

# Partners for Fish and Wildlife Program

*Mountain-Prairie Region  
Strategic Plan  
2017–2021*



## *Cornerstones:*

*Trust*

*Respect*

*Honesty*

*Flexibility*

*Friendship*

*Two-way Communication*

*Voluntary Private Lands Habitat Restoration*



*The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.*

**Front Cover Photographs**

*Musselshell Plains, Montana (landscape photo). Photo by Joe Smith. Landowner family with Partners for Fish and Wildlife Biologist, Marisa Sather. USFWS Photo.*

**Back Cover Photographs**

*Greater sage-grouse, Brewer's sparrow, sage thrasher (left to right). Photos by Tom Koerner, USFWS.*



## Mountain-Prairie Region



### *Message from the Regional Director*

As Regional Director of the Mountain-Prairie Region of the U.S. Fish and Wildlife Service (Service), I am pleased to share our new regional Partners for Fish and Wildlife program 5-year Strategic Plan, covering FY 2017–2021. The Partners for Fish and Wildlife program has a national framework for strategic planning, and this 5-year plan is the third planning effort following this structured approach. This plan will help guide the Region and our many public and private partners as we continue implementing effective habitat restoration benefitting priority fish and wildlife species while providing win-win solutions for private landowners. It is particularly exciting to roll out this plan as we launch the Partners for Fish and Wildlife program’s 30th anniversary in 2017.

During my career with the Service, I have seen the Partners for Fish and Wildlife program expand from a small program in the Prairie Pothole Region to a national program covering all 50 states and U.S. Territories. Despite its modest size, the Partners for Fish and Wildlife program has delivered valuable and lasting conservation accomplishments throughout its 30-year history. In our Mountain-Prairie Region alone, we have restored over 3.5 million acres of habitat on private lands. Now, we look to the future to build upon our many successful partnerships and further conservation. Over 70% of the United States is owned by private landowners and in the Mountain-Prairie Region, four of our eight states contain more than 90% private land. Thus, our continued success depends on close partnerships with private landowners and other partners. These partnerships will assist our regional Partners for Fish and Wildlife program to meet and exceed our goal of maintaining and increasing populations of Federal Trust Species and help support our ongoing effort to “keep common species common.”

The Partners for Fish and Wildlife program’s 5-year Strategic Plan is the result of a collaborative effort among Service programs, other federal agencies, state agencies, non-governmental organizations, community-based partnerships, private landowners, Tribes, and others. The knowledge, skills, and expertise of all the partners are evident in the plan and their contributions will lead to successful implementation.

Given the size of the Mountain-Prairie Region, habitat restoration costs far exceed available funding. It is critically important that the Partners for Fish and Wildlife program focus their conservation efforts. To do this, the Partners for Fish and Wildlife program used national and regional Service priorities, best available science, and input from partners to help guide strategic planning. The Partners for Fish and Wildlife program narrowed the scope of geographic focus areas and identified effective conservation practices to ensure significant positive impacts to high priority fish and wildlife populations.

The majority of private lands within the Mountain-Prairie Region are working cattle ranches. Most of these ranches are family-owned, multi-generational operations. These ranchers are true stewards of the land and are major contributors to the conservation of fish and wildlife habitats. Conservation projects on these private lands have also helped maintain rural lifestyles and viable agriculture communities, which in turn support healthy, working landscapes. All of this makes me very proud of our people and our partners.

Congratulations to the Partners for Fish and Wildlife program field staff and their many partners for their accomplishments over the past 30 years. The program is successful because of all of your extraordinary efforts. I look forward to many more outstanding and productive years in conservation as we work together in the future.

A handwritten signature in blue ink, appearing to read "RD Walsh". The signature is fluid and cursive.

RD Walsh  
U.S. Fish and Wildlife Service



**U.S. Fish & Wildlife Service**

# Partners for Fish and Wildlife Program

*Mountain-Prairie Region  
Strategic Plan  
2017–2021*



*Voluntary Private Lands Habitat  
Restoration*

*Cornerstones:*

*Trust*

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*Flexibility*

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*Two-way Communication*

# CONTENTS

- Overview of the Mountain-Prairie Region ..... 1**
  - Introduction..... 1
  - Focus Areas..... 2
  - Partnerships..... 2
  - Conserving Habitat..... 4
  - Geographic Focus Areas..... 5
  
- Colorado.....21**
  - Introduction..... 21
  - Geographic Focus Areas..... 24
  - Colorado Statewide Goals ..... 48
  
- Kansas .....61**
  - Introduction..... 61
  - Geographic Focus Areas..... 64
  - Kansas Statewide Goals..... 84
  
- Montana.....101**
  - Introduction.....101
  - Geographic Focus Areas..... 109
  - Montana Statewide Goals ..... 125
  
- Nebraska.....151**
  - Introduction.....151
  - Geographic Focus Areas..... 153
  - Nebraska Statewide Goals.....171
  
- North Dakota.....191**
  - Introduction.....191
  - Geographic Focus Areas..... 191
  - North Dakota Statewide Goals ..... 198
  
- South Dakota.....209**
  - Focus Area Selection ..... 209
  - Geographic Focus Areas..... 210
  - South Dakota Statewide Goals..... 221
  
- Utah .....233**
  - Introduction.....233
  - Geographic Focus Areas..... 235
  - Utah Statewide Goals..... 241
  
- Wyoming .....251**
  - Introduction..... 251
  - Geographic Focus Areas..... 256
  - Wyoming Statewide Goals..... 278
  
- Executive Summary.....293**
  - Regional Objectives ..... 293
  - Regional Habitat Five-Year Targets ..... 293
  - Key Strategic Activities..... 293
  - Broaden and Strengthen Partnerships..... 293
  - Improve Information Sharing and Communication..... 295
  - Enhance Our Workforce..... 296
  - Increase Accountability ..... 297
  - Partners for Fish and Wildlife Act..... 298
  
- Appendix A: Stakeholders .....302**
  
- Appendix B: Literature Cited.....305**
  
- Appendix C: Glossary of Terms.....313**



*Restored off-channel wetland project  
along the Loup River, Nebraska.  
Photo by Shawn Harders, Harders  
Dozers & Scraper Work.*

# Overview of the Mountain-Prairie Region



## Introduction

The Partners for Fish and Wildlife (PFW) program is the U.S. Fish and Wildlife Service's (Service) private lands habitat restoration program. The PFW program within the Mountain-Prairie Region (Region 6) continues to lead the Nation in these efforts, working with hundreds of private landowners on an annual basis to restore and enhance habitat that benefits high priority Federal Trust Species. Since 1987, Region 6 has worked with private landowners to restore wetlands, uplands, rivers and streams, impacting 269,803 acres of wetlands, 3,514,700 acres of uplands, 3,061 miles of rivers / riparian, and 283 fish passage barriers. These restoration accomplishments would not have been possible without the cooperation of the program's more than 19,311 private landowner partners. While the Region 6 PFW program has achieved some incredible accomplishments with landowners and other key partners, the program never stops trying to look for innovative ways to raise the bar. Congress recognized the effectiveness of the PFW program and ratified the Partners for Fish and Wildlife Act in 2006. The Act has provided strength and focus to the program, ensuring that we are fiscally responsible and strategic in how we deliver conservation on-the-ground. Approximately 70% of the land within the United States is in private ownership. In fact, four of the eight states in the Mountain-Prairie Region have over 90% private ownership. Given these facts, it is critical that we work with private landowners to find win-win solutions for both the landowners and the Service. The Region 6 PFW program is eager to work with new landowner cooperators, and shared partners,

to achieve the mission of the Service, "Working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

Several landscape level community-based conservation partnerships have been developed with the help of the PFW program. These community-based partnerships are effective at providing habitat for high priority fish and wildlife species, but also maintain sustainable agriculture communities and rural lifestyles.

In addition to working with many private landowner partners, the Region 6 PFW program works with organizations and other agencies with common goals. Many of these agency and organizational partners were stakeholders involved in the process of developing this strategic plan (Appendix A).

The Service, as well as many outside partners, constantly enhance science applications and decision support tools to help inform the PFW program where they should be working on the landscape to benefit the highest

## PFW Program Goals

Within the Partners for Fish and Wildlife program 5 major goals were identified within the national Vision Document. These were goals within the previous 5-year plan and will remain the same for this current strategic plan.

### Goal I

Conserve Habitat – *Restore and protect priority habitats to increase and maintain Federal Trust Species populations.*

### Goal II

Broaden and Strengthen Partnerships – *Accomplish our work through voluntary partnerships.*

### Goal III

Improve Information Sharing and Communication – *Collaborate and share information and concerns with our partners, stakeholders, potential future partners, decision-makers, and others to protect, restore, and enhance trust resources.*

### Goal IV

Enhance our Workforce – *The staff of our Program is our most important resource. Maintaining and supporting this staff is the key to success in achieving on-the-ground results for Federal Trust Species.*

### Goal V

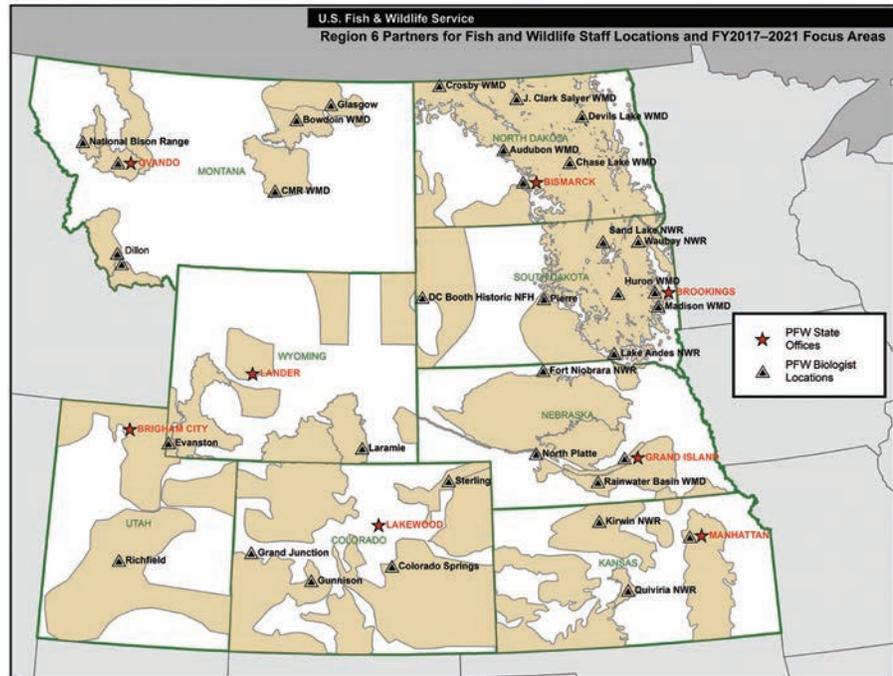
Increase Accountability – *Measure, assess, and report on the effectiveness, efficiency and fiscal integrity of our habitat conservations program and activities.*

priority Federal Trust Species. Leadership within the Region 6 PFW program continues to stay actively involved in all the new special initiatives, both within and outside the Service, in order to have the greatest benefits to focal species, at a landscape scale. The PFW program staff continues to be the greatest asset to the program, with staff constantly staying informed of the latest technologies in restoration ecology and partnership development.

### Focus Areas

Region 6 has had geographic focus areas for the past 18 years. These focus areas have always been identified with significant stakeholder involvement, including the involvement of other Service programs (i.e., Migratory Birds, Fisheries and Aquatic Conservation, Ecological Services and Refuges). With this new 5-year strategic plan, the PFW program again involved partners in the process to ensure the program was using the best available science and took into consideration shared goals. With newly available GIS data layers, and increased research and monitoring to determine species population numbers and threats, the Service has more tools available to help refine the focus areas that are currently in place. These newly developed regional focus areas will provide great opportunities to benefit high priority fish and wildlife species through private land habitat restoration and enhancement. In addition, acre and river mile accomplishment goals have been established for each of the focus areas, ensuring that each Private Lands Biologist tracks progress for our highest priority fish and wildlife species.

The Region 6 PFW program agreed to some common selection criteria for establishing focus areas. PFW program state coordinators were then given latitude to add new or additional criteria and were given the opportunity to structure their own process of engaging partners. The diversity of methods is highlighted throughout the state



Map of Region 6 PFW program Focus Areas and staff locations. USFWS map.

write-ups within this plan. All states considered the following criteria as part of their selection:

- Federal Trust Responsibilities
- Directorate Priorities
- Intact Landscapes (Fragmentation)
- Threats
- Public Land - Private Land Patterns
- Partnership Opportunities
- Proximity to Service Field Stations

Focus area selection was driven entirely by the focal species that were identified. Each focal species has specific habitat requirements, which were addressed prior to developing the focus area boundaries. Identifying focal species first, helps the program to know exactly where on the landscape we should be working. The Private Lands Biologists are then placed in the heart of their focus areas, in order to be as efficient and effective as possible. By having the Private Lands Biologists stationed within their geographic focus area, it provides a strong sense of community. Landowners not only recognize them as resource professionals, but also as community assets.

At the national level, the PFW program selected five major goals that each regional strategic plan would address. These five goals will remain just the same as the goals laid out in the past two PFW program strategic planning processes nationally.

