

## **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.

### ***Sweetwater Local Project Development Team Priority Areas and Actions***

The Sweetwater Local Project Development Team has identified six geographic priority areas within Sweetwater County (figure 3-1). Two of the priority areas extend outside Sweetwater County. This includes parts of Blacks Fork and Muddy Creek in Lincoln and Uinta counties, and a portion of the Henrys Fork River that passes through Uinta County. The Blacks Fork and Muddy Creek Geographic Priority Area is discussed in the Lincoln/Uinta LPDT section of the CAP because current associated conservation plans and actions are focused in Lincoln and Uinta counties. There were other areas identified by the Sweetwater LPDT as important but do not currently have defined objectives or proposed actions. These areas included crucial winter mule deer (*Odocoileus hemionus*) habitat, portions of sage-grouse core areas, allotments, and important habitat areas associated with energy development.

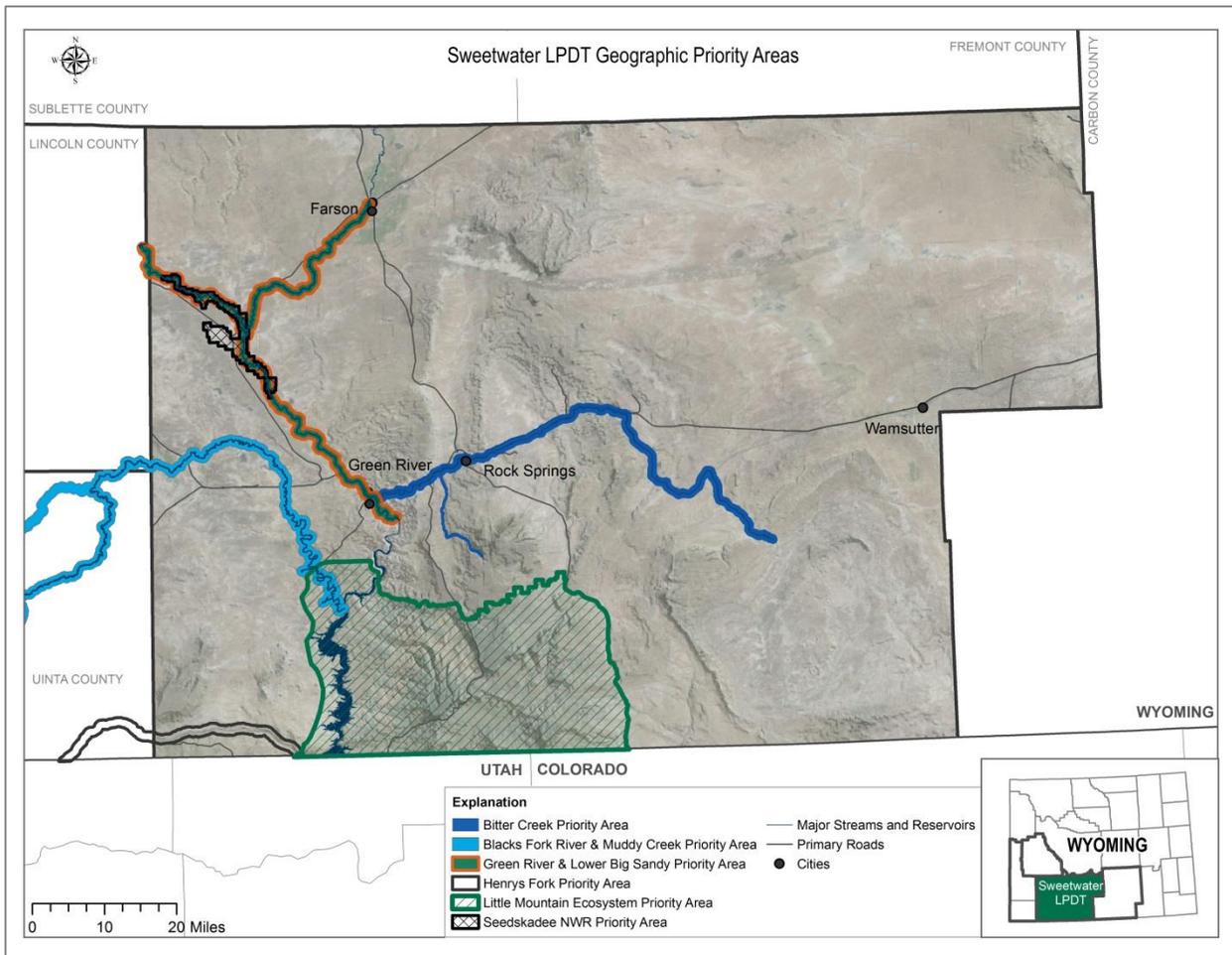


Figure 3-1. Sweetwater LPDT geographic priority areas

## Bitter Creek Geographic Priority Area

### Environmental Setting

Bitter Creek is predominantly located in central Sweetwater County with a watershed that encompasses nearly 800,000 acres (figure 3-2). The creek rises near the Delaney Rim on the western side of Wyoming's Red Desert in Carbon County. It flows through the city of Rock Springs and joins the Green River just east of the city of Green River, WY. For most of its course, Bitter Creek parallels the transcontinental railroad and Interstate 80. Forty-nine percent of the land ownership is public and 51% is private. In response to severe flooding and erosion events, bank and channel modifications were implemented to control flooding and to protect areas where people historically settled in the Rock Springs area. Bitter Creek has been identified as impaired in its lower reaches due to fecal coliform and chloride. Bitter Creek provides important habitat for two native fish species, the flannelmouth sucker (*Catostomus latipinnis*) and roundtail chub (*Gila robusta*) that are listed by Wyoming Game and Fish Department (WGFD) as Species of Greatest Conservation Needs (SGCN). Upper Bitter Creek has been identified by WGFD as one of five priority subdrainages for the management of these species in WGFD's Short Term Plan for the Three Species in the Green River Drainage of Wyoming (Senecal, Gelwicks, Cavalli, & Keith, 2010) and as a high priority conservation area in their State Wildlife Action Plan (WGFD, 2010). Bitter Creek also provides crucial winter range for elk (*Cervus canadensis*), mule deer, pronghorn (*Antilocarpa americana*), and sage-grouse. Portions of the Bitter Creek watershed are identified as sage-grouse core habitat and support numerous other SGCN. A significant portion of the upper Bitter Creek watershed is undergoing oil and gas development and nearby coal surface mining. The Bitter Creek Geographic Priority Area has three different project activities (figure 3-2) which address the issues described below.

