate decadent aspen stands by targeting dead and dying beetle killed conifers, 2) promote grasses and forbs to improve habitat for big game, 3) reduce hazardous fuel accumulations, and 4) restore fire to the landscape representing a more historical and natural role in the environment. Approximately 6,650 acres of BLM, state and private lands were targeted for treatment.

The project included a special emphasis on improvement of the age class and diversity of plant communities. Conifers were targeted for removal to reduce competition and promote aspen suckering and productivity. In 2010, all of the targeted 6,650 acres were treated in a mosaic pattern of burned and unburned areas across the landscape.

The prescribed burn addresses the Wyoming Range West Geographic Priority Area issues of woody species health, watershed health, and declining mule deer populations. Historically, some of this area has been classified as transitional and year-long range for mule deer, elk, moose, and antelope. By improving this portion of the transitional range, the treatment is anticipated to help hold deer in transitional areas, saving crucial areas for more critical periods during the winter. As other treatments are initiated in crucial winter range areas, the project is expected to ameliorate the issue of loss of forage by providing improved big game habitat in transitional areas. Other wildlife expected to benefit from this treatment include small mammals and a variety of birds. Partners include BLM, USFS, WGFD, WWNRT, WFHF, and the State of Wyoming Trust Fund.

11. Commissary Ridge Whitebark Pine

This ongoing project is designed to protect and enhance the 250-acre whitebark pine stand on Commissary Ridge, which is the southernmost whitebark pine stand in Wyoming. Diseased whitebark pine and competing subalpine fir are being removed to increase viability, production and regeneration of the ecologically significant sensitive species.

Commissary Ridge supports age-diverse stands of both whitebark and limber pine (*Pinus flexilis*). The mature stands have extensive (over 70%) mountain pine beetle (*Dendroctonus ponderosae*) infestation and a new infection of white pine blister rust (*Cronartium ribicola*). Diseased whitebark and limber pines are being removed to reduce the spread of both mountain pine beetle and blister rust and to improve survivorship of younger aged cohorts. Conservation actions may also include the removal of a proportion of subalpine fir (trees within approximately 50 feet of all whitebark pines that are less than or equal to 5 inches Diameter at Breast Height) to relieve competitive pressure and aid in the release and expansion of whitebark pine. The project began in 2012, although treatments did not occur due to drought, extreme fire hazard, and scheduling issues with the contractor. In 2013, tree thinning and removal occurred on 73 acres. Treatments on the remaining 177 acres were successfully completed in the summer of 2014. The U.S. Forest Service has conducted a Biological evaluation of Commissary Ridge area and will be involved in future genetic testing of the white bark pines in the Kemmerer Field Office.

This project addresses the Wyoming Range West Geographic Priority Area issue of woody species health and watershed function. Stand thinning is expected to increase the viability and regeneration of this ESA candidate species, contributing to range-wide conservation efforts. Intended benefits from whitebark pine restoration include

restored watershed function, snowpack retention, and increased food resources for the numerous wildlife species that depend on the tree. Partners include BLM and USFS.

12. Wheat Creek Meadows

This completed project's objective was to build approximately 1.5 miles of new fence and replace or upgrade 8 miles of existing fence to maximize the quantity and quality of forage for wildlife at Wheat Creek Meadows Wildlife Habitat Area. The 1,600-acre wildlife habitat area was acquired by the BLM through a land exchange with a primary goal of protecting wildlife habitat and wetlands with special emphasis on maximizing the potential for wildlife species production and diversity.

Fence construction and upgrades began in 2008 and were completed in 2009. The fence was built according to BLM wildlife friendly standards to improve wildlife passage for species such as mule deer, elk, pronghorn, moose, and sage-grouse. The project addressed the Wyoming Range West issue of watershed health and declining mule deer populations. It protects a wetland enhancement project constructed in 1998 and other habitat supporting many special status species including the sage-grouse, white-faced ibis (*Plegadis chihi*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), loggerhead shrike (*Lanius ludovicianus*), Brewer's sparrow (*Spizella breweri*), and pygmy rabbit. The BLM conducted the Wheat Creek Meadows Fence project, and partners for the related wetland enhancement project included Ducks Unlimited, Intermountain West Joint Venture, the Water for Fish and Wildlife Foundation, and the National Fish and Wildlife Foundation.

13. Fossil Butte Invasives

The objective of this project was to increase wildlife forage by reducing invasive plant populations on Fossil Butte National Monument (FBNM). The park has dedicated at least one person per year to invasive plant control since 1993, and this project provided a Student Conservation Intern to assist the park-funded biotech. By increasing control efforts, treatments along roads and trails proceeded more quickly and allowed time to address invasives in undeveloped areas in aspen and sagebrush. Eleven species were targeted including Canada thistle, bull thistle (*Cirsium vulgare*), musk thistle, cheatgrass, flixweed (*Descurainia sophia*), spotted knapweed, yellow sweetclover (*Melilotus officinalis*), and henbane.