### Partnerships

The Service’s mission underlines the value of partnerships and our commitment “to work with others”. Community-based, conservation partnerships are the foundation of the Region 6 PFW program. Partnerships help support PFW’s mission, “to efficiently achieve voluntary habitat restoration on private lands”. Furthermore, partnerships help determine our success and trajectory through strategic planning. PFW partners assist with identifying focal species and geographic focus areas. Partnerships have enhanced the PFW program’s ability to benefit priority fish and wildlife species and further our mission while supporting sustainable agriculture and rural lifestyles. Our partnerships include private landowners, community-based partnerships, ranching and farming groups, conservation districts, Federal and state natural



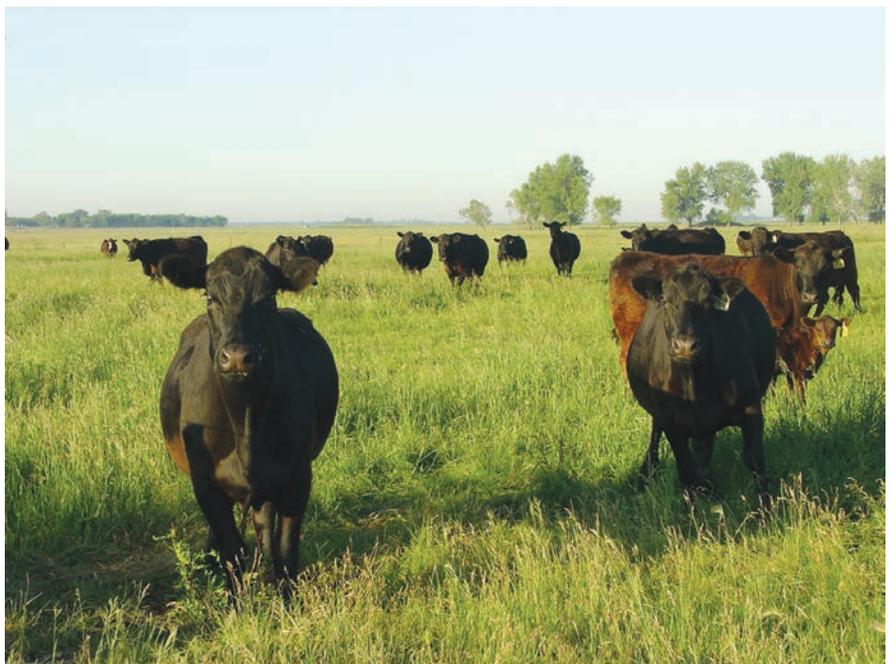
*Mindy Meade-Vohland, Wyoming PFW program Biologist, discussing a successful project with a private landowner. USFWS photo.*

resource agencies, local agencies, non-governmental organizations, Tribes, stakeholders, and others. We also work closely with other Service programs to implement conservation actions for Federal Trust Species. We utilize conservation plans and species lists developed by internal and external partners for planning and implementation. Plans include, but are not limited to, the North American Waterfowl Management Plan, endangered species recovery plans, state wildlife action plans, Partners in Flight conservation plans, Joint Venture implementation plans, and others. Internal and external partnerships support two-way communication and often serve as a conduit for information collection, analyses, and dissemination. Bringing together diverse, conservation-minded people affords more opportunities for habitat restoration, refines our conservation actions, ensures efficiency and effectiveness, decreases project costs (leveraging funds), and increases areas of impact. Diverse views and skill-sets are viewed as value-added components and strengthen the program, our strategic actions, and conservation delivery. As new initiatives come online and new

directives require landscape-level planning, innovative partnerships allow us to adapt to ever-changing priorities.

Each state within the Mountain-Prairie Region has a unique set of partnerships. Private landowners and community-based partnerships are the core of our partnership efforts, but we often work with

other agencies and organizations. Examples of community-based partnerships include the Tallgrass Legacy Alliance, Kansas Grazing Lands Coalition, Blackfoot Challenge, and Sandhills Task Force. In regards to agency partners, the U.S. Department of Agriculture (USDA) continues to be a significant partner throughout the Region. Because of increasing conservation efforts, new initiatives, and overlapping goals, local and state PFW offices are successfully partnering with the Natural Resources Conservation Service (NRCS) and the Farm Services Agency (FSA). Non-governmental organizations such as Ducks Unlimited (DU), Trout Unlimited (TU), The Nature Conservancy (TNC), and Pheasants Forever continue to be key partners and allow us to further our conservation efforts. Pheasants Forever continues to make large investments in private land conservation and support similar conservation practices that benefit suites of wildlife species and pollinators. New and expanding partnerships with the Theodore Roosevelt Conservation Partnership, Walton Family Foundation, and the National Wildlife Refuge Association continue to support restoration



*Sustainable ranching and grassland conservation efforts support habitat for migratory grassland birds. USFWS photo.*



*Grazing management provides win-win solutions for cattle producers and a suite of fish and wildlife species. Photo by Clint Wirick, USFWS.*

efforts and on-the-ground habitat delivery. Region 6 PFW will continue to work beyond regional boundaries by assisting with efforts led by the National Grazing Lands Coalition and the Prairie Pothole Region.

### **Conserving Habitat**

The Mountain-Prairie Region contains the largest percentage of the Nation's private and tribal rangelands. Four states in the Region are more than 90% privately owned. Subsequently, the Region has a diverse variety of intact landscapes that support sustainable ranching as well as multi-species conservation, population and habitat resiliency, habitat connectivity, life-cycle requirements, and other biological functions. By working to enhance sustainable ranching operations, Region 6 PFW will help ensure intact landscapes are maintained and wildlife habitat is conserved for future generations. Maintaining rural lifestyles safeguards wildlife habitat and the intact landscapes in which they occur. These efforts keep ranchers and farmers on the land and help prevent adverse impacts associated with subdivision, development, and other

forms of land-use conversion that would result in fragmentation and permanent loss of key habitats for Federal Trust Species.

Through strategic planning, the PFW program uses current science to inform decision making, focal species selection, and delineation of focus area boundaries. Since the previous 5-year strategic plan, we have learned additional information about several of our highest priority fish and wildlife species, and we have made necessary adjustments to focus areas and focal species lists to reflect the latest science. All at-risk species were considered for focal species selection. However, some at-risk species were not selected because habitat needs of umbrella species ensured conservation of overlapping biota and respective habitats. The PFW program and our partners recognize the need and value of reversing downward trends through voluntary conservation actions and before expensive recovery actions are required.

The PFW program strives to restore, enhance, or establish priority habitats and to increase or maintain populations of

Federal Trust Species. The PFW program works throughout general habitat types including upland, wetland, and in-stream or riparian habitats to meet and exceed Government Performance and Results Act (GPRA) targets. Within general habitat types, we focus on specific ecosystems and/or geographic areas such as the Flint Hills, sagebrush ecosystem, Prairie Pothole Region, San Luis Valley, and others discussed here. PFW strategic planning adapts Service national, regional, and Refuge program priorities to refine and reinforce planning and implementation of habitat conservation efforts and focus area delineation. PFW focus areas overlap with Service priority areas and other targeted areas identified by external partners. By targeting terrestrial and aquatic habitats identified by different Service priorities and external partners, we continue to benefit focal species and habitats occurring throughout diverse landscapes. Here, we discuss an array of Service priorities that overlap with PFW-led conservation efforts.



*The Region 6 PFW program focuses on landscape-scale habitat restoration projects, such as this project in the Blackfoot Valley of Montana. USFWS Photo.*

**Upland Habitat: Native Prairie**

Unfortunately, over 90% of native prairies throughout the United States have been lost to row-crop agriculture, energy development, woody species encroachment, development and urban sprawl, and incompatible grazing practices. In addition, reduced occurrences of

periodic, low-intensity fires have decreased plant vigor, plant health, and wildlife habitat. Other factors such as introduction of invasive species and decreased plant diversity further impact remnant prairies and prairie-dependent wildlife. Eastern redcedar and other invasive plants have increased habitat fragmentation

and partially lead to the decline of grassland bird species like the lesser prairie-chicken. It is estimated that 92% of historical, lesser prairie-chicken habitat has been lost (Crawford 1980).

Due to sustained and increasing threats associated with row-crop agriculture, more efficient farming



*Native prairie project site in Kansas. Photo by Greg Kramos, USFWS.*

***“Our family ranch was able to add our daughter, son-in-law, and their family into the operation. This was thanks to the Service’s PFW program, conservation easements, and the expertise of their biologists to add low red tape cost share for fence and water improvements. It was a real win-win project for us by improving our sustainability, profitability, lifestyle, and improving our natural resources for the future”.***

**Landowner Jim Faulstich, Hyde County South Dakota**



*USFWS photo.*

technologies, and increased profitability, numerous pollinators, avian species, and other prairie-dependent wildlife have declined as a result of decreased habitat availability and quality. The Region 6 PFW program will continue efforts to offset these impacts by providing targeted financial and technical assistance to private landowners throughout key focus areas that contain native prairie. PFW will continue to emphasize efforts throughout tall-, short-, and mixed-grass prairies. PFW-funded conservation efforts will include seeding native grasses and forbs, invasive species control, installation of grazing systems, and other practices. In some cases, a combination of biological, chemical, and/or mechanical control methods will be used to combat invasive species expansion. Timing and intensity of prescribed fire and grazing will be used to maintain desired conditions and further enhance native prairie. The PFW program will also assist with efforts to protect native prairie by working with non-governmental

organizations and the Service’s grassland easement program. Native prairie habitat restoration and enhancement projects will benefit a suite of migratory bird species identified within the Service Migratory Bird Program, Birds of Conservation Concern list. Regional focal species benefiting from PFW-led efforts include McCown’s longspur, chestnut-collared longspur, Baird’s sparrow, and Sprague’s pipit. Other species include but are not limited to golden eagle, mountain plover, long-billed curlew, grasshopper sparrow, Henslow’s sparrow, bobolink, rusty blackbird, upland sandpiper, lesser prairie-chicken, greater prairie-chicken, monarch butterfly, and burrowing owl. Some additional threatened and endangered species that will benefit from restoration efforts include black-footed ferret, grizzly bear, and Utah prairie dog. In addition to wildlife species, several at-risk plants will benefit from restoration efforts, including Mead’s milkweed and western prairie fringed orchid. The Region 6 PFW program is

working closely with the NRCS through the Working Lands for Wildlife program, Lesser Prairie-Chicken Initiative, and the Sage Grouse Initiative. We are also working with the FSA to support agriculture producers enrolled in the Conservation Reserve Program. Throughout the Region, PFW staff are working with federal partners, state natural resource agencies, and non-governmental organizations like Pheasants Forever to restore and enhance habitat for pollinators and other wildlife. The PFW program is working in eastern Colorado and western Kansas to specifically address threats to the lesser prairie-chicken, while also providing technical assistance to NRCS and other key partners.

#### **Upland Habitat: Monarch Butterflies and Pollinators**

The Service Director has made monarch butterflies a National priority. In addition, a Presidential Memorandum has been signed, creating a Federal strategy to



*Monarch butterfly on Baldwin ironweed during fall migration through the Flint Hills Focus Area, Kansas. Photo by Greg Kramos, USFWS.*



*Rocky Mountain bee plant. USFWS photo.*

promote the health of honey bees and other pollinators. Given this priority focus, the Region 6 PFW program has included these key species in the development of the new focus areas. Emphasis will be put on pollinators throughout the Region and the PFW program will be focusing resources for monarch butterflies in eastern North Dakota, South Dakota, Nebraska and Kansas, where the highest percentage of monarch butterflies are present, maximizing the limited resources available to support recovery. The PFW program will be working with landowners to provide both financial and technical assistance to restore native prairie, enhance prairie grasslands, develop grazing management plans, reduce invasive species, and assist with outreach opportunities. The native seed plantings will include a diverse seed mix, with a variety of native forbs, including local milkweed species. Native prairie enhancements, including grazing management plans will be managed specifically to express the greatest diversity of native forbs and help to express milkweed. A priority will be placed on landscapes with the greatest potential to recover

monarch butterflies. These include large intact landscapes with thousands of acres of native prairie. The goal will be to first maintain the native prairie acres that currently exist. Second, the goal will be to restore and enhance as many additional acres as possible. We are anticipating a very positive response from landowners.

### **Upland Habitat: Flint Hills**

The Flint Hills region of Kansas contains the largest remaining tract of tallgrass prairie. In addition to providing important habitat for grassland birds, pollinators, and resident wildlife, the Flint Hills provides a landscape for sustainable ranching and preservation of the ranching heritage. Because of proper livestock management and application of appropriate disturbance regimes (e.g., prescribed fire, grazing), the Flint Hills region is a stronghold for prairie-dependent wildlife and over 100 species of grassland birds. The Flint Hills is also known for its vastness as it encompasses approximately four million acres of premiere wildlife habitat and native

tallgrass prairie. Although vast, the Flint Hills is still susceptible to common threats like invasive species that repeatedly compromise native prairies throughout North America. Kansas PFW staff will continue to work with private landowners and external partners to maintain and enhance tallgrass prairie habitat. By supporting natural disturbance regimes through periodic prescribed fire and rest-rotation grazing and treating invasive plants such as eastern redcedar and *Sericea lespedeza*, the KS PFW team will ensure that the Flint Hills region is sustained and enhanced for future generations. Because of the significance and habitat value of the area, KS PFW and conservation partners will continue to work within the Flint Hills Focus Area. KS PFW spends over 98% of restoration funding within geographic focus areas such as the Flint Hills Focus Area.