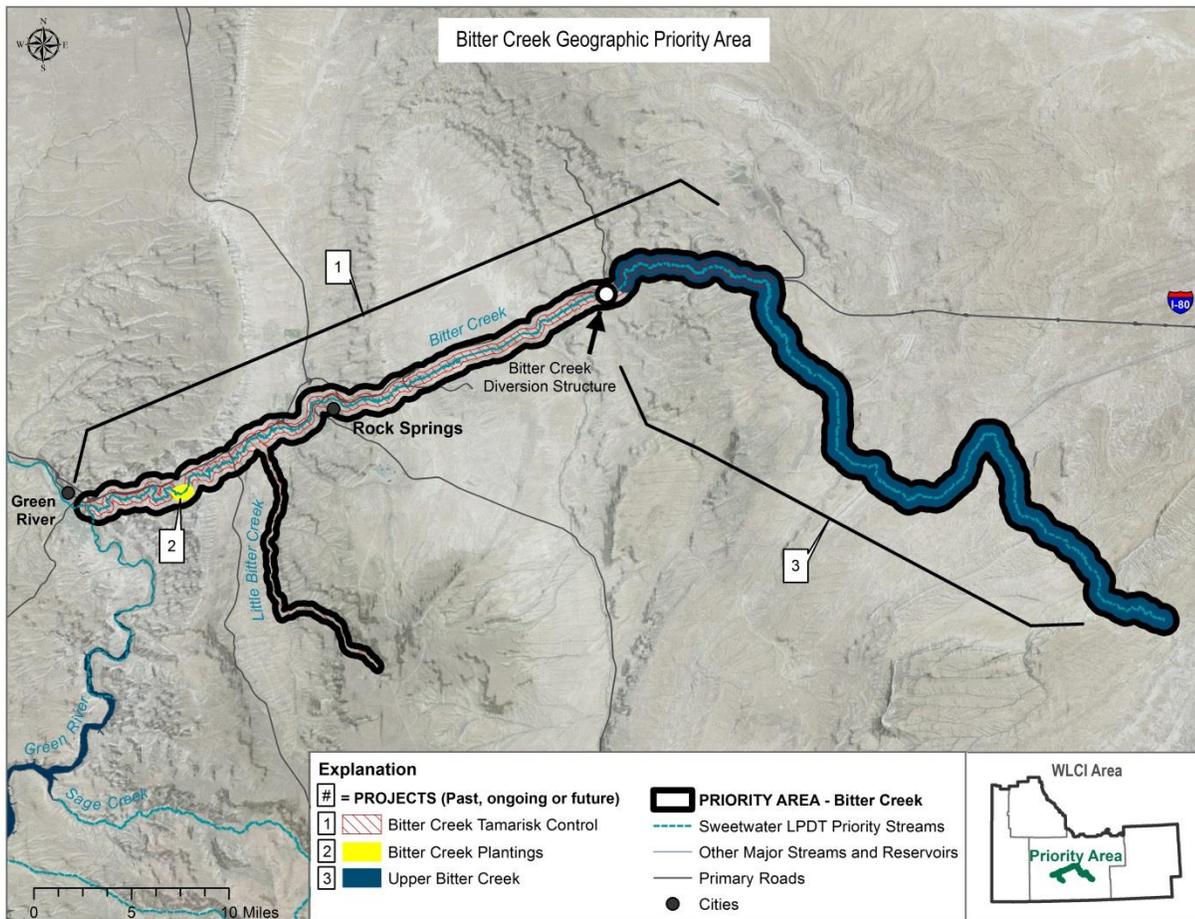


Figure 3-2. Bitter Creek Geographic Priority Area and projects

### Issues

- **Invasive plant species:** Tamarisk (*Tamarix* sp.) and perennial pepperweed (*Lepidium latifolium*) exist throughout the Bitter Creek drainage which are outcompeting willows (*Salix* spp.) and other preferred native vegetation.
  - **Important fish populations:** The Upper Bitter Creek supports important native flannelmouth sucker and roundtail chub populations. This habitat is crucial for preserving Wyoming's only genetically pure population of flannelmouth suckers (Senecal, Gelwicks, Cavalli, & Keith, 2010). The population's abundance and recruitment is low, and habitat restrictions limit the population.
  - **Stream head cut and failing diversion structure:** A large irrigation diversion is collapsing. This structure acts as a stream gradient control point to preventing an incised head-cut from moving upstream and destabilizing channel morphology and riparian habitat. This structure also serves as an incidental fish barrier to prevent the upstream movement of white suckers from hybridizing with flannelmouth suckers.
- Aquatic and riparian habitat degradation:** Factors negatively affecting Bitter Creek's aquatic and riparian habitats include salt loading, high levels of fecal coliform, and channel erosion and sedimentation associated with diversion structures and head-cutting.

### Conservation Actions and Intended Accomplishments

#### 1. Bitter Creek Invasive Plants

WLCI has supported efforts involving both biological and herbicide control of tamarisk and perennial pepperweed on Bitter Creek. Treatment efforts are intended to control the invasive species, improve conditions for native willows, increase riparian woody and herbaceous species, control and limit future expansion of tamarisk, reduce

tamarisk induced concentrated salinity, reduce water uptake by tamarisk thereby increasing in-stream flows, and improve water quality for fish. The Bureau of Land Management (BLM) and the Sweetwater County Weed and Pest Control (SCWP) released the northern tamarisk beetle (*Diorhabda carinulata*) during the summer of 2011. Beetles were released in areas that are more difficult to treat with herbicides. Tamarisk and perennial pepperweed were also treated with herbicides during 2008 and 2010. In all, approximately 400 acres have been treated. Monitoring the effectiveness of using beetle control and herbicide applications will continue over the next 10 to 15 years. Treatment efforts will continue to be focused between Rock Springs and the confluence of Bitter Creek and the Green River. WLCI Partners addressing invasive plant species in the Bitter Creek area include Rock Springs Grazing Association (RSGA), Anadarko, SCWP, BLM, WGFD, and private landowners. Additional tamarisk projects are being implemented along the Green River and its tributaries increasing the potential for landscape-scale ecological benefits from tamarisk control efforts. Continued support for tamarisk and pepperweed control will ensure long term success.

## **2. Bitter Creek Riparian Vegetation Plantings**

The primary objectives of planting riparian vegetation [willow species and buffaloberry (*Shepherdia* sp.)] are to 1) promote the reestablishment of native riparian trees and shrubs (especially at locations where tamarisk have been removed or controlled), 2) promote bank stability, and 3) reduce down cutting and excessive erosion. In 2010, approximately 600 trees were planted on Bitter Creek between Green River and Rock Springs with the help of approximately 80 youth volunteers as part of BLM's National Public Lands Day. The Sweetwater County Conservation District (SCCD) donated 600 trees for this effort. More tree plantings are proposed during the next five years. Some of these activities will not be implemented until the Bitter Creek irrigation diversion structure is replaced.

## **3. Upper Bitter Creek (Including Bitter Creek Diversion Structure)**

The upper reaches of Bitter Creek are important habitat for genetically pure flannelmouth sucker and roundtail chub, both species of concern. This area is also a high priority for WLCI partners because of the influence of these reaches on downstream conditions, which has historically been considered impaired near the city of Rock Springs.

A large irrigation diversion structure near Thayer Junction (referred to as the Bitter Creek diversion structure) is collapsing and needs to be repaired. A new structure will help: 1) improve water quality, 2) stabilize banks and riparian habitats, 3) reduce sedimentation, and 4) serve as a fish barrier to prevent the upstream movement of white suckers and possible hybridization with the native flannelmouth sucker population. Water quality will be improved by reducing erosion and sedimentation associated with the active head-cut. In addition to serving as a fish barrier, the diversion structure is also acting as a stream gradient control point to prevent an incised head-cut from moving upstream and destabilizing/degrading the crucial aquatic and riparian habitat above it.

Sweetwater County Conservation District provided support for an evaluation of the head-cut and existing structure. Soil testing and core samples were collected in the vicinity of the structure in 2013. This information will be used to develop geotechnical engineering recommendations for designing a new structure. In 2014, SCCD accepted a 19.8-acre land donation and 0.37-mile roadway easement grant from Anadarko Petroleum Corporation for the purposes of relocating the Bitter Creek structure and its future maintenance. Other land owners that Sweetwater County will need to obtain access easements from include the BLM and RSGA. Sweetwater County and the Conservation District are in discussions with the BLM and RSGA regarding obtaining the easements across their land. Future plans include an archeological survey with Western Archeological, surveying work with Rocky Mountain Survey, and creating a roadway development plan with Inberg-Miller Engineers. SCCD will be working on finding a source for suitable rock material and sheet piling may start in 2015. The Bitter Creek Diversion Structure addresses the priority area's issues of stream head-cutting, important fish populations, and aquatic and riparian habitat degradation.

### Additional Conservation Actions by WLCI Partners

- WGFD has conducted activities and identified management objectives and future plans for the management of the native species present in the upper Bitter Creek priority subdrainage. They have conducted habitat

assessments, nonnative fish removal, and recommend monitoring and habitat work in the Three Species Management Plan (Senecal, Gelwicks, Cavalli, & Keith, 2010). See page 13 of the Three Species Management Plan for a relative timeline of ongoing and future activities for the upper Bitter Creek priority subdrainage.

Timeframe 10 to 20 years.

#### Existing Plans and Strategies

- Bitter Creek Reconstruction Plan and Design (City of Rock Springs)
- BLM Green River Resource Management Plan (Bureau of Land Management, 1997)
- Sweetwater County Conservation District – Land & Resource Use Plan and Policy (Sweetwater County Conservation District, 2011)
- WGFD Short-term Plan for the Three Species in the Green River Drainage of Wyoming; 2009-2014 (Senecal, Gelwicks, Cavalli, & Keith, 2010)
- WGFD’s Strategic Habitat Plan (WGFD, 2009) identifies efforts that are needed to maintain stream habitat conditions in upper Bitter Creek for native fishes. Potential actions include:
  - installing a fish barrier/grade control structure (Bitter Creek diversion structure) to facilitate future chemical treatments to remove nonnative fish and to expand the native fish assemblage in upper Bitter Creek;
  - investigating potential for implementing instream water flow management strategies to augment native fish habitat;
  - investigating the need and potential for constructing instream weir habitat structures to increase pool habitat for native fish;
  - collaborating with partners to develop habitat protection plans in this area, and attempt to minimize habitat impacts created by energy development activities;
  - and, evaluate the headcut and lateral cuts at the Big Pond area on the upper Bitter Creek.