In 2013 and 2014, FBNM used WLCI funds to hire an intern for three months to mechanically and chemically remove weeds within the park. In 2013, the intern pulled 13,692 plants plus 37 bags of uncounted Russian thistle, pulled 308 musk thistle, 35 bull thistle, 20 spotted knapweed and sprayed about 61 acres of Canada thistle (649 plants by count). Canada thistle treatments extended onto adjacent infested BLM land. In 2014, the intern hand pulled, applied herbicides, or mowed 12 weed species on more than 26 acres. The FBNM used a variety of methods to monitor weed species within the park and will continue to do so in the future. The FBNM uses the National Park Services' National Inventory and Monitoring Team to continue monitoring established routes that were established in 2011. The FBNM utilizes their own Weed Team that is responsible for treating weeds and identifying areas within the park infested with invasive weed species. The FBNM staff also conducts ocular monitoring throughout the course of the day. All of the methods being employed are important to control of invasive weed species.

This project will help restore native plant communities and prevent the spread of invasive plants into communities of aspen, sagebrush, and mountain shrubs including riparian areas. In addition to addressing the CCNR Geographic Priority Area's invasive species issue, it protects and maintains the quality of crucial habitats for several sensitive and big game species. Fossil Butte is within Wyoming's core sage-grouse area, it contains winter range for elk and summer range for pronghorn and mule deer. Fossil Butte is also home to three rare Wyoming endemic plants the tufted twinpod (*Physaria condensata*), thick-leaved peppergrass (*Lepidium* sp.), and a rare astragalus (*Astragalus* sp.). Since no grazing is permitted within the monument, weed control is especially important for the conservation of this relatively undisturbed native habitat surrounded by cattle and sheep-grazed rangeland.

Additional Conservation Actions Conducted by WLCI Partners

- Cooperative Weed Management Area (CWMA) strategies are being used to control the invasive weed species in the area through a variety of measures including chemical, mechanical, and biological controls.
- In addition to the Raymond Mountain Invasives project, LCWP efforts to control Dyer's woad and Dalmatian toadflax include cost share agreements with private landowners and their Bag of Woad program (offering youth 50 cents per pound for pulling Dyer's woad), and treatments in collaboration with BLM on public lands prior to the WLCI-funded project.
- In 2008, approximately 1,306 acres were burned in the Shinglemill area approximately 2-3 miles north of the Pole Creek Burn location. One of the secondary objectives of the Pole Creek burn was to spread wildlife browse between Shinglemill and Pole Creek.
- In conjunction with the "Wyoming Range Mule Deer Nutritional Carrying Capacity" research project conducted by the Wyoming Cooperative Fish and Wildlife Research Unit, a series of winter range production and utilization habitat transects were established by the WGFD. 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.
- The Conservation Districts have implemented a watershed plan for the Salt River. See the Salt River Watershed Management Plan (Star Valley Conservation District, 2005) for specific issues, objectives and action items.

Timeframe – Through 2033 (Star Valley Front).

Relationship to Existing Plans and Other Actions

- BLM Kemmerer Resource Management Plan (Bureau of Land Management, 2010)
- Bridger-Teton National Forest Land and Resource Management Plan (U.S. Forest Service, 1990)
- Bridger-Teton National Forest Noxious Weed Strategy and Implementation Plan
- Conservation agreement for Colorado River cutthroat trout in the States of Colorado, Utah and Wyoming (CRCT Conservation Team, 2006)
- Greys River Landscape Scale Assessment (U.S. Forest Service, 2004)
- Lincoln County Conservation District annual plan and long range plan - 2010-2015 (Lincoln Conservation District, 2010)
- Middle Greys River Watershed Assessment (U.S. Forest Service, 2005)
- Salt River Watershed Management Plan (Star Valley Conservation District, 2005)
- Thomas Fork Habitat Management Plan (developed cooperatively by WGFD and BLM "to preserve, manage, and enhance BCT habitat") (Wyoming Game and Fish Department, Bureau of Land Management, 1979) Uinta County Conservation District annual plan and long range plan - 2010-2015 (Uinta County Conservation District, 2010)
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009)
- Wyoming Range Mule Deer Plan (Wyoming Game and Fish Department, 2011)

Resource Plans and Other Literature Cited

Allen, D. (2009). *Pinedale Anticline Ground Water Data Summary*. Pinedale, WY: Sublette County Conservation District.

Bates Hole/Shirley Basin Sage-grouse Working Group. (2007). *Bates Hole/Shirley Basin Sage-grouse Conservation Plan*. Wyoming Game and Fish Department.