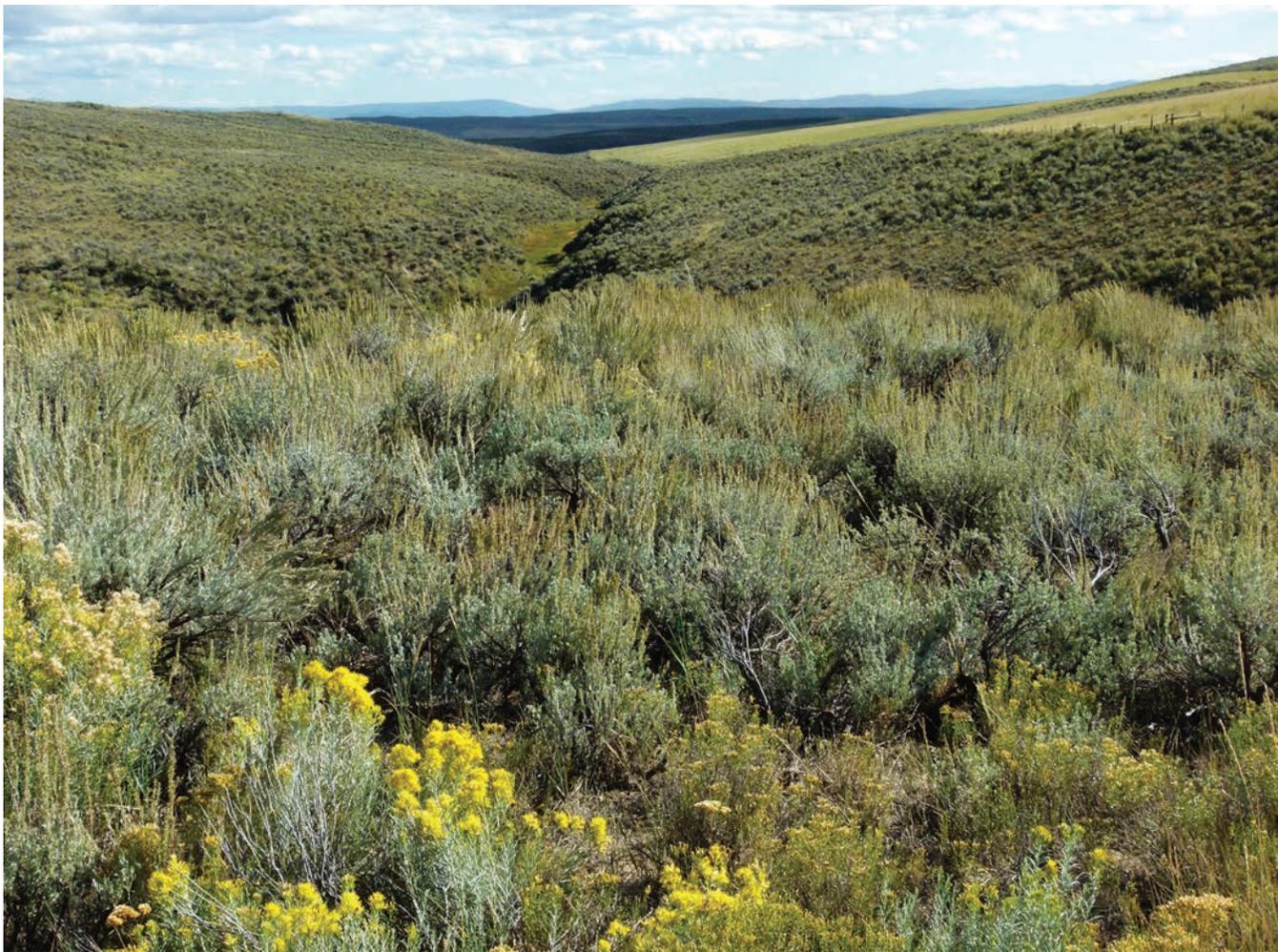
*PFW staff work with livestock producers to enhance native grasslands and benefit migratory grassland birds and pollinators. USFWS photo.*



*Native prairie provides habitat for pollinators and other invertebrates. USFWS photo.*



*A private landowner points out *Sericea lespedeza*, an invasive plant in the Kansas Flint Hills. USFWS photo.*



*PFW livestock management projects enhance sagebrush habitat throughout the West. USFWS photo.*

### **Upland Habitat: Sagebrush Ecosystem**

The sagebrush ecosystem includes more than 150 million acres across 11 western states. From North Dakota to Utah and Montana to Colorado, the Mountain Prairie Region encompasses more sagebrush habitat than any other region. Greater sage-grouse Management Zone II, delineated by the Western Association of Fish and Wildlife Agencies, contains more greater sage-grouse (37.5% of the population) than any other management zone (USFWS 2015). Within Region 6, Management Zone II primarily overlaps with Wyoming but small portions also occur within Colorado, Utah, and Montana.

Recent sagebrush habitat losses have resulted in the decline of many sagebrush obligate species

but, most notably, greater and Gunnison sage-grouse. Because of energy development, urban sprawl, habitat fragmentation, conifer encroachment, establishment of invasive grasses like cheatgrass, feral equids, and incompatible grazing practices, sagebrush habitat has declined precipitously during recent years. As a result, both greater and Gunnison sage-grouse have also declined. Currently, greater sage-grouse occupy only 56% of their historic range (Schroeder et al. 2004). During 2014, Service listed the Gunnison sage-grouse as threatened. However, in 2015, the greater sage-grouse was not warranted for listing under the Endangered Species Act because of recent and ongoing conservation actions by many conservation partners. Emphasizing the value of private land conservation, the Service concluded that threats previously identified have

been ameliorated because of conservation actions by state and federal natural resource agencies and private landowners. The impact of private lands habitat conservation is significant because approximately 39% of greater sage-grouse occur on private land (USFWS 2015). With these successes and continued support, Region 6 PFW will continue its commitment and support of sagebrush conservation and projects supporting sagebrush obligate species.

Region 6 PFW will continue to provide targeted technical and financial assistance within key focus areas that overlap with sagebrush habitat. Although some projects will occur in the Dakotas, Region 6 PFW will emphasize sagebrush funding and strategic efforts in Wyoming, Montana, Colorado, and Utah where we have the greatest opportunities



*Greater sage-grouse utilize private lands throughout the West and benefit from PFW program-funded conservation projects. Photo by Steve Fairbairn, USFWS.*

to benefit sage-grouse and other sagebrush obligate species. Conservation practices will include implementation of grazing management plans, mechanical sagebrush treatment (e.g., Dixie harrow, Lawson aerator), grass and forb interseeding, and wet meadow restoration. By increasing diversity, a combination of these treatments is an effective way to enhance sagebrush habitat. Rotational grazing, cross-fencing, and off-site livestock water sources will be used to increase grass-forb understory and to provide food and cover for sage-grouse. In some cases, mechanical sagebrush treatments and interseeding of native grasses and forbs will be used to open closed-canopy sagebrush habitat and enhance habitat quality. Wet meadow restoration and enhancement projects will be completed at selected sites to increase insect production and water storage. Wet meadow habitats provide important protein through invertebrate

production. Similar to other gallinaceous birds, insects are necessary for sage-grouse chick growth and survival.

In addition to on-the-ground habitat restoration efforts, Region 6 PFW has provided partial financial support for shared positions with the Sage Grouse Initiative. These positions are located within core sage-grouse areas throughout the Region. Positions are part of a larger partnership involving state and federal agencies and non-governmental organizations – the Strategic Watershed Action Team. PFW has been one of the largest supporters of the Sage Grouse Initiative effort. The Sage Grouse Initiative provides an important opportunity for PFW to partner with other natural resources agencies and help deliver Farm Bill conservation programs to private landowners. Working together, we are able to further our impacts to high priority, sagebrush obligate species.

Sagebrush habitat restoration and enhancement projects will also benefit a suite of migratory bird species identified in the Service Migratory Bird Program Birds of Conservation Concern list. Sagebrush obligate species that will benefit include greater sage-grouse, Gunnison sage-grouse, sagebrush sparrow, Brewer's sparrow, and sage thrasher. Many restoration efforts in sagebrush habitat will also benefit pygmy rabbit, white- and black-tailed prairie dogs, and Federal Trust Species like black-footed ferret.



*Cinnamon teal utilize wetlands restored by PFW program and private landowners in the Bear River Watershed. Photo by Tom Koerner, USFWS.*

### **Wetland Habitat**

Wetlands provide an important role throughout the landscape as many wildlife species utilize wetland habitat during part of their life cycle. Every wetland between permanent lacustrine to intermittent vernal pools, provide habitat or services for terrestrial and aquatic wildlife including migratory birds, amphibians, and native fishes. Wetlands within the Prairie Pothole Region provide critical nesting and brood-rearing habitat for waterfowl, shorebirds, and other waterbirds. These wetlands as well as others throughout the Region also serve as feeding and rest-over habitat for many wetland-dependent migratory birds en route to Alaska and the Canadian Arctic. Further west, shallow water wetlands in parts of Colorado and Wyoming provide key habitat for imperiled species such as boreal and Wyoming toads.

Similar to many habitat types, wetlands have declined worldwide and wetland-dependent species have suffered. In many cases, wetlands are drained or filled to

increase row-crop production, accommodate urban sprawl, provide water for irrigation, or change drainage patterns. Recently, there has been a tremendous



*Wyoming toads released at a PFW program-restored wetland. Photo by Dominic Barrett, USFWS.*



*Yellow-headed blackbird on PFW program-restored wetland, South Dakota. Photo by Dominic Barrett, USFWS.*

increase in tile drainage in North and South Dakota, accelerating the percentage of wetland loss to an alarming rate. Although row crop farming is necessary to feed the world and sustain rural economies, Region 6 PFW program strives to find compromise and identify innovative opportunities to conserve and enhance remaining habitat. Region 6 PFW will continue to make wetland restoration and enhancement a high priority. PFW will continue to focus conservation efforts throughout the Prairie Pothole Region within northeast Montana, North Dakota, and South Dakota. Region 6 PFW will work with livestock producers to conserve wetlands embedded in native prairie and support robust agricultural economies.

In addition to the Prairie Potholes Region, Region 6 is also home to the Playa Lakes, Central Platte River, Rainwater Basin, and Bear

River, all of which provide critical migration and nesting habitats for large numbers of wetland-dependent birds. These critical migratory bird areas are part of PFW focus areas in Colorado (San Luis Valley), Kansas (Playa Lakes), and Nebraska (Central Platte River, Rainwater Basin), Utah and Wyoming (Bear River), and other states.

Wetland habitat restoration, enhancement, and creation projects will benefit a suite of migratory bird species identified within the Service Migratory Bird Program Species of Conservation Concern list. Some of the key species include trumpeter swan, northern pintail, greater scaup, lesser scaup, piping plover (federally endangered), marbled godwit, black tern, and whooping crane (federally endangered).

Major partners in wetland conservation continue to be DU, TNC and several migratory bird Joint Ventures (e.g., Rainwater Basin, Playa Lakes, Intermountain West, and Prairie Pothole). These partners are providing assistance through planning, monitoring, funding and on-the-ground delivery.

#### **Wetland Habitat: Prairie Pothole Region**

The Prairie Pothole Region provides nesting habitat for 177 species of migratory birds and more than 22 million breeding ducks. The area provides important nesting habitat for mallards, northern pintails, northern shovelers, gadwalls, blue-winged teal, canvasbacks, and redheads. Although the eastern Dakotas only account for approximately 6.5% of the waterfowl breeding area in North America, this portion

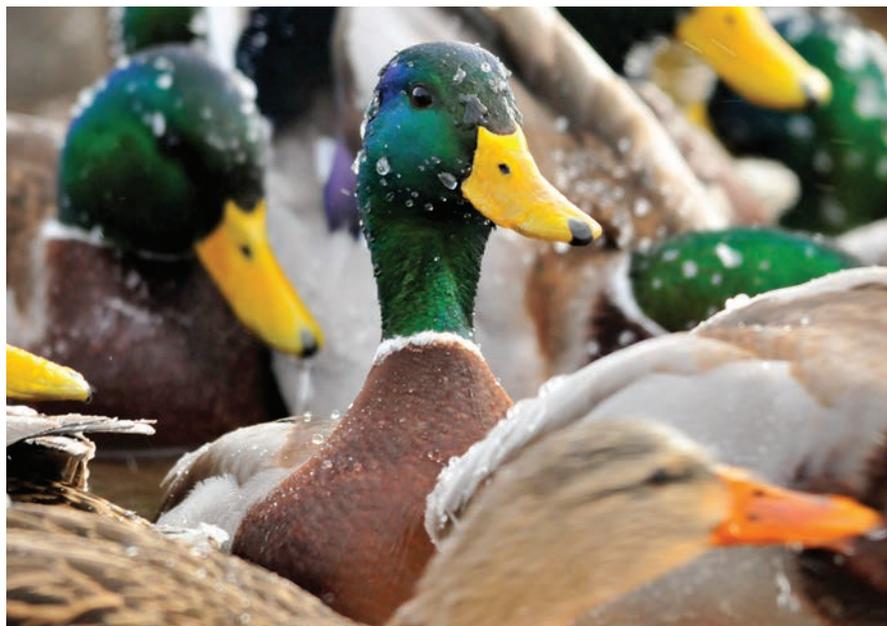


*Working landscapes provide opportunities for wetland restoration and valuable upland habitat for nesting waterfowl species, North Dakota. USFWS photo.*

of the Prairie Pothole Region provides breeding habitat for 21% of breeding duck pairs. Because of the patchwork of wetlands and grasslands and habitat diversity, the Prairie Pothole Region provides habitat for a variety of waterfowl, shorebirds, waterbirds, and grassland birds. Fertile soil and favorable climate make the area suitable for agricultural production and threaten conversion of native pasture to cropland. In South Dakota alone, over 80% of the landscape is identified as suitable for row crop farming. The Prairie Pothole Region has lost over 50% of wetlands and 60% of grasslands, both of which are extremely valuable to nesting waterfowl and other migratory birds. The Region 6 PFW program will continue to focus on restoring, enhancing, and establishing wetland and grassland habitat for Federal Trust Species throughout the Prairie Pothole Region. PFW staff will continue working with livestock producers to develop and implement livestock management plans, install grazing systems, develop livestock waters, and convert cropland back to native grassland by using a mix of native grasses and forbs suitable for pollinators and grassland birds.

Targeted technical and financial assistance will maintain and increase populations of waterfowl, other waterbirds, and grassland birds. In addition to restoration efforts, PFW staff will continue to work across programs and provide support to the Service's Realty Program and Wetland Management

Districts. By providing support to these programs, PFW furthers its mission and increases impacts to private land conservation.