### **Green River and Lower Big Sandy River Geographic Priority Area and Seedskafee National Wildlife Refuge**

#### Environmental Setting

The Green River is the chief tributary of the Colorado River, stretching 730 miles from the Wind River Mountains in Wyoming through Colorado and Utah to its confluence with the Colorado River in Canyonlands National Park. The WLCI Green River and Lower Big Sandy Geographic Priority Area (figure 3-3) extends between the Fontenelle Dam and Flaming Gorge in Sweetwater County. The Big Sandy River is a 141-mile-long tributary of the Green River, and the focus area includes the stretch between the confluence of the two rivers and the town of Farson. The majority of Seedskafee National Wildlife Refuge is located within the Green River and Lower Big Sandy River Geographic Priority Area. The 27,230-acre refuge protects a mosaic of riparian, wetland, and upland shrub habitats along 36 miles of the Green River between the Fontenelle Reservoir and the city of Green River.

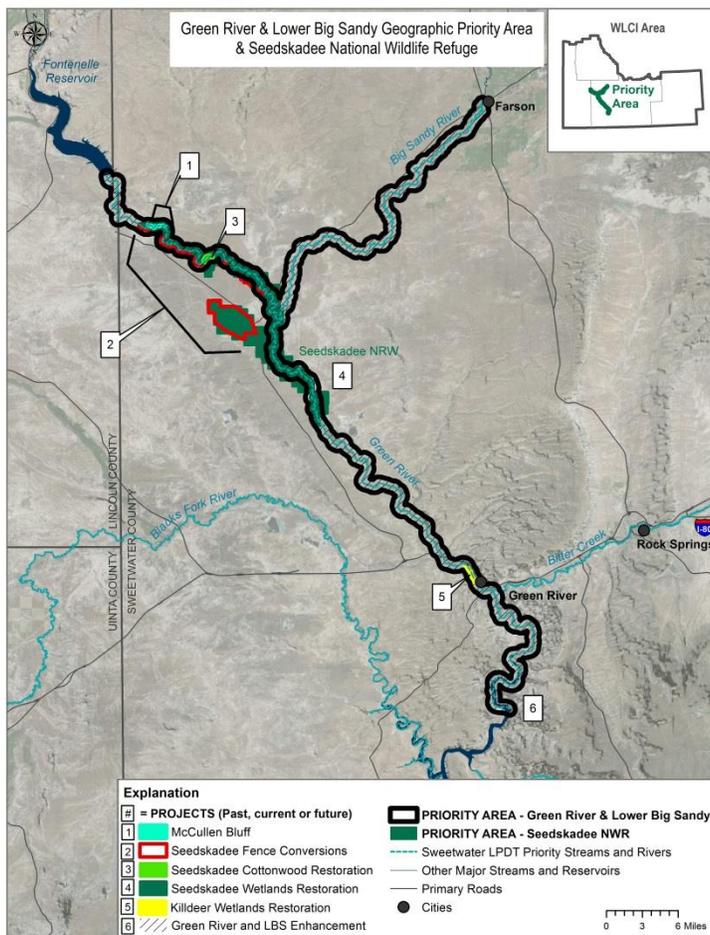


Figure 3-3. Green River & Lower Big Sandy Geographic Priority Area, Seeskadee National Wildlife Refuge and associated projects.

### Issues

- **Invasive plant species:** Russian olive (*Elaeagnus angustifolia*) and tamarisk exist throughout the Green River and Lower Big Sandy Geographic Priority Area. Perennial pepperweed, henbane (*Hyoscyamus* sp.), Canada thistle (*Cirsium arvense*), cheatgrass (*Bromus tectorum*), and halogeton (*Halogeton glomeratus*), are present as well.
- **Water quality and quantity, native riparian woody structure:** Change in minimum flows and sedimentation result from reservoir water management of the Fontenelle Dam. There is a need to slow the velocity of the river by having rocks and downed woody debris incorporated in sections of the river.
- **Fisheries:** Volume and timing of flows released from the Fontenelle Dam are important management issues in meeting life stage habitat needs to maintain a productive fishery. Lowered water tables and loss of cottonwood (*Populus* sp.) and their associated snags are factors limiting fisheries production. Some of the existing fish habitat is disconnected or fragmented which contributes to poor winter survival and recruitment for fingerling trout populations in the lower Green River.
- **Riparian habitat loss and degradation:** Riparian habitat within the focus area lacks complexity. The extent of cottonwood and willow (*Salix* spp.) communities in the focus area has declined. Remaining stands lack age class diversity and adequate regeneration. Regeneration is hampered by seedling recruitment and ungulate herbivory.

### Conservation Actions and Intended Accomplishments

## **1. McCullen Bluff (And Other Seedskadee NWR Aquatic Habitat Improvements)**

The WLCI has contributed funding towards the reconstruction of the McCullen Bluff sill. This is one of two existing river-wide instream rock sill structures located on the Green River at Seedskadee NWR that was reconstructed in 2011 to improve habitat connectivity by elevating the upstream level of the river to reconnect flows into the lateral river side channel (approximately 1 mile in length) during low discharge levels. Lateral side channels provide important juvenile trout and native nongame fish rearing habitat with margin niches and laminar flows needed for small fish survival and recruitment to adult populations. Woody debris was placed in side channels to improve structural habitat for juvenile fish. The re-watered side channels promote elevated water tables required for restoring and maintaining healthy cottonwood and willow communities. In 2012, staff associated with WGFD and Seedskadee NWR, and local Trout Unlimited volunteers harvested several six to twelve foot green conifer trees and placed them in side channels at the site. Crews later used harvested trees to fashion and construct conifer revetment structures along the streambank at predetermined reaches of each lateral river channel to improve aquatic habitat for juvenile fish at Seedskadee NWR. The conifer revetment features are expected to provide juvenile fish escape and hiding cover along 950 feet of channel margin at the McCullen Bluff site.

This project addresses the priority area's issues of water quality and quantity, fisheries, and riparian habitat loss and degradation. The WGFD is continuing to collaborate with Seedskadee NWR to expand the use of instream river structures on refuge lands to improve irrigation ditch functionality to constructed wetlands, mimic lost woody debris, increase trout breeding habitat, and provide over-winter habitat for trout. WGFD electrofishing surveys showed a significant increase in trout use in the lower Green River where habitat structures were previously installed. Monitoring of both the structure and fish will continue.

## **2. Seedskadee Fence Conversions**

Seedskadee National Wildlife Refuge established a boundary fence in 1997 to exclude range cattle from Refuge habitat. A study conducted in 2003 found several sections of fence did not meet standards for pronghorn and other big game. Approximately 29 miles of fence required adjustments to improve pronghorn migration. The project addresses pronghorn migration corridor maintenance and big game passage, which are landscape-scale issues in southwest Wyoming. This project was completed in 2010. WLCI partners will continue to collaborate to convert other fences throughout this area on other properties over the next five years. Partners include the USFWS staff of Seedskadee NWR and the WGFD.

## **3. Seedskadee Cottonwood Restoration**

Seedskadee NWR in conjunction with WLCI partners is working to improve habitat conditions along the Green River corridor for wildlife and migratory birds by restoring cottonwood galleries. The effort extends from Fontenelle Dam to the City of Green River. Staff associated with the Seedskadee NWR and the BLM Kemmerer Field Office and volunteers with a youth group and boy scouts planted 45 trees at Weeping Rock campground. A contractor planted 234 trees in 2010 and 2011 along a portion of the refuge where infrastructure was available to irrigate the trees. This project addresses the priority area's issue of riparian habitat loss. Partners include USFWS, WGFD and BLM.

Numerous studies by WLCI partners have been investigating cottonwood herbivory and regeneration at Seedskadee and adjacent properties. While there is some cottonwood regeneration there is not enough to meet the overall objective of having diverse age structures and additional galleries are needed for sustained regeneration throughout the area. Tree planting will continue on and off the refuge especially where tamarisk and Russian olive is being removed.