- Bowen, Z. H. (2013). *U.S. Geological Survey science for the Wyoming Landscape Conservation Initiative - 2012 annual report*. U.S. Geological Survey Open-File Report 2014.
- Bureau of Land Management. (1997). *Record of decision and Green River resource management plan*. Wyoming: Rock Springs Field Office.
- Bureau of Land Management. (2008). *Record of decision and approved Pinedale resource management plan*. Wyoming: Pinedale Field Office.
- Bureau of Land Management. (2008). *Record of decision and approved Rawlins resource management plan*. Wyoming: Rawlins Field Office.
- Bureau of Land Management. (2010). *Record of decision and approved Kemmerer resource management plan*. Kemmerer, WY: Kemmerer Field Office.
- Carbon County Conservation District. (2007). *Long Range and Natural Resource Management Plan 2010-2015*.
- Cerovski, A., Gorges, M., Byer, T., Duffy, K., & Felley, D. (2001). *Wyoming Bird Conservation Plan (Version 1.0)*. Lander, WY: Wyoming Partners in Flight. Wyoming Game and Fish Department.
- Copeland, H., Tessman, S., Hogan, M., Jester, S., Orabona, A., Patla, S., et al. (2010). *Wyoming wetlands: conservation priorities and strategies*. Lander, WY: The Nature Conservancy.
- CRCT Conservation Team. (2006). *Conservation agreement for the Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah and Wyoming*. Fort Collins, CO: Colorado Division of Wildlife.
- Damm, P., & Randall, J. (2012). *Wyoming Range Mule Deer Habitat Management Plan: Big Piney-LaBarge Area*. Pinedale, WY: Wyoming Game and Fish Department.
- Dillon, G. K., Knight, D. H., & Meyer, C. B. (2003). *Historic range of variability for upland vegetation in the Medicine Bow National Forest, Wyoming*. Fort Collins, CO: Unpublished report to Medicine Bow National Forest.
- Heitmeyer, M. E., Henry, A. R., & Artmann, M. J. (2012). *Hydrogeomorphic Evaluation of Ecosystem Restoration and Management Options for Seedskadee National Wildlife Refuge*. Prepared for U.S. Fish and Wildlife Service, Region 6, Denver CO. Greenbriar Wetland Services Report 12-02. Blue Heron Conservation Design and Printing LLC, Bloomfield, MO.
- Lincoln Conservation District. (2010). *Land Use and Natural Management Long Range Plan - 2010-2015*.
- Little Snake River Conservation District. (2011). *High Savery annual irrigation release and operating plan*. Little Snake River project design report.
- Mule Deer Working Group. (2009). *The Wyoming Mule Deer Initiative*. Wyoming Game and Fish Department.
- National Fish and Wildlife Foundation. (2009). *Executive Summary for the Path of the Pronghorn Business Plan*. National Fish and Wildlife Foundation.
- NRCS. (2013). *Final Environmental Assessment for the Little Snake River Restoration Project*. USDA Natural Resource Conservation Service.

- NRCS. (2013). *Henry's Fork Salinity Control Project Plan and Final Environmental Impact Statement*. USDA Natural Resources Conservation Service.
- Pacific Flyway Study Committee. (2002). *Pacific Flyway Implementation Plan for the Rocky Mountain Population of Trumpeter Swans*. Prepared for the Pacific Flyway Council and U.S. Fish and Wildlife Service.
- Platte Valley Habitat Partnership. (2013). *Platte Valley Habitat Partnership's (PVHP) Mule Deer Habitat Plan*.
- Sawyer, H., Hayes, M., Rudd, B., & Kauffman, M. J. (2014). *The Red Desert to Hoback Mule Deer Migration Assessment*. Laramie, WY: Wyoming Migration Initiative, University of Wyoming.
- Senecal, A. C., Gelwicks, K. R., Cavalli, P. A., & Keith, R. M. (2010). *WGFD Short-term Plan for the Three Species on the Green River Drainage of Wyoming; 2009-2014*. Wyoming Game and Fish Department, Fish Division.
- Star Valley Conservation District. (2005). *Salt River Watershed Management Plan*. Afton, WY.
- Stroud, D. (2010). *Sommers-Grindstone Wildlife Values*. Bureau of Land Management, Wyoming.
- Subcommittee on Rocky Mountain Trumpeter Swans. (2012). *Pacific Flyway Management Plan for the Rocky Mountain Population of Trumpeter Swans*. Portland, OR: Pacific Flyway Study Committee (c/o USFWS DMBM), unpublished report.
- Sublette County Conservation District. (2010). *Land Use and Natural Management Long Range Plan 2010-2015*.
- Sweetwater County Conservation District. (2011). *Land & Resource Use Plan and Policy*.
- The Nature Conservancy. (n.d.). *Shirley Basin-Laramie Rivers Conservation Action Plan*.
<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/wyoming/howwework/shirleybasin-capbrochure-layout-1-singlepages.pdf>: The Nature Conservancy.
- The Nature Conservancy. (n.d.). *Places we protect: Shirley Basin*.
<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/wyoming/placesweprotect/shirley-basin.xml>.
- The Nature Conservancy. (n.d.). *Places We Protect: Upper Green River*.
<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/wyoming/placesweprotect/upper-green-river.xml>.
- U.S. Fish and Wildlife Service. (2002). *Seeds-kadee National Wildlife Refuge Comprehensive Conservation Plan*. Green River, WY and Denver, CO: Seeds-kadee National Wildlife Refuge and Division of Refuge Planning.
- U.S. Fish and Wildlife Service. (2012). *Partners for Fish and Wildlife Program: Mountain-Prairie Region Strategic Plan 2012 - 2016*.
- U.S. Fish and Wildlife Service. (2013). *Draft comprehensive conservation plan and environmental assessment, Cokeville Meadows National Wildlife Refuge*. Lakewood, CO: U.S. Department of the Interior, Fish and Wildlife Service, Mountain Prairie Region, 224 p.
- U.S. Fish and Wildlife Service. (2013). *Greater Sage-grouse (Centrocercus urophasianus) Conservation Objectives: Final Report*. Denver, CO: U.S. Fish and Wildlife Service.