*Restored and enhanced wetlands throughout the Prairie Pothole Region benefit PFW focal species such as mallards and other waterfowl. Photo by Tom Koerner, USFWS.*



*PFW wetland and riparian fencing project within the San Luis Valley, Colorado. USFWS Photo.*

**Wetland Habitat: San Luis Valley**

The majority of the San Luis Valley is located in southern Colorado and encompasses approximately 5.2 million acres of the upper Rio Grande watershed. The San Luis Valley Conservation Area was developed to conserve important wetland and upland habitat for southwestern willow flycatcher, western snowy plover, nesting and migratory waterfowl, and 95% (20,000) of the Rocky Mountain population of sandhill cranes. The San Luis Valley is the most important area in Colorado for breeding waterfowl as it provides nesting habitat for approximately 30,000 breeding ducks. Compounded by reduced precipitation, agricultural activities and the transfer of water rights to downstream entities have altered the hydrology, lessened groundwater recharge, and

decreased the number of functional wetlands throughout the Valley. Colorado PFW will continue to target conservation projects within the San Luis Valley and work to restore and enhance stream and wetland habitats by installing grazing systems with riparian pastures, controlling invasive species, and planting native vegetation. Colorado PFW will also work to conserve Rio Grande cutthroat trout populations throughout the San Luis Valley by installing fish barriers and improving fish passage in native trout streams.

**Wetland Habitat: Rainwater Basin**

The Rainwater Basin is a natural bottleneck and provides important habitat for migrating waterfowl and waterbirds. Approximately 61% of the midcontinent population of ducks migrate through the

Rainwater Basin and utilize the area as a staging area during migration. Federally protected whooping cranes also migrate through the basin and often utilize private and public lands. Wetlands and other food sources within the Rainwater Basin are crucial for successful migration and enhance body condition of migrating waterfowl. Through wetland restoration and enhancement, conservation partners can benefit spring-migrating waterfowl by increasing fat reserves, reducing time at stopover sites, and increasing reproductive success (Pearse et al. 2011). NE PFW staff will continue to target projects that restore wetland hydrology, eradicate invasive species, and enhance native grasslands.

## **Wetland Habitat: Bear River Watershed**

The Bear River is the largest tributary to the Great Salt Lake and provides water for numerous communities, agriculture, wildlife, and other uses. Within Region 6, the Bear River Watershed occurs within portions of northeastern Utah and southwestern Wyoming. The watershed provides habitat for migrating and nesting waterfowl, other waterbirds, greater sage-grouse, native fishes like Bonneville cutthroat trout and the northern leatherside chub, and other wildlife species. Over 200 species of birds and 60% of the breeding population of cinnamon teal occur within the watershed. Approximately 46% of white-faced ibis utilize the Bear River Watershed for breeding and migration. Similar to other biologically significant areas, the watershed attracts human development and use because of diverse natural resources, agricultural opportunities, economic stability and growth, gas and oil production, and other reasons. Agricultural activities consume over 80% of the water available (Bear River Watershed Information System, 2009) and human populations within portions of the watershed are expected to double over the next 30 years (Utah Division of Water Resources 2004). Altered hydrology resulting from human activities has negatively impacted fish and wildlife resources. Because of wildlife value, Utah and Wyoming PFW staff will continue to work throughout overlapping focus areas in respective states. PFW staff will work on projects that enhance riparian vegetation, stabilize stream banks, improve grazing practices, and restore wetland habitat.

### **In-Stream and Riparian Habitat**

In-stream and riparian habitats have long been a focus of the Region 6 PFW program. In-stream habitats support critical fisheries that are unique to the Mountain-Prairie Region while adjacent riparian habitats support neotropical migrants, resident



*Silt being removed from a wetland restoration project site, Bear River Watershed, Utah. USFWS photo.*

wildlife, and other species. Intertwined, these habitats provide important services for the other. Natural hydrology supports native fisheries but also play a key role in maintaining riparian habitats. Some species like interior least tern and piping plovers require natural disturbance regimes provided by high flow events in prairie rivers. Other species like southwestern willow flycatchers require more stable systems that support diverse arrangements of cottonwood and willow gallery forests. Riparian vegetation along streams and rivers improve water quality, capture transported sediment, stabilize stream banks, decrease water temperature through shading, and increase water retention through infiltration.

The Region 6 PFW program has been critical for native fisheries conservation. Mountain streams and rivers associated with higher elevations provide vital habitat for bull trout, westslope cutthroat trout, Arctic grayling, and others. However, increasing water demands throughout the Region continue to add stress on aquatic and terrestrial resources associated with in-stream and riparian habitats. Native cutthroat trout and fluvial Arctic grayling,

as well as many prairie fishes, are threatened by altered hydrology associated with water diversion; introduction of non-native fishes and crustaceans; diseases such as whirling disease; habitat degradation due to poor grazing management practices; human development; and other factors such as invasive terrestrial and aquatic plants. Tamarisk, or salt cedar, is an invasive exotic plant found along riparian areas throughout the West. It often occurs in dense stands where it can impact limited water resources and prevent establishment of native plant species by altering soil chemistry.

With large rivers and numerous associated tributaries providing habitat for a diverse array of aquatic species, Region 6 has made river and stream restoration a priority. The PFW program has several trained specialists in river restoration, leading the nation in terms of expertise in river morphology and innovative restoration techniques. In order to expand and enhance expertise and activities, the Mountain-Prairie Region continues to invest in river restoration training for PFW staff. Several biologists have acquired advanced levels of river restoration training (e.g., Rosgen methodology)



*Grazing systems developed by the PFW program support working landscapes while enhancing fish and wildlife habitats. USFWS photo.*

to further river restoration efforts within their designated focus areas. Region 6 PFW program stream restoration activities will support conservation efforts for native trout, fluvial Arctic grayling, chub and sucker species, neosho madtom, Topeka shiner, plains topminnow, Arkansas River shiner, and Arkansas darter.

Many of the tributaries within the Region are part of intact landscapes that still have the capability of supporting large numbers of native trout and other high priority or at-risk species. Consequently, efforts expended to restore degraded streams are worthwhile and the outcomes are usually immediate – natural dimensions, patterns, and profiles are restored, and fish and aquatic invertebrates respond quickly to the positive changes in river

morphology. Extensive reaches of several rivers and streams in Montana, Utah, and Wyoming have been restored and PFW plans to continue these efforts. The PFW program will also continue to build upon successful fish passage work, using the most up-to-date

technologies in fish passage structures to prevent entrainment of native fishes and invasion of non-native fishes. Riparian restoration projects have proven extremely valuable, not only for fish and other aquatic species, but migratory birds.



*Volunteers planting native vegetation within a PFW program riparian restoration project, Utah. Photo by Clint Wirick, USFWS.*



*Westslope cutthroat trout. Photo by Alex Poole.*

Region 6 PFW staff will work closely with fisheries biologists, both within and outside the Service, to develop, design, and implement aquatic-based conservation projects that complement the National Fish Habitat Action Plan, local Fish Habitat Partnership (e.g., Western Native Trout Initiative, Great Plains Fish Habitat Partnership, Desert Fish Habitat Partnership) strategic plans, recovery plans, state wildlife action plans, and other coordinated efforts. The PFW program will continue to provide financial and technical assistance for conservation projects benefitting warm- and cold-water fisheries that include game and nongame species.

#### **In-Stream and Riparian Habitat: Native Cutthroat Trout and Arctic Grayling**

Within Region 6, there are six native species of cutthroat trout; however, the greenback cutthroat is the only species listed under the Endangered Species Act. Native

cutthroats occur throughout Colorado, Montana, Wyoming, and Utah while Arctic grayling are limited to Montana. Similar to many native fishes of the West, native cutthroat range has been greatly reduced and compromised by altered hydrology, non-native species introductions, and other negative impacts. The historic range of Colorado River cutthroat trout has been reduced by over 90% (Young 2008). PFW staff have successfully completed conservation projects benefitting native cutthroat trout and Arctic grayling. By working with private landowners and other partners, PFW staff have enhanced and protected populations of native cutthroat trout and Arctic grayling by installing non-native fish barriers, restoring fish passage for native fishes, improving water delivery in agricultural areas, and restoring aquatic habitats (in-stream and off-channel sites). Efforts by MT PFW, conservation partners, and private landowners enhanced Arctic grayling

populations and removed the need for species protection under the Endangered Species Act. Region 6 PFW will continue to support conservation efforts supporting native cutthroat trout and Arctic grayling.

#### **Strategic Habitat Conservation**

Since 2006, the Service has used Strategic Habitat Conservation (SHC) as the science framework for how we prioritize our conservation actions and accomplish our mission. The PFW program has used this framework to drive the decisions we make for on-the-ground delivery. The PFW program worked with science experts, both within and outside the Service, to determine the focal species identified for this 5-year strategic plan. This helped to inform the focus areas as well as the restoration techniques needed to meet our habitat and biological outcomes.



*PFW program staff work to restore streams and rivers that provide habitat for native cutthroat trout species throughout Colorado, Utah, Wyoming, and Montana. USFWS photo.*

When we developed our first 5-year strategic plan, there were a lot of knowledge gaps about how habitat outcomes could inform biological outcomes for focal species. Today, we still have gaps, however new science applications have provided us a tremendous amount of new knowledge and information, allowing us to make more informed decisions and adapt our restoration and enhancement activities. This, ultimately, helps us to focus our efforts and maximize our ability to see positive outcomes for our priority fish and wildlife species.

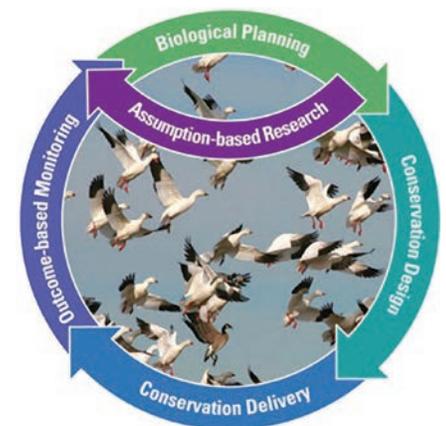
**Landscape Conservation Design**

The Region 6 PFW program will be assisting other Service programs with the implementation of Landscape Conservation Design (LCD). LCD corresponds to the biological planning and conservation design elements

of SHC. It is a stakeholder-driven, participatory process that integrates societal values and multi-jurisdiction/-sector interests with the best available interdisciplinary science to assess spatial and temporal patterns, vulnerabilities, risks, and opportunities. This results in the development of spatially-explicit products and adaptation strategies that protect vulnerable biodiversity and ecosystem services, and increase the resilience and sustainability of socio-ecological systems for future generations.

As the Service works with internal and external partnerships to develop LCDs, the PFW program will be a part of the collaborative efforts, particularly where it informs conservation delivery on private lands. The PFW program will assist with the cornerstones of a successful LCD (i.e., people,

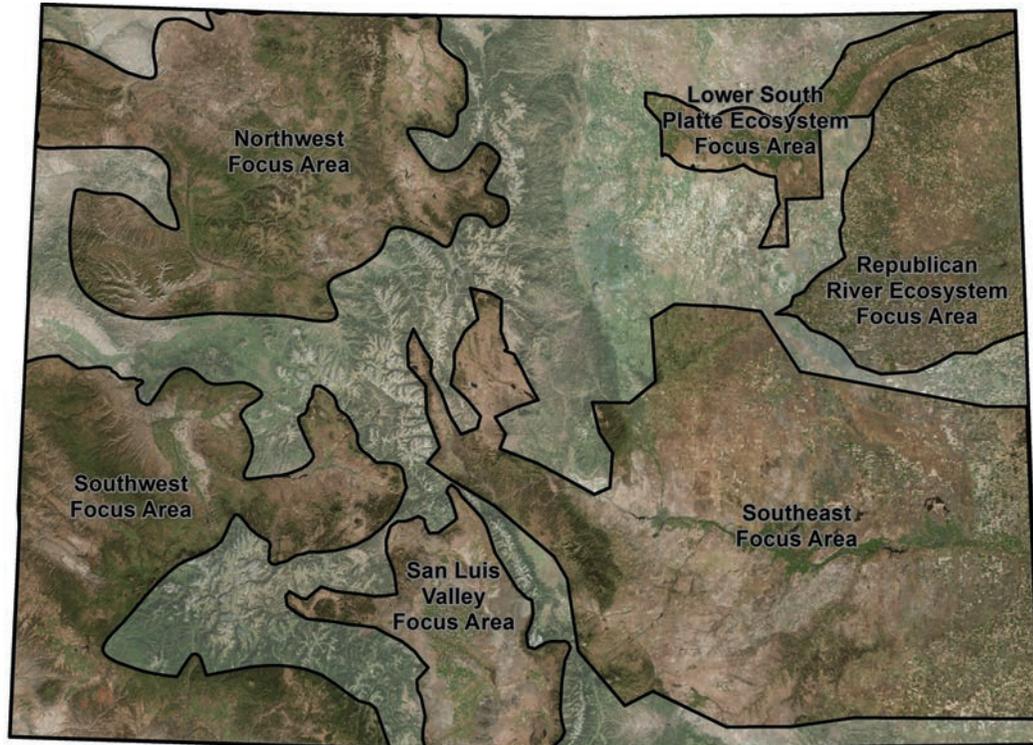
purpose, process and products) and ensure that as new science is made available to help inform on-the-ground delivery, that the PFW program will remain engaged in these discussions and ready to adapt as needed to ensure success.





*PFW program staff work to restore and enhance habitats that benefit vulnerable species. Photo by Dominic Barrett, USFWS.*

# Colorado



*Colorado PFW program Focus Areas. USFWS map.*

## Introduction and Overview

The 2017–2021 Colorado PFW (CO PFW) Strategic Plan is built upon the solid foundation established by the two previous strategic plans. Those plans developed CO PFW’s initial focus areas, evaluated critical resource needs and threats in conjunction with opportunities to prevent or reverse habitat fragmentation, identified existing or potential partners, and support for National Wildlife Refuge system lands in relationship to Colorado’s private lands. This plan continues those efforts with the incorporation of current Service priorities, new scientific information, the revised 2015 Colorado State Wildlife Action Plan (CPW SWAP 2015), and input from our partners.