## **4. Seedskadee Wetland Restoration**

Trumpeter swan (*Cygnus buccinator*) habitat enhancement projects funded by the WLCI are part of a long-term effort to establish additional shallow water wetland habitat for an expanding population of resident trumpeter swans and other wetland dependent avian species in southwest Wyoming such as migratory shorebirds, waterfowl, and brood-rearing sage-grouse. The trumpeter swan is a Priority Species 1 in the state. Resident swans in Wyoming make up approximately 25% of the Tri-State Area flocks that comprise the U.S. portion of the Rocky Mountain Population of Trumpeter Swans. Traditionally, nest sites have been concentrated in the Snake River drainage in the northwestern corner of the state. Due to range expansion efforts, a number of new pairs have established in the

Green River basin, and production of cygnets has increased. To ensure that adequate shallow water wetland habitat will be available in future years for the growing number of resident swans, WGFD initiated a habitat planning project in 2003 with the following objectives: 1) to identify and survey potential swan summer habitat on private and public lands in the Green River basin, 2) to prepare site management plans for high priority wetland projects, and 3) to identify potential funding partners so priority projects can be completed in a timely fashion to keep ahead of swan habitat. WLCI has contributed funding to support wetland restoration efforts on Seedskafee NWR and on private lands throughout the Green River Basin. Development of wetlands and enhancement of habitats for trumpeter swans will continue until WGFD population targets are met in the Upper Green River Valley.

## **5. Killdeer Wetlands Restoration**

This project was designed to mitigate reduced water flow from Fontenelle Dam by constructing a sill to restore water to an original oxbow and braided channels. It will restore wetland plant diversity and provide wetland habitat for birds, fish, and other aquatic species. The project addresses the priority area's issues of water quality and quantity, fisheries, and riparian habitat loss and degradation. Partners include Wyoming Wildlife and Natural Resource Trust (WWNRT), Ducks Unlimited, U.S. Fish and Wildlife Service (USFWS), WGFD, the City of Green River, the Green River Greenbelt Task Force, Bureau of Reclamation, and U.S. Department of the Interior – Central Utah Project.

## **6. Green River Russian Olive and Tamarisk Control**

This project is part of a landscape-scale effort led by WLCI partners to control Russian olive and tamarisk. Approximately 100 miles of the Green River from Fontenelle Dam spillway to Flaming Gorge Reservoir have been inventoried for Russian olive and tamarisk locations. Additional assessments of the lower Big Sandy River are planned in the next few years. Forty four stream miles and 28,556 acres of riparian habitat were inventoried in 2010 by the Teton Science School (on contract with WGFD) and refuge staff from Fontenelle Dam to the southern boundary of Seedskafee NWR. The assessment continued in 2012 from the southern boundary of Seedskafee NWR to I-80, and below the City of Green River to the Flaming Gorge National Recreation Area. The Wyoming Governor's Big Game License Coalition funds were used to treat Russian olive and tamarisk from Fontenelle Dam down to the County Road 8 crossing in 2011. The Sweetwater County Weed and Pest District manually removed or treated Russian olive and tamarisk with herbicides on public and private lands above Seedskafee National Wildlife Refuge over multiple years. Treatments and monitoring will continue as needed and native riparian vegetation will be planted.

The City of Green River in partnership with the WGFD and USFWS is implementing a multi-phase project involving inventories and control measures for Russian olive and tamarisk and the planting of native trees. During the first phase the City of Green River hired contractors to remove Russian olive and tamarisk along the Green River within the city's limits and on two adjacent parcels of private property. In 2012, mechanical removal of Russian olive and tamarisk on 586 acres of riparian habitat occurred along five miles of river between Expedition Island and the Scott's Bottom area. A specialized track-hoe attachment was used to extract the intact root crown. This approach severs lateral roots reducing re-sprouts. A large rotary grinder was used to chip all Russian olive and tamarisk which was used as mulch on site. Locations that could not be accessed with equipment or only supported short trees that were too small for mechanical control were treated with a combination of hand cutting the stump and applying herbicide. Initial results indicated noticeably reduced Russian olive and tamarisk densities and biomass however, a large number of re-sprouts was observed by the end of the growing season. The second phase consisted of the city hiring contractors to plant cottonwoods and other native trees and shrubs during the spring of 2013. The City of Green River planted older and much larger shrubs and trees to reduce impacts from herbivory and to more quickly develop horizontal and vertical structure needed for wildlife habitat. It is also hoped that this would demonstrate to riverfront landowners that large native trees can be used to replace nonnative trees and encourage landowners to participate in future control programs (Wyoming Game and Fish Department, 2013). The third phase of the project includes continued monitoring and treating re-sprouts or seedling trees. The City of Green River Parks and Recreation Department is conducting monitoring and follow-up control of invasive re-sprouts for three consecutive years following the original treatment dates. During the 2014 fiscal year, follow-up treatments were completed on private lands along the Green River from below Seedskafee NWR through the City of Green River to the confluence. SCWP, in coordination with WGFD, contracted Field Services and Weed Control, LLC. to apply herbicide on areas previously treated and those sites that were difficult to reach by land. Up to 30 estimated

acres of Russian olive and tamarisk located within 8,072 acres of riparian river corridor and 28 stream miles were controlled using a combination of stump-cut and chemical treatment. Trend data reported in 2014 for two ¼ acre representative plots along the treated riparian zone support the need for timely follow-up control of re-sprouts to prevent reestablishment. Plans for the 2015 fiscal year include follow-up stump-cut and foliar herbicide applications on city owned/controlled property and participating adjacent private property along the riparian greenbelt between Killdeer Wetlands and the lower end of Scott's Bottom (approximately 5-7 river miles and about 600 riparian acres).

This landscape-scale effort addresses multiple issues within the Green River and Lower Big Sandy River Priority Area. The removal of these invasive trees reduces competition with native vegetation, providing an opportunity for the restoration and regeneration of more complex native communities. Planting native trees and shrubs reduces new invasive plants from being established and provides diverse stand structures. Newly established trees also capture sediments and stabilize streambanks, which improves water quality and fish habitat.

#### Additional Conservation Actions by WLCI Partners

- Seedskadee NWR addresses many habitat and wildlife issues identified in the WLCI CAP. For additional information on the projects described above and other conservation actions, see *Seedskadee National Wildlife Refuge Comprehensive Conservation Plan* (U. S. Fish & Wildlife Service, 2002) and *An Evaluation of Ecosystem Restoration and Management Options for Seedskadee National Wildlife Refuge* (Heitmeyer, Henry, & Artmann, 2012)
- WGFD and Seedskadee NWR collaborated on a series of aquatic habitat improvement projects in addition to the WLCI-funded McCullen Bluff project mentioned previously. They include placing woody debris in side channels to improve juvenile fish habitat structure, constructing up to 12 rock barb jetty structures on an outside meander bend to benefit juvenile fish at the Hawley Unit, and constructing a large trench pool/point bar channel constriction at the Pal Unit to provide slower velocity pool habitat for adult trout.
- Monitoring of cottonwood regeneration is conducted cooperatively between Seedskadee NWR staff and WGFD Green River Region biologists. Three Live/Dead Index transects have been monitored since 2009 at Seedskadee National Wildlife Refuge (NWR) to evaluate big game herbivory on young cottonwood growth and survival. This information is used to assist deer and moose (*Alces alces*) population management and harvest strategies that would encourage vertical growth of cottonwood along the lower Green River riparian corridor.
- The USGS is conducting water-resource monitoring on the Green River in cooperation with State and other Federal agencies to address concerns about energy development in the region. Water quality monitoring includes measuring stream flow, specific conductance, and the collection of water samples for laboratory analysis of dissolved solids (DS) concentrations. By examining relations between measured specific conductance and DS concentrations in water samples, USGS scientists were able to develop a web-based tool that provides real-time DS concentrations for the Green River.
- Riparian greenline monitoring has been conducted by WGFD on the lower Big Sandy River between the town of Farson and the Green River confluence. Six transects were originally established in 1993 to evaluate riparian vegetation response to elevated water tables created by instream rock sill structures installed in the river. The Big Sandy Working Group (multiple partners) has shown interest in the data to evaluate the effectiveness of grazing management strategies in restoring healthy riparian plant communities along the lower Big Sandy River.