- U.S. Fish and Wildlife Service. (2013). *Land protection plan - Bear River Watershed Conservation Area*. Lakewood, CO: U.S. Department of the Interior, U.S. Fish and Wildlife Service, Regions 1 and 6, 227 p.
- U.S. Forest Service. (1985). *Final environmental impact statement for the Medicine Bow National Forest: Land and resource management plan*. Laramie, WY: U.S. Forest Service.
- U.S. Forest Service. (1990). *Bridger-Teton National Forest Land and Resource Management Plan*. Jackson, WY: U.S. Forest Service, Bridger-Teton National Forest, Greys River Ranger District.
- U.S. Forest Service. (2004). *Greys River Landscape Scale Assessment*. Afton, WY: U.S. Forest Service, Bridger-Teton National Forest, Greys River Ranger District.
- U.S. Forest Service. (2005). *Middle Greys River Watershed Assessment*. U.S. Forest Service, Bridger-Teton National Forest, Greys River Ranger District.
- U.S. Forest Service. (2009). *Final environmental impact statement for the Ashley National Forest land and resource management plan (revised 2009)*. Ogden, UT: U.S. Forest Service.
- Uinta County Conservation District. (2010). *Uinta County Conservation District Long Range Plan*.
- Uinta County Conservation District, Blacks Fork/Smiths Fork Water Quality Steering Committee. (2005). *Blacks Fork & Smiths Fork Rivers Watershed Management Plan*.
- Uinta County Conversation District, Upper Bear River Water Quality Steering Committee. (2005). *Upper Bear River Watershed Management Plan*. Uinta County Conservation District.
- Utah Department of Natural Resources. (2006). *Range-wide Conservation Agreement and Strategy for Roundtail Chub (*Gilia robusta*), Bluehead Sucker (*Catostomus discobolus*) and Flannelmouth Sucker (*Catostomus latipinnis*)*. Salt Lake City, UT: Utah Department of Natural Resources, Division of Wildlife Resources.
- Wyoming Department of Environmental Quality. (2012). *Wyoming Water Quality Assessment and Impaired Waters List (2012 Integrated 305(b) and 303(d) Report)*. Cheyenne, WY: Wyoming Department of Environmental Quality, Water Quality Division.
- Wyoming Game and Fish Department. (2009). *Wyoming Game and Fish Department Strategic Habitat Plan*. Wyoming Game and Fish Department.
- Wyoming Game and Fish Department. (2010). *State Wildlife Action Plan*. Wyoming Game and Fish Department.
- Wyoming Game and Fish Department. (2011). *Wyoming Range Mule Deer Plan*. Wyoming Game and Fish Department.
- Wyoming Game and Fish Department. (2012). *Platte Valley Mule Deer Plan v. 110512*.
- Wyoming Game and Fish Department. (2012). *Strategic Habitat Plan Accomplishments - 2011 Annual Report*. Wyoming Game and Fish Department.
- Wyoming Game and Fish Department. (2013). *Strategic Habitat Plan Accomplishments - 2012 Annual Report*. Wyoming Game and Fish Department.
- Wyoming Game and Fish Department. (2014). *Strategic Habitat Accomplishments - 2013 Annual Report*. Wyoming Game and Fish Department.

- Wyoming Game and Fish Department, Bureau of Land Management. (1979). *Thomas Fork Habitat Management Plan*.
- Young, M. K., Schmal, R. N., Kohley, T. W., & Leonard, V. G. (1996). *Conservation Status of Colorado River Cutthroat Trout. General Technical Report RM-GTR-249*. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station.