Plan development guidance was provided by National and Regional Service priorities. Current information relating to species and habitat occurrences, priority areas for conservation, and presence of potential partnerships were obtained from the Colorado parks and Wildlife (CPW), Colorado Natural Heritage Program (CNHP), TNC, DU, and statewide and local land trusts. The State of Colorado’s 2015 Wildlife Action Plan, in particular, was used to help guide the planning process. The plan identifies 210 species as meeting the criteria for inclusion as Species of Greatest Conservation Need. Of those 210 species 55 are on the State’s Tier 1 list. Additionally, CO PFW field biologists solicited and met with local partners for focus area specific input. Information from these more localized sources was integrated into the National, Regional, and

Statewide information for each Colorado focus area.

Colorado is home to 18 animal species and 18 plants listed as Threatened or Endangered under the Endangered Species Act. The Colorado Natural Heritage Program lists 132 species and natural communities as Globally Critically Imperiled (G1) or Imperiled (G2), and 681 species and natural communities as State Critically Imperiled (S1) or Imperiled (S2). Colorado lies within the Central and Pacific flyways and the Playa Lakes and Intermountain West Joint Ventures. The state provides important nesting and stopover habitat for many migratory birds and for resident sage steppe and grassland species.

Although often perceived of as a federal ownership state, nearly two-thirds or 38,679,947 acres



*Native prairie, Cheyenne County, Colorado. USFWS photo.*

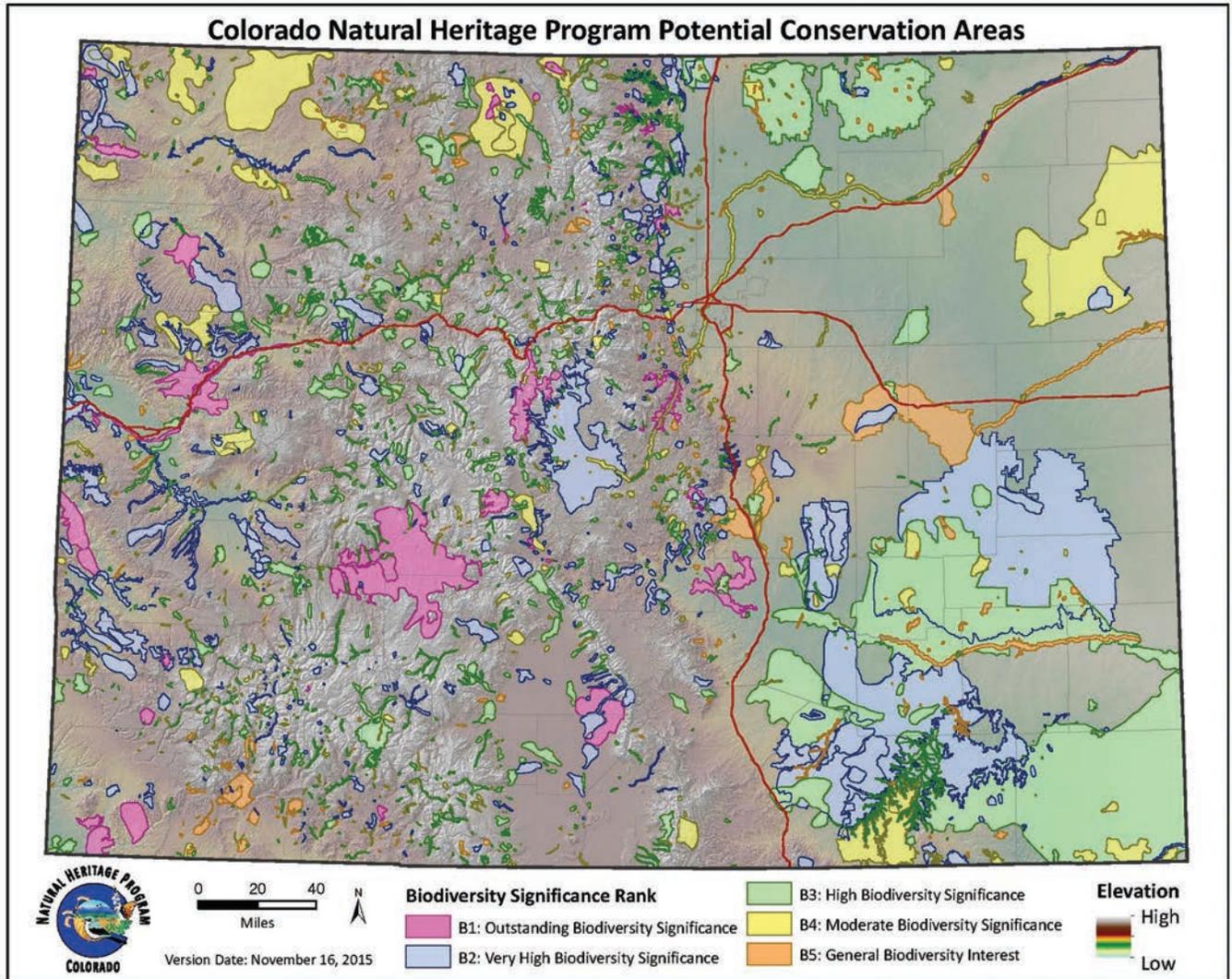
(60,437 square miles) of Colorado are in private or local government ownership. The intersection of private land and target habitats provide the foundation and the primary filter for PFW restoration efforts in Colorado. The Executive Summary of Colorado's State Wildlife Action Plan (CPW 2015) states that almost all habitat types are impacted by "residential/commercial development and natural systems modifications (including alteration of hydrological and fire regimes)". Additionally, conversion or degradation from incompatible agricultural activities, climate change, and invasive species are affecting more than two-thirds of Colorado's habitat types. The current Colorado SWAP further identifies several priority habitat types for the Service as having moderate to high vulnerability to modeled climate change. These include

playas, shortgrass prairie, sand sage prairie, riparian and slope wetlands, and foothills and mountain grasslands. Several of the CO PFW focus areas reflect agreement with the state's conclusion.

This 2017–2021 update of the CO PFW program Strategic Plan retains many of the principal habitat targets of the first two previous plans. However, the Service priorities as articulated at the national, regional and state levels have set up a more refined approach to plan development. Additionally, a notable increase in the science available for landscape planning has occurred and will greatly assist project planning and implementation. In particular, the massive sagebrush habitat conservation effort by the States and Federal government has resulted in improved

habitat evaluation, restoration approaches, and monitoring. Project site selection guided by newer information and models such as Core Area Mapping and Habitat Resilience and Resistance, generated by sagebrush research will improve restoration success. Statewide efforts such as CNHP's Potential Conservation Area mapping were also used in planning.

The process as it is now being implemented in Colorado is the essence of the Strategic Habitat Conservation model with an active feedback loop between research developments and implementation efforts. The need for increased applied research and effective lines of communication with implementers is critical. The work in sagebrush ecosystem is an excellent foundation, one that will need to be implemented and



expanded upon in the grasslands of the Great Plains where a similar multi-state landscape conservation effort will likely need to occur.

According to the State of the Birds 2016 report: “One-third of all grassland bird species are on the Watch List due to steeply declining populations and threats to habitat. Birds that breed in the Great Plains of Canada and the U.S., and winter in Mexico’s Chihuahuan grasslands, are experiencing exceptionally steep declines, nearly a 70% loss since 1970. Other temperate grassland birds have declined by 33% in that time.” Seventeen of the 48 Tier II bird species listed in the CPW SWAP 2015 are grassland dependent. The graphic above, courtesy of the Bird Conservancy of the Rockies (BCR), presents the recorded declines of several key Great Plains grassland species.

While much additional research is needed to clearly identify the causes of these declines, and to guide conservation responses, the need to retain as much existing grassland as possible is evident. The CO PFW program will use the intervening five years of this Strategic Plan to better develop and then refine our approaches to grassland conservation on the eastern plains of Colorado. Increased coordination and cooperation with individual ranchers, NRCS range conservationists, Colorado Cattlemen’s Association, Federal, State, University and NGO research will be required. CRP acres are a key for grassland conservation in the Great Plains and declining acreage and management issues have reduced the programs value for birds in many areas. The CO PFW program

currently has staff assets in place in Eastern Colorado to position us to lead the way for an expected future increase of grassland conservation efforts.

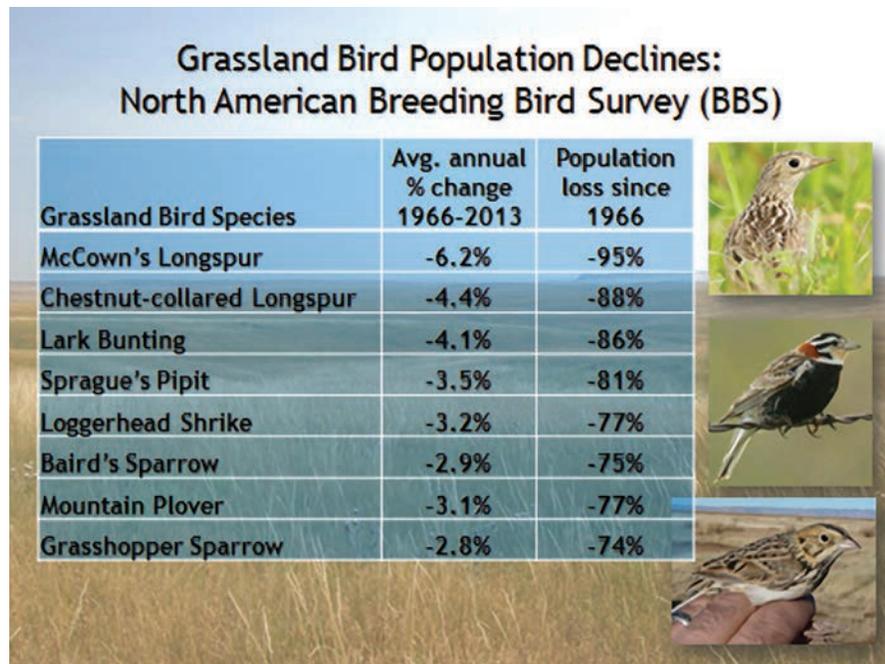
Just as the 2012–2016 Strategic Plan was a refinement of the previous plan, this version is built upon a mix of new information, lessons learned, and changes in the social, political and economic landscape. Climate change, and how best to address it, is a major factor which will influence CO PFW efforts under this and future PFW Strategic Plans. The overall goal is to recognize the importance of larger contiguous natural communities, maintain and improve the biodiversity and integrity of existing habitats, and recognize and influence pressures on these systems. This approach will afford resiliency in ecological systems and

processes, and to allow common species and species of concern the ability to adapt to changing environmental factors the PFW program cannot directly impact.

The CO PFW program will continue to work as closely as possible with the NRCS sage-grouse Initiative (SGI) on project selection and delivery. The Service assists in the support of a SGI biologist in Colorado assigned to Gunnison sage-grouse. Conservation of sagebrush for this species is a high National and Regional priority. The program will also continue to work with the NRCS Lesser Prairie Chicken Initiatives (LPCI), although with reduced emphasis. CO PFW will coordinate with other conservation partners and participate in appropriate projects when requested.

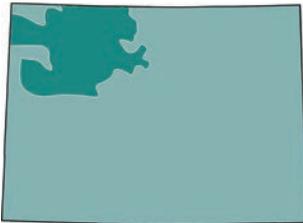
### Plan Development

1. Input on general PFW program direction and future activities was solicited from key partners in a comprehensive stakeholder meeting on March 15-16, 2016, and through requests for written comments from our major partners.
2. Focus Area Biologists requested input from local partners on additions, edits, and other suggestions for each focus area. This resulted in the addition of a new Focus Area (Republican River watershed) and the expansion of the Southeast Focus area to include the Upper Arkansas River Headwater and South Park. Slight changes to the boundaries of the other focus areas were also made in response to knowledge gained over the past five years.



*Breeding Bird Survey data compiled by the Bird Conservancy of the Rockies.*

### Northwest Focus Area



Colorado has the highest average elevation of any U.S. State at 6,811 feet, and the Northwest Focus Area exemplifies this with its diversity of habitats and species. Several major rivers have their origins in the Northwest Focus Area including the Colorado, North Platte and the Yampa River. Focal species include native cutthroat trouts, northern leopard frog, a host of neotropical migrants, and greater sage-grouse. This Focus Area provides vital habitats for many wildlife species, important to the state and local conservation organizations and watershed groups.

The majority of the Focus Area is west of the Continental Divide. The notable exception to that is at the far north-east boundary, in a high elevation valley known as North Park. This area contains State renowned populations of both greater sage-grouse and nesting waterfowl. However, the State's

largest population of greater sage-grouse occurs west of the Divide, in Moffat County. In addition, many smaller populations of this important species are located throughout the Focus Area near places such as Kremmling, Meeker, Toponas, and elsewhere.

Sagebrush is a high priority landscape for the Service at all organizational levels and the CO PFW program has been working with landowners on conservation for 20 years. Within sagebrush rangelands throughout northwest Colorado, greater sage-grouse are often considered the marquee species. Research has shown that both the distribution and abundance of sage-grouse has markedly decreased over time. Sage-grouse populations have exhibited long-term declines in many areas of its overall range, declining by 33% over the past 30 to 40 years (Braun 1998). The sagebrush ecosystem is occupied by many important sagebrush obligate species, including the sage thrasher, Brewer's sparrow, and sagebrush sparrow. The 2015 Colorado SWAP lists 22 Tier 1 plants and animals and 43 Tier 2 species as occurring in sage steppe. Of these 65 species, CPW has identified sagebrush as the



*The Secretary of the Interior, Director of the Service, visit a PFW program-Sage Grouse Initiative project on a private ranch in northwest Colorado. Although not pictured, the Governor of Colorado and the Director of Colorado Parks and Wildlife were also present. Photo by Brandon Miller, NRCS.*

primary habitat for 39 species. In addition, our habitat projects that specifically benefit these obligate species will benefit a wider suite of Federal Trust Species and state species of concern, including northern harrier and vesper sparrow. Other species, typically noted with a more moderate association with sagebrush, will benefit as well, including green-tailed towhee, lark sparrow, and Preble's shrew (SWAP 2015).