Timeframe: 15 to 20 years

#### Existing Plans and Other Strategies

- *An Evaluation of Ecosystem Restoration and Management Options for Seedskadee National Wildlife Refuge* (Heitmeyer, Henry, & Artmann, 2012). See *Seedskadee National Wildlife Refuge plans listed above for additional details on projects 1-5 and conservation plans specific to the refuge.*
- BLM Green River Resource Management Plan (Bureau of Land Management, 1997)
- Greater Yellowstone Trumpeter Swan Initiative
- WGFD Trumpeter Swan range expansion program (1992-2002)
- WGFD Trumpeter Swan Summer Habitat Enhancement in the Green River Basin Project

- Pacific Flyway Plan for the Rocky Mountain Population of Trumpeter Swans (Pacific Flyway Study Committee, 2002)
- Sweetwater County Conservation District – Land & Resource Use Plan and Policy (Sweetwater County Conservation District, 2011)
- Seedskaadee National Wildlife Refuge Comprehensive Conservation Plan (U. S. Fish & Wildlife Service, 2002)
- WGFD Strategic Habitat Plan (WGFD, 2009)

## Henrys Fork River Geographic Priority Area

### Environmental Setting

The Henrys Fork River rises in the High Uinta Wilderness of Utah and flows through southern portions of Uinta and Sweetwater counties in Wyoming before emptying into Flaming Gorge Reservoir. WGFD has identified the entire Henrys Fork River riparian corridor in Wyoming as an aquatic crucial habitat priority area. The Henrys Fork watershed has also been identified as a potential Native Fish Conservation Area for a new National Fish and Wildlife Keystone Initiative focused on native fishes in the Upper Colorado River. The upstream reach of the river near the Utah-Wyoming state line provides habitat for Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*, abbreviated as CRCT) and is characterized by a relatively steep gradient with varying sizes of boulders. The lower two thirds of the river provide habitat for two other sensitive native fish species, the flannelmouth sucker and bluehead sucker. Of the 87 total conservation populations of CRCT in Wyoming, 3 core conservation populations area found in the Henrys Fork drainage. The river corridor provides diverse cottonwood and willow riparian habitat that is utilized by numerous terrestrial and aquatic wildlife species (WGFD, 2009). *Although there are numerous issues that need to be addressed in this priority area there is only one proposed action that has been discussed at the time of this report (figure 3-4).*

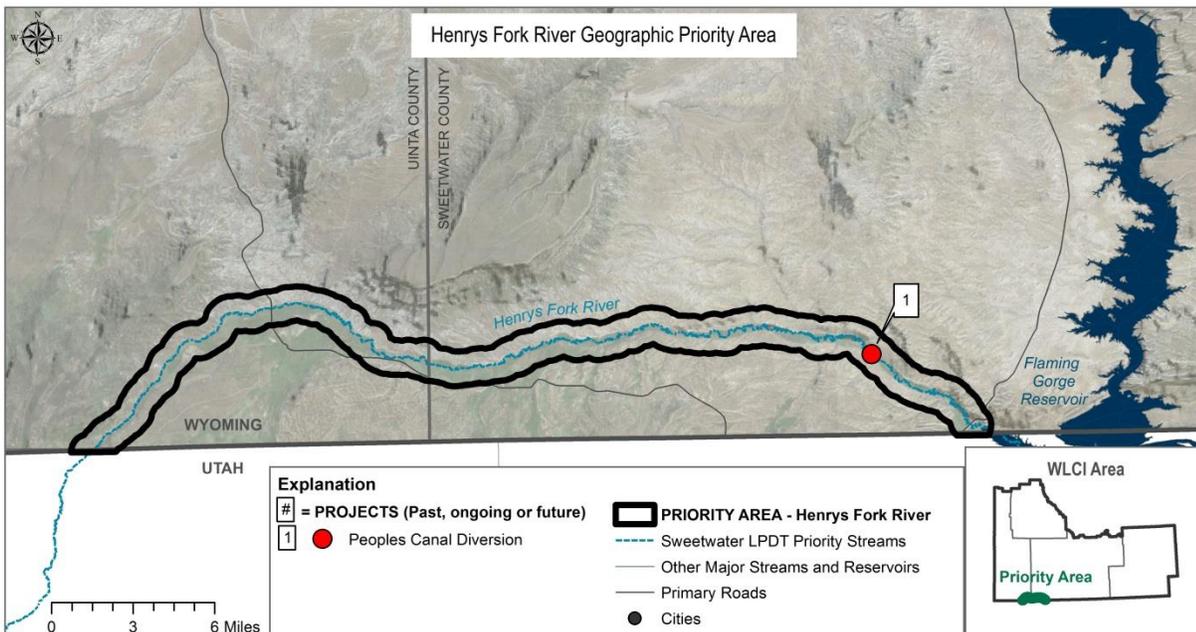


Figure 3-4. Henrys Fork River Geographic Priority Area and projects

### Issues

- **Water quality and aquatic and riparian habitat degradation:** The Henrys Fork was designated as a salinity control area by the Natural Resources Conservation Service (NRCS) in its 2013 Henrys Fork Salinity Control Project Plan and Final Environmental Impact Statement. Irrigation of native hay crops has altered flows, and deep percolation of irrigation water has dissolved salt and carried it into the river system (NRCS, 2013). WGFD has reported that habitat function for fish has diminished and that heavy siltation is common in the middle and lower sections of the river (WGFD, 2009).
- **Important native fish populations:** The Henrys Fork River provides habitat for sensitive native fish species whose populations have declined range-wide. The upstream reach of the river near the Utah-Wyoming state line provides habitat for CRCT and the lower two thirds of the river provide habitat for flannelmouth suckers and bluehead suckers. Habitat degradation and hybridization with non-native species has reportedly contributed to the decline of each of these species, and habitat protection is warranted (WGFD, 2009), (Senecal, Gelwicks, Cavalli, & Keith, 2010), (Young, Schmal, Kohley, & Leonard, 1996).
- **Channel structure and function:** Restoring channel structure and function for all tributaries of the river is a landscape-scale goal identified by Trout Unlimited.
- **Impediments to fish movement:** Irrigation diversion structures in the river may be barriers to fish passage and cause habitat fragmentation.
- **Invasive species:** Invasive burbot (*Lota lota*) currently occupy Flaming Gorge Reservoir and could impose competitive pressure on native fish populations if they enter the river system.

### Conservation Actions and Intended Accomplishments

#### **1. Peoples Canal Diversion Structure**

Trout Unlimited has coordinated with Peoples Canal Company, BLM, WGFD, NRCS and other partners to improve a diversion structure located on People's Canal. The primary objective of the project is to make a more secure and permanent barrier to prevent burbot and other aquatic invasive species from entering the Henrys Fork River system. Burbot populations are established in the Flaming Gorge Reservoir and could pose a threat to the sensitive native fish species upstream of the diversion structure. The desired outcomes of this project include 1) prevention of passage by non-native aquatic species, 2) protection of the native Colorado River cutthroat trout (CRCT), bluehead and flannelmouth sucker populations, and 3) consistently provide the Peoples Canal Company with their appropriated water. Project implementation is tentatively planned for 2015. Following construction, TU and WGFD will sample above the diversion in November of 2015 for burbot for approximately 10 miles. If burbot are not found, the project will be considered successful. TU will contact the irrigators along the canal regularly to ensure that the structure is functioning properly.

This project addresses the priority area's issues of invasive species and threats to important native fish species. It will protect over 100 stream miles from burbot and other invasives. The Henrys Fork drainage is a focus for many future fisheries restoration projects, particularly for restoring historic CRCT habitat. This project is one of the first steps in enhancing the Henrys Fork watershed and increasing the range and connectivity of native CRCT in the drainage. The success of all of these future efforts relies heavily on the protection provided by the project.

### Additional Conservation Actions by WLCI Partners

- NRCS issued its Henrys Fork Salinity Control Project Plan and Final EIS in April of 2013. The plan was developed to reduce 6,540 tons of annual salt loading to the Colorado River system by implementing conservation practices (irrigation system improvements) in the upper Henrys Fork project area (NRCS, 2013). Deep percolation from 14,096 acres is expected to be treated through the project action, reducing it by approximately 40%. The salt loading reduction will be achieved by on-farm irrigation system improvements and some on-farm water delivery ditches in the project area.
- Trout Unlimited (in cooperation with NRCS) created a new position in 2013 for salinity control project coordination. The project coordinator works with local landowners to improve their irrigation efficiencies, reduce salt loading and improve aquatic habitat for native fish species in the drainage. Efforts are being made to incorporate new sprinkler systems into irrigation strategies, fence a portion of Beaver Creek (a tributary of the Henrys Fork) on private land, and improve additional diversion structures and aquatic habitat connectivity in

the Henrys Fork area. The project coordinator is also working with three private landowners to convert a large ditch to a screened pipeline reduce water seepage and improve water quality in the area.