The removal of invasive overstory in the form of pinyon-juniper, implementing livestock grazing plans, vegetative plantings, and the enhancement of wet meadows, are the current main emphasis of program efforts to benefit sage-grouse. Some greater sage-grouse research points to the majority of nesting (70-80%) and early brood-rearing occurring within three miles of lek sites (Bradbury et al. 1989). The PFW program works to concentrate efforts within this

“circle of maximum influence.” Nesting cover objectives include stands of sage with a grass/forb understory, generally averaging greater than 20 inches in height (Peterson 1980) and canopy cover of sagebrush around nests ranging from 15 to 38% (Colorado Division of Wildlife 2005). These areas are important nesting and brood habitat for greater sage-grouse, while providing a variety of lifecycle benefits for a multitude of neotropical migrants.



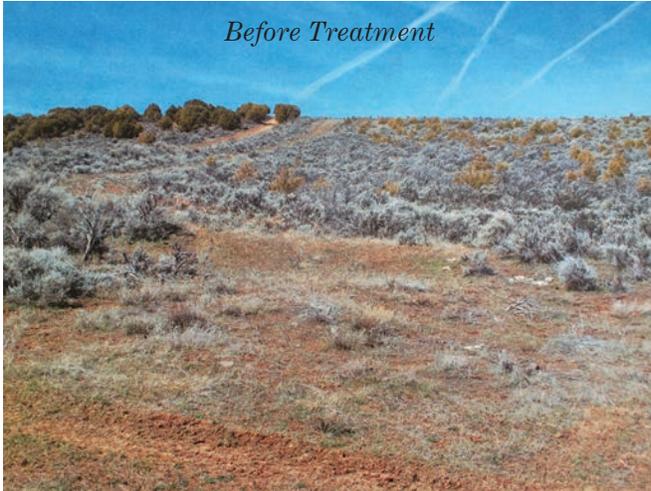
*Multi-tasking: As a veterinarian checks cattle, a cooperating landowner reviews Service paperwork for an invasive juniper removal project in association with NRCS SGI efforts. Photo by Bob Timberman, USFWS.*



*Within Red Canyon (above and below), this irrigated meadow at 8,200 ft illustrates its multiple uses. Waterbirds nest there in the early spring, soon after it can become brood habitat for greater sage-grouse. These mesic areas within sagebrush habitat are important for wildlife and working landscapes. Photo by Bob Timberman, USFWS.*



*Ancillary benefits promoting sagebrush health and its restoration include those for big game. This can be helpful for a landowner to make their decision regarding participation in habitat projects to benefit the greater sage-grouse. Photo by Bob Timberman, USFWS.*



*Ensuring the complete removal of young trees is critical to the longevity of pinyon-juniper removal projects. Photos by Bob Timberman, USFWS.*

In-stream restorations to specifically benefit native cutthroat trout populations will continue to be worked on whenever possible. In addition to native cutthroat trout being a Regional priority, riparian and wetland resources are of particular importance

to much of this otherwise arid landscape. Several streams have relatively unaltered hydrographs which have maintained significant native fish, riparian and wetland communities. TNC, Yampa Valley Land Trust, and others have been targeting riparian areas for

conservation easements to protect these habitats. In addition, both the Arapaho and Browns Park National Wildlife Refuges are located within the Focus Area, and provide valuable fish and wildlife habitats.



*Colorado Parks and Wildlife and Trout Unlimited fish biologists gather low flow population data for a PFW native cutthroat project that included funding from them, NRCS, and others. Photos by Colorado Parks and Wildlife.*



*This high elevation stream is restored to address the low flow/high temperature issue identified as the limiting factor for native trout. Livestock are excluded for a few years to allow the planted woody vegetation to establish and provide shading. Photo by Bob Timberman, USFWS.*



*This stream restoration on Milk Creek shows a log vane that's directing the high flow velocities from the near bank, as it maintains pool habitat. Erosion control fabric holds the bank profile of this construction until the vegetation matures. Photo by Bob Timberman, USFWS.*



*A head cut such as this is common in many areas, and can be repaired with various techniques. Erosion control structures can prevent additional erosion, as well as set the stage to aggrade soils to recover some of what was previously lost. Photo by Bob Timberman, USFWS.*

Increased resilience of wet meadows within the sagebrush ecosystem by restoring their hydrologic functions may very well prove to be critical for greater sage-grouse populations. Wet meadows provide brood rearing habitat for the grouse in otherwise arid upland locations. They also provide important habitats for numerous other wildlife species, including a host of neotropical migrants and northern leopard frog. In many core habitat locations, the meadows are compromised with head cuts leading to expansive erosion and reduced water tables. Over time as the soil moisture declines, grasses and forbs are replaced as sagebrush moves into these zones that were previously too wet to allow for their growth. This condition also leads to reduced insect production that's so

important to the first few weeks of the greater sage-grouse life cycle. Left unchecked, these head cuts continue to move upslope with subsequent runoff events, and therefore increase damage to the landscape. The techniques shown here have been implemented on CO PFW projects in our Southeast Focus Area and in Gunnison sage-grouse habitat in pursuit of the same habitat goals. This project type is now part of our strategic planning for future efforts that will benefit greater sage-grouse habitat, as well as addressing the general health of the sagebrush landscape for all sagebrush obligate species.

The PFW program conservation targets for this Focus Area include the restoration and enhancement of native riparian and wetland

plant communities for the primary benefit of migratory bird and amphibian species. It operates with maximized investment of shared conservation efforts on private lands, and a strong emphasis on strategic habitat conservation for priority resources to guide the goal of self-sustaining populations such as those for sagebrush dependent populations of birds, specifically the greater sage-grouse. Riparian protection, wetland restoration, grazing management, pinyon-juniper removal, and restoration of hydrologic functions, constitute the majority of PFW program efforts. Whenever possible on private lands, projects to restore or protect habitat for native cutthroat trouts will be pursued and accomplished.



*Restoration of head cuts are effective but labor intensive. This may prove to be the largest challenge for widespread implementation efforts. Photos by Bob Timberman, USFWS.*

### Northwest Focus Area Focal Species

- Greater sage-grouse
- Colorado River cutthroat trout
- Boreal toad
- Sage thrasher
- Green-tailed towhee
- Brewer's sparrow
- Vesper sparrow
- Lark sparrow
- Sage sparrow
- Greater sandhill crane

### Northwest Focus Area Habitat Targets

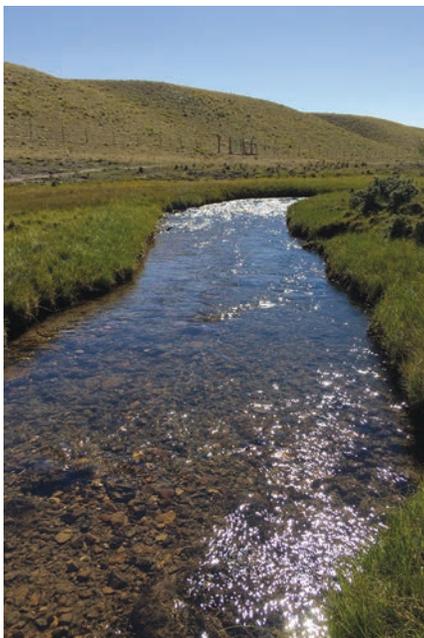
- Upland Restoration/Enhancement: 20,000 acres
- Riparian Restoration/Enhancement: 10 miles
- Wetland Restoration/Enhancement 500 acres
- In-stream Structures: 10

### Northwest Focus Area Partnership Targets

- Private Landowner Agreements: 40
- Partnerships: 324
- Technical Assistance: 250 staff days
- Percentage of Leveraging (Ratio Service to Partner): 1:3

### Northwest Focus Area Related Plans

- North American Waterfowl Management Plan
- United States Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- North American Bird Conservation Initiative
- State Wildlife Action Plan: A Strategy for Conserving Wildlife in Colorado (Colorado Parks and Wildlife 2015)
- Partners in Flight (Rich et al. 2004)
- Southern Rocky Mountains: An Ecoregional Assessment and Conservation Blueprint, September 2001 (Neely et al. 2001)
- A Conservation Assessment of the Colorado Plateau Ecoregion
- Colorado Important Bird Areas Program
- Greater Sage-grouse Statewide Conservation Plan (in progress)
- WAFWA MOU National Sage-grouse Habitat Conservation Strategy
- Intermountain West Joint Venture Coordinated Bird Conservation Plan
- Northern Eagle and Southern Routt Greater Sage-grouse Conservation Plan
- Northwest Colorado Greater Sage-grouse Conservation Plan
- Conservation Agreement and Strategy for Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) in the States of Colorado, Utah, and Wyoming

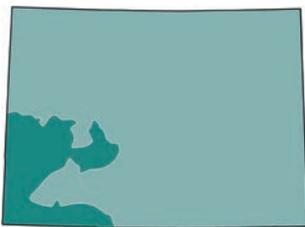


*Riparian fence in South Park, Colorado. Photo by Katy Fitzgerald, USFWS.*



*Restored wet meadow continues to provide critical brood-rearing habitat for Gunnison sage-grouse. PFW program projects are intended to create resiliency and provide long-term benefits at a landscape scale. Photo by Corey Kanuckel, USFWS.*

### Southwestern Focus Area



This conservation focus area targets habitat on all private and tribal lands in an area extending south from the Colorado River to New Mexico, and west of the Continental Divide to Utah. It encompasses the major river basins of the Gunnison, Dolores, and San Juan and includes watersheds of the Animas, Mancos, San Miguel, Uncompaghre, Tomichi, and North Fork of the Gunnison. The PFW program conservation objectives for this focus area include the restoration and enhancement of native riparian and wetland plant communities, sagebrush habitats,

and native aquatic resources. The selection of focal species for this focus area is not intended to be comprehensive or exclusive, but rather representative of specific habitat types and ecosystems prioritized by the program.

The sagebrush ecosystem, while naturally dynamic and spatially diverse, is one of the most imperiled ecosystems in the United States, with continued threats from increasing fragmentation, habitat loss, and invasive weeds like cheatgrass (Braun 1998; Davies et al. 2011; Dobkin and Sauder 2004; Miller and Eddleman 2001). In southwest Colorado, Gunnison sage-grouse are considered the marquee species for this habitat type. As with greater sage-grouse, the restoration of diverse age classes of sagebrush with a healthy understory of native grasses and forbs is the objective for sagebrush habitat

enhancements. The PFW program seeks to address the limiting factors within the complexity of habitat types required by the sage-grouse as well as a suite of other sagebrush dependent species such as the Brewer's sparrow, sagebrush sparrow, sage thrasher, and green-tailed towhee. Habitat improvement practices can include the removal of encroaching pinyon-juniper trees, native grass/forb/shrub seeding, and grazing system improvements as well as the development and enhancement of critical wet meadow and shallow wetland areas. The program will continue to assist the NRCS with the delivery of EQIP, SGI, and other Farm Bill funded projects which target sagebrush habitat improvements.



*Cinnamon teal courtship displays in Archuleta County, Colorado. Photo by Corey Kanuckel, USFWS.*

While the annual rate of wetland loss in the U.S has significantly declined over the past 30 years, thanks in large part to a national focus and prioritization of wetland conservation and restoration, the threats to freshwater emergent wetlands remain (Dahl 2006). Wetlands are some of the most productive and diverse communities within the arid landscapes of southwestern Colorado and thereby warrant significant investment. These wetland complexes, often associated with adjacent riparian corridors, vary greatly throughout this Focus Area. The PFW program recognizes this complexity from hemi-marsh wetlands, to seasonal shallow water wetlands, to wet meadows associated with flood irrigation practices. The restoration, enhancement, and establishment of wetland habitat remains a high priority for migratory waterbirds and amphibians such as the northern leopard frog.

The decline of native riparian communities and their critical importance to a myriad of wildlife species have been well documented throughout the west (Busch and Smith 1995; Chaney et al. 1990; National Research Council 1992; Johnson et al. 1977; Kauffman et al. 1997; Knopf et al. 1988; Sanders and Edge 1998). The PFW program will continue to focus on the restoration and enhancement of important riparian corridors and engage willing landowners who share a vested interest in providing connected habitat along southwest Colorado waterways. The goal of riparian enhancement projects is to provide habitat connectivity with the delivery of a robust and structurally diverse native plant community. These enhancement activities can include: grazing management to allow natural regeneration of the native cottonwood/willow community; riparian planting to provide a more diverse community; instream structure to provide grade control and improve hydrologic function;

bioengineering techniques to curb accelerated erosion and sedimentation; and removal and treatment of woody invasive species such as tamarisk and Russian olive.

In addition to the terrestrial benefits provided by a healthy riparian corridor, the instream benefits are also numerous and invaluable to the function of the aquatic ecosystem. Riparian buffers offer shade (temperature control) that is critical to trout; filtering of sediment and other pollutants to improve water quality; and the contribution of leaf litter and woody debris that is the base of the aquatic food chain (Broadmeadow et al. 2010, Henley et al. 2000, Jensen and Platts 1989, Karr et al. 1986). Native fish projects look to connect the link between the terrestrial and aquatic system by targeting species such as bluehead sucker, flannelmouth sucker, and roundtail chub. This could include floodplain connection and enhancement, side channel



Before and after tamarisk removal and follow-up treatments along the Dolores River, Gateway, Colorado. Photo by Corey Kanuckel, USFWS.

development, or the placement of log and root wad structures to increase instream habitat complexity. These projects may also involve obstruction removal or even the installation of barriers to prevent hybridization with non-native suckers. The installation of fish barriers on select private lands has been successful in protecting existing populations of Colorado River cutthroat trout from competition and hybridization with non-native trout. The program will continue to work closely with Colorado Parks and Wildlife aquatic biologists to identify habitat needs and support the conservation and recovery of Colorado River cutthroat trout.

#### Southwest Focus Area Focal Species

- Gunnison sage-grouse (Threatened)
- Southwestern willow flycatcher (Endangered)
- Western yellow-billed cuckoo (Threatened)
- Colorado River cutthroat trout
- Mallard
- Cinnamon teal
- Green-winged teal
- Greater sandhill crane
- Wilson's phalarope
- American bittern
- Sage thrasher
- Green-tailed towhee
- New Mexico meadow jumping mouse (Endangered)

#### Southwest Focus Area Habitat Targets

- Upland Restoration / Enhancement: 3,500 acres
- Wetland Restoration / Enhancement: 1,200 acres
- Riparian / Stream Restoration / Enhancement: 15 miles

#### Southwest Focus Area Partnership Target

- Private Landowner Partners: 45
- Partnerships: 364
- Technical Assistance: 300 staff days
- Percentage Leveraging (Ratio Service to Partner): 1:3

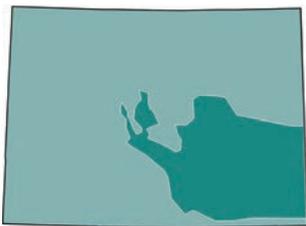
#### Focus Area Linkage to Existing Conservation Plans

- North American Waterfowl Management Plan
- United States Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- North American Bird Conservation Initiative
- State Wildlife Action Plan: A Strategy for Conserving Wildlife in Colorado (Colorado Parks and Wildlife 2015)
- Colorado Wildlife Action Plan Enhancement: Climate Change Vulnerability Assessment (Colorado Natural Heritage Program 2014)
- Statewide Strategies for Riparian and Wetland Conservation: Strategic Plan for the Wetland Wildlife Conservation Program (Colorado Parks and Wildlife 2011)
- Strategic Plan for the Southwest Wetlands Focus Area Committee
- Partners in Flight Strategic Action Plan
- Intermountain West Joint Venture Coordinated Bird Conservation Plan
- Southern Rocky Mountains: An Ecoregional Assessment and Conservation Blueprint, (Neely et al. 2001)
- Colorado Important Bird Areas Program
- Gunnison Sage-grouse Rangewide Conservation Plan (Colorado Division of Wildlife 2005)
- Southwestern Willow Flycatcher Recovery Plan
- Conservation plan and agreement for the management and recovery of the southern Rocky Mountain population of the boreal toad (*Bufo boreas boreas*)
- Conservation Agreement and Strategy for Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) in the States of Colorado, Utah, and Wyoming
- Range-wide Conservation Agreement and Strategy for Roundtail Chub (*Gila robusta*), Bluehead Sucker (*Catostomas discobolus*), and Flannelmouth Sucker (*Catostomas latipinnis*). Utah Department of Natural Resources, Division of Wildlife Resources



*Elk herd utilizing Purgatoire River riparian area after removal of invasive trees. Photo by Katy Fitzgerald, USFWS.*

### Southeast Colorado Focus Area



The Southeastern Colorado Focus Area encompasses a large geographical area and several ecological communities. Ecologically it includes sand sage, shortgrass prairie, wet meadow/slope wetlands, streams and playas. Projects are targeted to address building resiliency and connectivity in these ecological systems and addressing limiting factors for species of concern. This approach allows species to respond to environmental and anthropologic stressors including land use changes, and habitat

quality shifts. It is applied at both the localized project site and within the landscape context.

For the 2017–2021 Strategic Plan, the Southeastern Colorado Focus Area was modified to include the Arkansas River Headwaters and Upper South Platte drainage. A number of variables have influenced this decision. These include unique ecological habitat occurrences, partnership opportunities, landowner willingness, wetland community integrity, and restoration potential. These areas have unique values and offer opportunity for building ecological resiliency to targeted high value systems of the South Platte and Arkansas drainages as well as the neighboring San Luis Valley.

There are a number of habitat types outlined in both the SWAP and CNHP Wetland Assessment

documents. This document will focus on generalized habitat types that provide achievable restoration potential, are significant to species of concern, provide valuable ecosystem function, and meet agency and partner goals.

The Arkansas River Basin is the largest basin in the state of Colorado and drains a quarter of the state's land area. The floodplain of the Arkansas River, its tributaries, and numerous playa lake complexes are important migratory and wintering bird habitat (Service 1995). These areas are utilized by several priority wildlife species, and state species of concern, including plains native fisheries, shorebirds, and migratory waterfowl.

The South Platte Headwaters/South Park area has been identified as a very high biodiversity area

by CNHP. It supports several biologically rich fens, and globally rare plant communities. Research has shown that South Park contains important breeding grounds for mountain plover, supporting 15-20% (>2,000) of the species breeding population (Wunder et al., 2003). Additionally, these grasslands support globally imperiled grasslands and several associated plants. The area is the headwaters of the economically and ecologically important South Platte basin with three primary tributaries contributing to the drainage.

The SWAP identifies the threats to habitat in this Focus Area as residential/commercial development, natural system modifications (hydrological and fire regimes), conversion or degradation from incompatible agricultural activities, climate change, and invasive species. The SWAP goes into detail about habitat specific threats, species impacted, and possible conservation/restoration actions. CNHP noted in their 2012 State of Colorado Biodiversity

report, “Of the species that are at risk, fish and amphibians – both aquatic dependent species – have the highest percentage of at-risk taxa. Forty-three percent of all native fish are at risk. Amphibians fared only slightly better with 41% of native species at risk (CPW SWAP 2015).

Restoration potential within this outlined work area is good overall with area specific opportunities and challenges based on partnership goals and opportunities, landowner motivations, socio-economic drivers, and environmental drivers. The restoration goals need to mesh with landowner operational goals as well as habitat improvement, to develop practices that can be sustainable and adaptable.

With such a large geographical coverage, prioritization will be based on working collaboratively to restore valuable ecological systems, to benefit species of concern, and to build on momentum of landowner interest and partnership opportunities.

*Wetland habitats:* Within the Arkansas River drainage, according to CNHP, only 2% of the total acreage is classified as wetlands. These wetlands include wet meadows, wet seeps, playas, riparian and associated floodplain wetlands. Of these wetland acres, 76% are privately held, and 44% of those are under moderate to severe stress from hydrological, management and physical modifications. The most common observed stressors to wetland biotic and vegetative integrity are typically roads, grazing, invasive species, and hydrological impacts. These impacts can include increased basin sedimentation, late successional wetland plant communities, and artificially fed irrigation wetland systems which are being dried up with water efficiency practices.

Within the South Platte Headwaters/South Park area, 6% of the drainage is comprised of wetlands totaling 60,336 acres. These wetland acres are comprised of globally important fen habitats,

*Arkansas River Basin (adapted from CNHP Wetland Inventory):*

Type	Acres	Percentage
Freshwater Herbaceous	137,652	43%
Freshwater Shrub	58,496	18%
Freshwater Forested	29,474	9%
Ponds	17,948	6%
Lakes	37,332	12%
Rivers	33,147	10%
Other	8,034	2%

*South Platte Headwaters (adapted from CNHP Wetland Inventory):*

Type	Acres	Percentage
Freshwater Herbaceous	35,035	58%
Freshwater Shrub	11,576	19%
Freshwater Forested	389	< 1%
Ponds	2,049	3%
Lakes	9,816	16%
Rivers	433	< 1%
Other	1,038	2%



*Playa basin in a wheat field. Photo by Greg Stoebner USFWS.*

wet meadows, slope wetlands, riparian and associated floodplain wetlands. Of these wetland acres, 44% are privately held, and 67% are under moderate to severe stressors. The most observed stressors to biotic integrity have been roads, livestock grazing, invasive species, mining operations, and hydrological impacts. PFW is able to work with private landowners, through changes in management and infrastructure, to eliminate or reduce these impacts and to improve wetland condition.

*Playa restoration:* Playas are a prevalent wetland type in this short grass prairie ecosystem. It is estimated there are 7,500 playa basins in eastern Colorado alone, with basin size varying from 0.25 acre to 65 acres (Hutton 2004). They are shallow, temporary wetlands. They are ephemeral in nature, dependent on precipitation events for hydrology. These prairie-based wetlands support a rich community of birds, mammals, amphibians, invertebrates, and

plants. They also provide critical migration habitat for waterfowl and shorebirds. There are a number of Federal Trust Species and/or State species of greatest conservation concern (16 SGCN) that utilize playas including northern pintail, ferruginous hawk, mountain plover, American avocet, long-billed curlew, plains leopard frog, black-tailed prairie dog, and massasauga rattlesnake (CPW SWAP 2015).

Hydrological changes, grazing and conversion to agriculture are the primary threats. Filling of the basins via sedimentation, digging pits to concentrate water, conversion and use for irrigation water collection are some examples. CNHP's recent ecological integrity assessments (EIA) within the lower Arkansas River basin, found that playas represented the least botanical diversity of all wetland types surveyed with typically less than 10 plant species and, depending on the site, could include non-native or noxious weed species.

This type of restoration is perhaps one of the most elusive to achieve, as perceived landowner values of these basins are often low. In Southeastern Colorado, there are hydrologically modified basins or intact playas impacted by sedimentation and management. Often times, management to provide plant structure and reduce sedimentation impacts are all that's necessary. Other work can entail providing alternate water sources, and assisting in developing grazing management practices to address wetland function and stressors.

*Wet meadow-slope wetlands:* According to CPW SWAP, non-riparian wetlands support 53 SGCN species. Wet meadows are typically groundwater fed wetlands with a mix of wetland sedges, grasses, forbs, and shrubs. Recent CNHP EIA work has shown that when hydrology was intact, wet meadows offered high vegetative biodiversity and habitat. The wet meadow habitat is one that is often impacted and



*Plains leopard frog. Photo by Greg Stoebner, USFWS.*

modified by management practices. These practices and use patterns often lead to erosional processes, lowering of water table, and subsequent drying of this wetland type.

Slope wetlands are a form of wet meadow found throughout mountainous regions. Brinson defines slope wetlands as those that occur “where there is a discharge of groundwater to the land surface.” They normally occur on sloping land; elevation gradients may range from steep hillsides to slight slopes. The level to which headwater slope wetlands are intact, influences the water delivery rate (baseflow) to the downslope environments (Earman et al., 2004). Wetland vegetation also helps dissipate water energy before the water reaches tributaries and therefore has an effect on reducing downstream erosion and channel downcutting (deepening of the stream channel due to erosion). Environmental and management stressors include erosional

and vegetative impacts from hydrological manipulation, livestock grazing, logging, and roads.

*Restoration potential:* There is great potential in restoring these groundwater driven wetland systems through simple structures and management changes with the goal of restoring the hydrological function of the wetland. This is a new programmatic endeavor and there is developing partnership opportunities in the Arkansas and South Platte Headwaters as well as on ephemeral drainages of the southeast. The practices typically include controlling erosional process, encouraging connection to water table, and addressing cattle use patterns and travel in these areas. Exciting efforts using Zeedyk inspired structures is gaining momentum within the state.

*Riparian and stream restoration:* According to CPW SWAP, riparian woodlands and shrublands support 26 SGCN. The waterways in

this area are tributaries of the Arkansas watershed, and are often strongholds of amphibian, migratory birds, and native eastern plains fishes. Hydrologically, they range from dry creeks to intermittent and perennial flowing streams with water levels and flows dependent on rainfall, springs, and run-off events.

Stream corridors play a critical role in the life cycle of grassland dependent species, amphibians, plains native fishes, and neotropical migratory birds. Over 60% of neotropical species use riparian areas in the West as stopover areas during migration or for breeding habitat (Kreuper 1992). There are at least 195 species of birds that are confirmed riparian breeders, according to the Colorado Breeding Bird Atlas (Kingery 2000). Native eastern plains fishes are another group of species linked to these systems. These fishes are believed to be declining because of impacts on eastern plains tributaries. Surface water



*Youth Corps members construct a “One Rock Dam” to control erosion on a Colorado PFW program project. Photo by Katy Fitzgerald, USFWS.*

diversion and dewatering of the Ogallala Aquifer for irrigation and general development are two such impacts. The Arkansas darter is a native eastern plains fish that has been impacted by these activities—currently a state listed species. A wide variety of native Colorado bats utilize these systems including eastern red bat, hoary bat, and silver-haired bat.

Riparian systems are heavily impacted by overgrazing, development, invasive species, fragmentation, diversion, and farming practices, to name a few. Tamarisk Coalition, has documented that 70% of Colorado’s tamarisk is present within the Arkansas River Basin. The PFW program focuses on addressing invasive species has been to work collaboratively with partnering

organizations to address it at a landscape scale.

Riparian restoration practices the PFW program utilizes include addressing native plant community vigor and diversity through grazing management, exclusion, invasive species removal and plantings. Other stressors impacting hydrological function and floodplain connectivity can be addressed sometimes on the supporting uplands by reducing erosional impacts or within the channel by addressing stream morphology changes. The desired biological outcome is to reduce erosion, restore hydrology and stream function, and to promote a diversity of plant species and plant structure within the stream, riparian corridor, and associated uplands.

*Grassland restoration:* The focus area targets short grass prairie, a small area of transitional mixed grass prairie, and sandy soil areas characterized by sand sagebrush habitat. Lesser prairie-chicken, burrowing owl, mountain plovers, shorebirds and other high priority grassland species, have the potential to benefit from grassland management and restoration in this area. CPW SWAP documents, 52 SGCN associated with short grass prairie. Sandsage supports 21 SGCN. Sandsage shrublands dominate sandy areas on Colorado’s eastern plains, where they often intermingle with shortgrass prairie to form a locally patchy sandsage-shortgrass matrix.