Timeframe 5 to 10 years

#### Existing Plans and Other Strategies

- BLM Green River Resource Management Plan (Bureau of Land Management, 1997)
- Henrys Fork Salinity Control Project Plan and Final Environmental Impact Statement: Irrigation Improvements (NRCS, 2013)
- Conservation Agreement for Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah and Wyoming (CRCT Conservation Team, 2006)
- Range-wide Conservation Agreement and Strategy for Colorado River Cutthroat Trout (CRCT Coordination Team, 2006)
- Range-wide Conservation Agreement and Strategy for Roundtail Chub (*Gilia robusta*), Bluehead Sucker (*Catostomus discobolus*) and Flannelmouth Sucker (*Catostomus latipinnis*) (Utah Department of Natural Resources, 2006)
- Sweetwater County Conservation District – Land & Resource Use Plan and Policy (Sweetwater County Conservation District, 2011)
- WGF D Short-term Plan for the Three Species on the Green River Drainage of Wyoming; 2009-2014. (Senecal, Gelwicks, Cavalli, & Keith, 2010)
- Wyoming Game and Fish Department Strategic Habitat Plan (2009)

### **Little Mountain Ecosystem Geographic Priority Area**

#### Environmental Setting

The Little Mountain Ecosystem (LME) is recognized by WLCI partners as the area south of Rock Springs, east of Flaming Gorge Reservoir, west of Highway 430, and north of the Utah state line in Sweetwater County. The LME is ecologically diverse, supporting wildlife species assemblages unique to southwest Wyoming, and has been the focus of aquatic and terrestrial habitat enhancement and ecosystem restoration efforts over the past 20 years. The LME provides important habitat for a large assemblage of Species of Greatest Conservation Need (SGCN) and contains exceptionally diverse and productive vegetation communities. Increasing demands for energy development and other land uses in the Green River watershed threaten water quality and quantity associated with numerous small streams. There are currently four project activities in this priority area (figure 3-5).

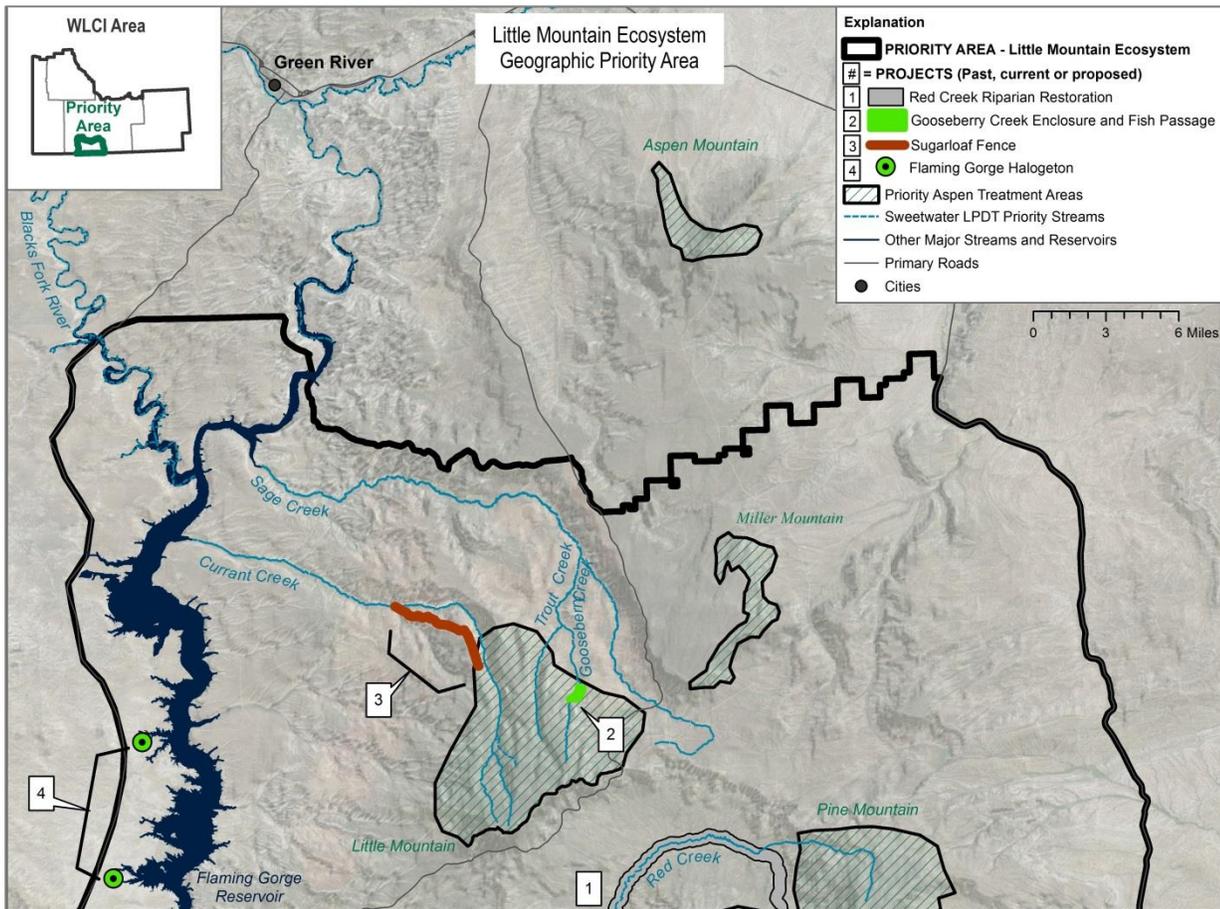


Figure 3-5. Little Mountain Ecosystem Geographic Priority Area and projects

### Issues

- **Invasive plant species:** Tamarisk, halogeton and other invasive plant species exist within the Little Mountain Ecosystem Priority Area. Additional species identified by the Sweetwater LPDT include cheatgrass, Canada thistle, musk thistle (*Carduus nutans*), henbane, perennial pepperweed, and whitetop (*Cardaria draba*).
- **Impediments to fish movement:** Gooseberry Creek has lost its population of CRCT above two in-stream barriers. Gooseberry Creek is a very small tributary and cannot maintain a large population of CRCT without connectivity to Trout Creek and Sage Creek.
- **Aquatic and riparian habitat degradation:** Priority streams identified by Sweetwater LPDT to maintain or improve habitat function in the LME include Curren Creek, Gooseberry Creek, Red Creek, Sage Creek and Trout Creek. Each of these priority streams are being subjected to one or more of the following: excessive sedimentation, head-cutting, inappropriate fitting culverts, loss of woody riparian vegetation, poor fish passage, and failing water diversion structures.
- **Aspen and mountain shrub community health:** Priority areas include Aspen Mountain, Little Mountain, Miller Mountain, and Pine Mountain. Factors contributing to poor health include conifer encroachment and ungulate herbivory. Excessive browsing of aspen regeneration by elk is suppressing or killing re-growth, and threatening the long term health or existence of aspen habitat.
- Potential energy development activities on the east side of Flaming Gorge threaten to fragment and degrade the life stage habitats of numerous aquatic and terrestrial species including the endemic reptiles of the area.

### Conservation Actions and Intended Accomplishments

#### 1. Red Creek Riparian Restoration - Tamarisk Removal and Riparian Planting

The Red Creek Riparian Restoration project used both biological and herbicide treatments to control tamarisk. Controlling tamarisk is expected to improve native riparian tree and shrub structure, reduce erosion, reduce water loss and salinity from tamarisk, and maintain viable populations of CRCT. Sweetwater County Weed and Pest District treated an estimated 150 acres in 2009 and 2010. Post-treatment monitoring indicated successful control of tamarisk. Native riparian woody species [narrowleaf cottonwood (*Populus angustifolia*), coyote willow (*Salix exigua*), silver buffaloberry (*Shepherdia argentea*), chokecherry (*Prunus virginiana*) and other shrubs] were planted on Red Creek in 2008 to augment existing populations of native woody riparian species and provide streambank stability along both banks of the floodplain of Red Creek, which is a highly erosive stream. Therefore, this project addresses the priority area's issues of aquatic and riparian habitat degradation in addition to invasive species. Several other projects have occurred on Red Creek and Sage Creek. See brief descriptions of these projects in the section "Additional Conservation Actions Conducted by WLCI Partners". Partners include Sweetwater County Weed and Pest, WGFD, BLM and Trout Unlimited.

## **2. Gooseberry Creek Fish Passage and Enclosure**

Trout Unlimited, BLM, and WGFD worked collaboratively to improve fish passages for CRCT in Gooseberry Creek. This creek is a very small tributary and could not maintain a large population of trout without access to Trout Creek and Sage Creek. The objective for this project was to replace two structures impeding fish passage. The structures were replaced, allowing trout access to 1.5 miles of prime spawning and rearing habitat. The first structure replaced a deteriorating manmade gabion that created a 6.6 foot drop. Reconstruction of this structure stabilized an existing head-cut and provided upstream passage for fish. The second project addressed a rock out-cropping 1/4 mile upstream of the County Road 34 crossing. This rock out-cropping used to stop multiple head-cuts also had a significant drop preventing fish from moving upstream. A structure similar to the one designed for the gabion structure was constructed. Two enclosures were built for Gooseberry Creek between 2008 and 2013. These were constructed to improve the effectiveness of an existing erosion control structure, which was placed to prevent the upstream movement of an existing head-cut. TU and BLM will monitor both structures for proper performance for five years following project completion. The population of CRCT will continue to be monitored by WGFD. The local TU chapter has explored the opportunity for using hatching boxes for CRCT in the upper Gooseberry Creek. An effort to restore the watershed with native woody plants began in 2013. Two hundred coyote willows were planted in a collaborative effort between TU, WGFD, and local high school students. WLCI partners plan to complete constructing a section of fencing and some reseeded. This is considered one of the last steps needed to reconnect the upper Gooseberry Creek to the rest of the Sage/Trout Creek drainage.

These WLCI-funded projects address the priority area's issues of impediments to fish passage and aquatic and riparian habitat degradation. They complement other TU/NRCS fish habitat enhancement projects that are planned for private lands on Gooseberry Creek and Trout Creek downstream of this passage project. They are an integral part of a larger collaborative effort to improve aquatic and riparian habitat within the Little Mountain Ecosystem and increase the range of native CRCT.

## **3. Sugarloaf Fence – Currant Creek Habitat Restoration**

In 2012, 4.9 miles of fencing were constructed on Big Ridge to restore the riparian habitat of Currant Creek. Two existing fences were connected, resulting in the protection of 8.25 miles of riparian pasture along upper Currant Creek. The strategy for this habitat restoration project is to permanently enclose the stream and adjacent meadows unless livestock is authorized in the special use pasture. The BLM has reported that the most imminent threat to the Currant Creek habitat is continual cattle drift into the drainage and subsequent grazing of riparian vegetation. This portion of Currant Creek is a BLM designated Area of Critical Environmental Concern (ACEC) and has been the focus of watershed scale habitat restoration for over 20 years. The area is near an elk parturition range and is in seasonal elk and deer range. The area provides habitat for Colorado River cutthroat trout, elk, deer, beaver (*Castor canadensis*), multiple bird species, and other wildlife species. The Currant Creek drainage is part of the Little Mountain Ecosystem, which is being managed for improved riparian vegetation abundance and diversity of sedges, rushes, various willow species, aspen, wild rose (*Rosa* sp.), gooseberry (*Ribes* spp.), currant (*Ribes* spp.), and other riparian species. The project aids in increasing the effectiveness of livestock management, improved vegetation vigor, decreasing or stabilizing weedy vegetation, and decreasing browsing levels on willow and aspen planting projects so these species can be established in greater densities in the habitat. It addresses the priority area's issues of aquatic and riparian habitat degradation, aspen health, and invasive species. It addresses numerous WLCI

conservation priorities including the maintenance of quality critical habitat, the enhancement and restoration of big game crucial habitat and sensitive fish species aquatic habitat (CRCT), and the restoration of stream and riparian function. Partners for the project include the WGFD, RMEF, and the BLM Rock Springs Field Office.

#### **4. Flaming Gorge Halogeton**

The WLCI is addressing the issue of halogeton invasion and providing restoration efforts in salt-desert shrublands in the Little Mountain Ecosystem Geographic Priority Area. Treatments were conducted to improve habitat conditions in two two-acre enclosures. The native plant communities [Gardner's saltbush (*Atriplex gardneri*)] known to exist within these enclosures have been invaded and displaced by halogeton. Treatments have included a variety of soil preparation and seeding techniques as well as introducing different plant materials. Enclosures have been built and seeds or transplants have been planted within them. Each enclosure had different vegetation planted to assess what will work best throughout the large landscape. Monitoring of each treatment will occur for at least two years. Preliminary findings from 2012 were reported to the WLCI for new seed and transplant trials. In January of 2014, an ARS Seminar Series was held presenting information about the potential of forage kochia and other plants to reclaim Gardner's saltbush ecosystems that have been invaded by halogeton. In September of 2014, second year data collection on forage kochia and halogeton was conducted. Russian wildrye and forage kochia were reportedly slow to establish, but once established were competitive with halogeton. Analyzed halogeton frequency data was presented at the Western Society of Crop Science meeting in Bozeman, MT in July of 2014. Plans for 2015 include collecting and analyzing the third year's data on forage kochia and halogeton. Partners of this project include USFS, SCWP, and WWNRT. Monitoring trials will continue. Based on the success of these treatments additional areas may be treated over the next five years.

#### Additional Conservation Actions Conducted by WLCI Partners

- The WGFD has been monitoring aspen to evaluate elk browsing effects on aspen regeneration. The monitoring sites include Aspen Mountain, Little Mountain, Miller Mountain, and Pine Mountain, which comprise the LME priority aspen treatment areas identified by the Sweetwater LPDT.
- BLM and WGFD initiated burning treatments to increase aspen age and structure diversity in the Red Creek drainage area during 2009 and 2010.
- Support was provided by Trout Unlimited (TU), private landowners, and the Natural Resource Conservation Service (NRCS) to the WGFD to rebuild a failed irrigation diversion structure with a fish passage component on Trout Creek, a priority stream identified by the LPDT.
- In 2008, the WGFD constructed gradient control structures on Currant Creek, which has been identified by LPDT members as a priority stream. This project was one phase of an ongoing multi-phased effort that began in 1990 to restore the health and function of the Currant Creek Watershed.
- Numerous collaborative Colorado River cutthroat trout habitat improvement projects have been led by the Flaming Gorge/Lower Green River Chapter of Trout Unlimited within the Little Mountain Ecosystem. WGFD provided support for the installation of a series of conifer streambank revetments and woody debris structures in Red Creek to improve pools and cover for CRCT. A local Boy Scout troop also planted young aspen trees along the same reach of Red Creek to improve riparian habitat and complement the instream habitat structures. The Sweetwater County Road 34 crossing at Gooseberry Creek was replaced with a new bottomless arch styled culvert to improve fish passage and maintain hydrologic processes. Large timbers were hauled to Gooseberry Creek to restore the stream channel at two head-cut reaches while providing upstream fish passage. Planning continues to rebuild a failed irrigation diversion structure with a fish passage component on Trout Creek. More information about these projects can be found in the 2012 WGFD Fish Division Annual Progress Report or by contacting the Flaming Gorge/Lower Green River Chapter of Trout Unlimited.
- Multiple partners continue to collaboratively plan for the maintenance of wildlife habitat values and the ecological integrity of the LME in the face of energy development. In 2010, a series of meetings were held by the Governor's staff, which were attended by BLM, private landowners, conservation groups, energy development companies, county government, and WGFD representatives. The purpose was to encourage affected interest groups to identify and discuss their issues related to energy development in the LME, which the Governor's Office intended to compile and present to the BLM for consideration as scoping issues for revision of the Green River RMP in 2011.

- USFS is collaborating with SCWP to map and treat invasive plant species within Flaming Gorge National Recreation Area, including along the Blacks Fork and Green rivers. Target species on the Blacks Fork include perennial pepperweed, black henbane (*Hyoscyamus niger*), and musk thistle. Target species on the Green River include Russian olive, tamarisk, perennial pepperweed, Russian knapweed (*Rhaponticum repens*), and common reed (*Phragmites australis*).
- BLM Rock Springs Field Office Fuels projects planned for 2015 and over the next several years include:
  - Currant Creek Ridge Juniper: Remove 912 acres of Utah juniper (*Juniperus osteosperma*) that are encroaching on sagebrush communities from Currant Creek Ridge and Sugarloaf Allotment. A series of treatment phases are planned over the next 3 to 7 years. In addition to reducing the potential for large rapid fires, this project's objectives include restoring sagebrush communities, improving watershed condition, and reducing the amount of soil erosion and sediment deposited into Currant Creek.
  - Sage Creek Cheatgrass: Continue to monitor and treat cheatgrass and other invasive species in the Sheep Mountain Wildfire area. BLM has collaborated with Wyoming Natural Diversity Database (WYNDD) on monitoring since 2001 and with SCWP on aerial chemical treatments since 2012.
  - Lousy George Spring HFR: Remove encroaching Utah juniper from sagebrush and mountain shrub communities near Lousy George Spring in the Sugarloaf Allotment. At least 2,100 acres are targeted for mechanical and prescribed pile burn treatment. This project should maintain or enhance vegetative communities' health, composition and diversity, and improve watershed conditions.
  - Little Red Creek: Treat (mechanically and with prescribed fire) 2,847 acres of conifer encroachment within the Red Creek Allotment. The project aims to reduce subalpine fir (*Abies lasiocarpa*) and juniper to allow reestablishment of aspen colonies within the treated areas.

Timeframe 15 years

#### Existing Plans and Other Strategies

- BLM Green River Resource Management Plan (Bureau of Land Management, 1997)
- Conservation Agreement for Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah and Wyoming (CRCT Conservation Team, 2006)
- Range-wide Conservation Agreement and Strategy for Colorado River Cutthroat Trout (CRCT Coordination Team, 2006)
- Sweetwater County Conservation District – Land & Resource Use Plan and Policy (Sweetwater County Conservation District, 2011)
- WGFD Strategic Habitat Plan (WGFD, 2009)
- See WGFD Fish Division Annual Progress Reports for the collaborative CRCT habitat improvement projects led by TU in the Little Mountain Ecosystem, including work on Red Creek and Gooseberry Creek mentioned in the “Additional Conservation Actions Funded and Conducted by Partners” section above.

#### **Big Game Corridor Geographic Priority Area**

\*Note to Sweetwater LPDT: Projects from this team spans Sublette and Sweetwater counties and is included in the Big Game Corridor Geographic Priority Area of the Sublette LPDT maps and narratives as well.

#### Environmental Setting

This Big Game Corridor Geographic Priority Area (Sublette figure 3-2) contains a critically important section of a mule deer migration corridor that runs from the Hoback Rim to Big Sandy in Sublette County. Over 4,000 mule deer utilize the migration corridor, including an estimated 500 deer that travel a one-way distance of 150 miles from the Red Desert to the Hoback Basin in the longest mule deer migration ever recorded. In addition to this corridor along the Wind River front, the priority area contains a large portion of the “Path of the Pronghorn”, a migration route between the upper Green River Basin and Grand Teton National Park. Pronghorn have used this route to move between summer and winter range for more than 6,000 years. The priority area is comprised of mixed federal, state and numerous private lands.

## Issues

- **Migration corridor maintenance and big game passage:**  
Sublette and Sweetwater counties support some of the largest and most diverse ungulate populations in North America. The performance of these herds is largely dependent upon their ability to seasonally migrate from low-elevation winter ranges to high-elevation summer ranges. The Big Game Corridor Priority Area contains a critically important section of a migration corridor used by both elk and mule deer. Non-wildlife friendly fences impede big game passage within this corridor and throughout the priority area, causing wildlife stress, injury and mortality while fragmenting habitat. Pronghorn face the additional issue of passing through a narrow bottleneck between the New Fork and Green rivers during their migration from Grand Teton National Park to access their winter range in upper Green River Basin. Road crossings, energy development, and residential development also threaten the ability for big game to seasonally migrate between crucial seasonal habitats.
- Additional issues identified within this priority area include invasive species (cheatgrass), critical wildlife habitat, and energy and residential development. Please see the Boulder Cheatgrass/Invasive Species Task Force Cheatgrass Priority Area narrative for additional information.

## Conservation Actions and Intended Accomplishments

### **Red Desert to Hoback (RD2H) Mule Deer Migration Project**

WLCI partners and members of the Sweetwater and Sublette LPDTs are implementing a two-phase project that addresses the Red Desert to Hoback Basin (RD2H) mule deer migration. This recently discovered 150 mile migration is the longest mule deer migration ever recorded, and the second longest land migration in North America. The first phase (led by the Wyoming Migration Initiative) consists of a threat assessment along the RD2H route. The objective of the threat assessment is to identify and evaluate locations where specific threats and impediments are occurring. Examples of threats and impediments include fences, road crossings, movement bottlenecks, and energy and residential development. The objective for Phase II is for members from the Sweetwater and Sublette LPDTs to use the information collected during Phase I to design, develop, and implement appropriate conservation actions. Conservation actions might include fence modification, purchasing conservation easements, restoring or enhancing important crucial or transitional habitat, informing land use plans and public outreach.

The RD2H assessment was initiated in 2013 and completed during 2014. Tracking of GPS-collared mule deer has occurred since 2011 (Sawyer, Hayes, Rudd, & Kauffman, 2014). Data from this effort was used in the assessment to determine locations where deer movements may indicate possible issues. The assessment combined fieldwork, aerial surveys, data analysis, and mapping. Partners mapped the migration route, inventoried fences, documented land ownership, and identified stopover areas and areas which restrict mule deer migration or could impede their migration in the future. Results were compiled in a written document that includes detailed maps, images, GIS data, threat information, and potential conservation actions (available at [http://migrationinitiative.org/sites/migration.wygisc.org/themes/responsive\\_blog/images/RDH\\_Migration\\_Assessment\\_Final.pdf](http://migrationinitiative.org/sites/migration.wygisc.org/themes/responsive_blog/images/RDH_Migration_Assessment_Final.pdf)). A National Geographic photographer compiled a series of images and videos that convey the story of the migration to the public. Several receptions were held in 2014 throughout Wyoming to share the results of the threat assessment with WLCI partners and the public. Additional work in 2014 included the collaring of 18 deer for continued monitoring. Ten camera traps were placed along the migration route in an attempt to determine whether remote camera traps would be able to capture the timing, duration, and density of migrating mule deer. If successful, this technique could be utilized by wildlife managers to take proactive management techniques during migration periods. Future plans for 2015 include 1) additional collaring and monitoring of mule deer; 2) deploying

remote, high-definition camera traps; and 3) determining the ability to use camera traps to monitor the timing of migrations.

This project has and will continue to address the Sublette Big Game Corridor Geographic Priority Area's issues of migration corridor maintenance and big game passage. It addresses the Sublette LPDT's objective to protect, maintain and enhance important and crucial habitats and corridors for mule deer and other big game species. The assessment provides missing information needed to conserve the RD2H migration corridor. By identifying areas where migration corridors of mule deer are threatened from a host of causes, project leads are able to identify areas where partners can target management activities. Partners have suggested developing road overpasses and/or underpasses on Highway 28 as a long-term solution to address one of the major impediments to migration along this migration route. A large portion of the migration route passes through the Wildlife Friendly Fencing Initiative Phase II project area. Therefore, an opportunity exists to integrate conservation efforts between these projects since noncompliant fencing is considered a major threat to this migration. Existing Plans and Other Strategies

- BLM Green River Resource Management Plan (Bureau of Land Management, 1997)
- BLM Pinedale Resource Management Plan (Bureau of Land Management, 2008)
- WGFD Strategic Habitat Plan (WGFD, 2009)
- Sublette County Conservation District's Land Use and Natural Management Long Range Plan 2010-2015 (Sublette County Conservation District, 2010)
- Wyoming Migration Initiative - Threat Assessment for the Red Desert to Hoback (RD2H) Mule Deer Migration (Sawyer, Hayes, Rudd, & Kauffman, 2014), Atlas of Wildlife Migration: Wyoming's Ungulates, Database and Online Viewer

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