*Riparian fencing project, South Park, Colorado. Photo by Katy Fitzgerald, USFWS.*

The majority of the habitat impacts in this focus area, within the grassland mosaic, are a result of fragmentation, habitat composition shifts, and habitat quality degradation. Nearly 50% of the historic short grass prairie has been lost to grassland conversion to agricultural use. Ongoing impacts are present from agriculture, drought, energy production, etc. Recent CNHP work on Pueblo Chemical Depot showed that plants with a grazing history, could take up to 10-12 years after grazing was removed, to match the vegetative trends of non-grazed plant species. Sandsage communities anecdotally are noted to be longer to recover from grazing impacts, and some plant species when grazing and drought conditions are combined can be extirpated from the community.

Grassland habitat restoration is framed around the concepts of restoring/promoting plant diversity and structure to the landscape. This is typically achieved via establishing individualized and adaptive, grazing management goals that allow for utilization while managing for a landscape scale species richness and morphological structure. These types of projects are rare for the PFW program because of increased emphasis and greater funding pools within NRCS programs. The PFW program strives to provide a technical assistance role in these NRCS effort when opportunity arises. Additionally, there is opportunity with FSA CRP projects to promote diversified seed mixtures, either via fiscal or technical assistance.

#### **Southeast Focus Area Focal Species**

- Long-billed curlew
- Boreal toad
- Arkansas darter
- Mallard
- Northern pintail
- Mountain plover
- Ferruginous hawk
- American avocet
- Wilson's phalarope
- Grasshopper sparrow

### Southeast Focus Area Habitat Targets

- Upland Restoration / Enhancement: 800 acres
- Wetland Restoration / Enhancement: 1,000 acres
- Riparian / Stream Restoration / Enhancement: 18 miles

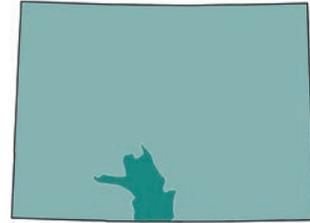
### Southeast Focus Area Partnership Target

- Private Landowner Partners: 35
- Partnerships: 283
- Other Partners: 12
- Technical Assistance: 545 staff days
- Percentage Leveraging (Ratio Service to Partner): 1:3

### Southeast Focus Area Focus Area Plans

- North American Waterfowl Management Plan
- United States Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- North American Bird Conservation Initiative
- State Wildlife Action Plan: A Strategy for Conserving Wildlife in Colorado (Colorado Parks and Wildlife 2015).
- Statewide Strategies for Riparian and Wetland Conservation: Strategic Plan for the Wetland Wildlife Conservation Program (Colorado Parks and Wildlife 2011)
- Partners in Flight Strategic Action Plan
- Intermountain West Joint Venture Coordinated Bird Conservation Plan
- Conservation plan and agreement for the management and recovery of the southern Rocky Mountain population of the boreal toad (*Bufo boreas boreas*)

### San Luis Valley Ecosystem Focus Area



The San Luis Valley (SLV), spanning approximately 100 miles north to south and 60 miles east to west at its widest point, is considered to be one of the largest inter-mountain valleys in the world with an average elevation of 7,700 feet. Numerous high quality wetland and wet meadow habitats are found in the SLV. However, increased human development and landscape modifications have resulted in degradation and loss of wetland habitat throughout the SLV. Water supply, use, and timing are rapidly becoming the primary driver of natural resource management in the SLV. Ground water augmentation projects may become more common in the SLV



Seasonal wet meadow habitat in an active San Luis Valley hayfield. Photo by Corey Kanuckel, USFWS.



*Fencing projects help restore San Luis Valley riparian areas for a variety of wildlife including southwestern willow flycatcher and yellow-billed cuckoo. Photo by Corey Kanuckel, USFWS.*

and CO PFW may have a role to play in those projects. Water users in the South Platte River basin operate under similar requirements and the CO PFW has found a role assisting in the surface design of augmentation projects to create wildlife benefits. The greatest future potential for wetland and wet meadow habitat restoration and enhancement activities in the SLV lies in analogous voluntary agreements with private landowners who flood irrigate for livestock forage.

The SLV is well known for its quality waterfowl nesting habitat; large numbers of nesting waterfowl, shorebirds, and waterbirds; and seasonal shallow wetlands providing a diversity of stopover foraging habitat (Gilbert et. al. 1996, Laubhan and Gammonley 2000). Therefore, habitat restoration and enhancement activities focus on providing such quality habitat. Focal species in the SLV Focus Area include mallard, cinnamon teal, northern pintail, white-faced ibis, American avocet, and Wilson's phalarope. Habitat restoration and

enhancement provides important migration, foraging, hiding, and resting areas for these species. Other high priority Federal Trust Species that benefit from these projects include Northern harrier, marsh wren, American bittern, and northern leopard frog.

Riparian habitat restoration and enhancement activities focus on regeneration of native vegetative

communities associated with the rivers and streams in the SLV. Historic and current land use practices, such as livestock grazing, have impacted the regeneration of cottonwoods, willows, and shrubs within riparian areas throughout the SLV. Primary habitat objectives are to restore riparian areas such that they will contain a suitable mixed-age class of cottonwoods with a dense



*Wetlands throughout the San Luis Valley are critical nesting and migration habitat for many waterfowl and shorebird species such as this Wilson's phalarope. Photo by Corey Kanuckel, USFWS.*

understory of willow and other native shrubs. These areas provide high quality habitat for a wide array of neotropical songbirds including the federally endangered southwestern willow flycatcher and the threatened yellow-billed cuckoo.

Habitat restoration for native fishes of State Concern (e.g., Rio Grande cutthroat trout, Rio Grande sucker, and Rio Grande chub) is a high priority both on private lands and the Baca NWR. Of particular importance is restricting movement of non-native fish species into habitats occupied by native fish through the construction of fish movement barriers. An additional priority is removing and/or replacing detrimental barriers, such as improperly placed culverts, which may restrict access to critical habitats for native fish.

The SLV is within the Intermountain West Joint Venture. Other land management units in the area include three National

Wildlife Refuges (Alamosa, Baca, and Monte Vista); Great Sand Dunes National Park and Preserve; Blanca Wetland Management Area, owned and managed by the BLM; numerous Colorado Division of Wildlife State Wildlife Areas; and TNC's 100,000 acre Medano-Zapata Ranch. Additionally, numerous perpetual conservation easements are held throughout the SLV by DU, USDA - NRCS, Rocky Mountain Elk Foundation, Colorado Open Lands, and numerous local land trusts. The PFW program works closely with agencies and organizations, such as the NRCS, U.S. Forest Service, Colorado Division of Wildlife, DU, Trout Unlimited, and TNC.

### San Luis Valley Focus Area Focal Species

- Southwestern willow flycatcher (Endangered)
- Western yellow-billed cuckoo (Threatened)
- Rio Grande chub
- Rio Grande sucker
- Rio Grande cutthroat trout
- Mallard
- Cinnamon teal
- Northern pintail
- Greater sandhill crane
- White-faced ibis
- American avocet
- Wilson's phalarope
- American bittern
- Sage thrasher
- Boreal toad



*A reconstructed San Luis Valley stream provides habitat for a remnant population of Rio Grande chub and serves as a reintroduction site for Rio Grande sucker. Photo by Corey Kanuckel, USFWS.*

### San Luis Valley Habitat Targets

- Upland Restoration / Enhancement: 400 acres
- Wetland Restoration / Enhancement: 1,500 acres
- Riparian / Stream Restoration / Enhancement: 15 miles
- Fish barriers constructed: 3

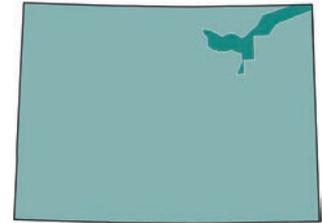
### San Luis Valley Partnership Targets

- Private Landowner Agreements: 30
- Partnerships: 243
- Technical Assistance: 250 staff days
- Percentage Leveraging (Ratio Service to Partner): 1:4

### San Luis Valley Focus Area Related Plans

- North American Waterfowl Management Plan
- United States Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- North American Bird Conservation Initiative
- State Wildlife Action Plan: A Strategy for Conserving Wildlife in Colorado (Colorado Parks and Wildlife 2015)
- Statewide Strategies for Riparian and Wetland Conservation: Strategic Plan for the Wetland Wildlife Conservation Program (Colorado Parks and Wildlife 2011)
- San Luis Valley Community Wetlands Strategy
- Partners in Flight Strategic Action Plan
- Intermountain West Joint Venture Coordinated Bird Conservation Plan
- Rio Grande Basin Implementation Plan (Revised Draft April 2015)
- Southwestern Willow Flycatcher Recovery Plan
- Conservation plan and agreement for the management and recovery of the southern Rocky Mountain population of the boreal toad (*Bufo boreas boreas*)
- Rio Grande cutthroat trout (*Oncorhynchus clarkia virginalis*) Conservation Strategy
- Rio Grande Chub (*Gila Pandora*): A Technical Conservation Assessment
- Rio Grande sucker recovery plan (Colorado Division of Wildlife 1994)

### Lower South Platte Ecosystem Focus Area



The Lower South Platte Ecosystem Focus Area is located in portions of Weld, Arapaho, Morgan, Logan, Phillips, and Sedgwick counties in northeastern Colorado. The floodplain and tributaries of the Lower South Platte River, along with associated uplands, are interests within the focus area. Although much of the land has been altered in the past by agricultural practices and water development, many farmers, ranchers and recreational landowners have an interest in restoring these lands to benefit wildlife and for groundwater augmentation. Restoration of seasonal emergent wetlands, and associated uplands, is a primary conservation objective. These flood plain projects are commonly associated with conservation easements held by CPW, DU, Colorado Open Lands and other major land trusts. Significant protection of the South Platte River corridor has been accomplished over the last two decades.



Waterfowl on a PFW program-funded project, South Platte River, Colorado. Photo by Greg Stoebner, USFWS.



*Win-win conservation practices benefit private landowners and wildlife. Photo by Greg Stoebner, USFWS.*

Migratory water and grassland bird species, along with a host of other wetland-dependent species, will benefit from these efforts. These include snow goose, Canada goose, mallard, northern pintail, American avocet, Wilson's phalarope, common garter snake, and northern leopard frog. Projects which include a groundwater augmentation component will help keep local agriculture sustainable and also continue to contribute to Platte River water flows through the "Big Bend" reach in Nebraska, benefiting several federally listed species such as whooping crane, piping plover, and least tern. Of increasing importance in eastern Colorado as well as the Great Plains as a whole, is the decline of many native grassland bird species. Both the South Platte and Republican Focus Areas provide important grassland habitat in northeastern Colorado. Native prairies as well as CRP tracts comprise a significant resource within the landscape of both focus areas. Floodplain wetland restoration, grazing

system establishment (fencing, alternate water supply, rotation) and re-seeding of native grasses and forbs will likely constitute the majority of PFW program efforts within the basin. In addition, follow-up efforts on the many existing projects in the focus area will likely be an increasing portion of the workload.

Identified conservation threats and challenges include the spread of invasive noxious weeds (woody and herbaceous), fragmentation due to oil and gas drilling, development, increased demand for water by municipalities, reduction of CRP acres, conversion of native grasslands for crop production, fulfillment of augmentation plans, and inflation of land prices.

#### **Lower South Platte Ecosystem Focus Areas Focal Species**

- Mallard
- Northern pintail
- Mountain plover
- American avocet
- Wilson's phalarope
- Greater sandhill crane
- Long-billed curlew
- Loggerhead shrike
- Short-eared owl
- Grasshopper sparrow

### Lower South Platte Ecosystem Focus Area Habitat Targets

- Upland Restoration / Enhancement: 1,000 acres
- Wetland Restoration / Enhancement: 700 acres
- Riparian / Stream Restoration / Enhancement: 3 miles

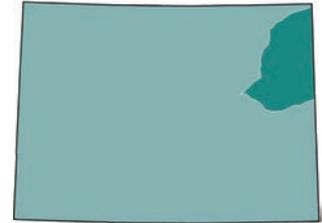
### Lower South Platte Ecosystem Focus Area Partnership Target

- Private Landowner Agreements: 10
- Partnerships: 90
- Technical Assistance: 400 staff days
- Percentage Leveraging (Ratio Service to Partner): 1:3

### Lower South Platte Ecosystem Focus Areas Plans

- North American Waterfowl Management Plan
- United States Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- North American Bird Conservation Initiative
- Ducks Unlimited- 10-year strategic plan for the South Platte River
- South Platte Wetlands Focus Area Strategic Plan
- Partners in Flight
- State Wildlife Action Plan: A Strategy for Conserving Wildlife in Colorado (Colorado Parks and Wildlife 2015)
- Southern Rocky Mountains: An Ecoregional Assessment and Conservation Blueprint September 2001 (TNC, Neeley et al. 2002)
- The Nature Conservancy Central Shortgrass Prairie Ecoregional Assessment
- The Platte River Recovery Implementation Program Biological Opinion
- The Platte River Recovery Implementation Program Final Environmental Impact Statement

### Republican River Ecosystem Focus Area



The Republican River Basin consists of short grass prairie, sand sagebrush prairie, and three river drainages: the North and South Forks of the Republican River and the Arikaree River. This geographical area consists of portions of Washington, Yuma, Lincoln, Logan, Sedgwick, Phillips, and Kit Carson counties. The average rainfall varies from 15-20 inches across the landscape. Land use is primarily ranching, hay production, dryland, and irrigated farming.

PFW has been delivering projects within this watershed and with local partner support will move forward in designating this watershed as a focus area within



*Republican River basin livestock management project. Photo by Greg Stoebner USFWS.*



*American avocets on PFW program-restored wetland in northeast Colorado. Photo by Greg Stoebner, USFWS.*

our program for this planning timeframe. The biological goals established for this focus area emphasize restoring or improving existing riparian condition (with an emphasis on woody invasive control), playa restoration/enhancement, rangeland management that improves grassland structure and diversity, and encouraging land management that reduces fragmentation impacts, i.e. incorporating expired Conservation Reserve Program acres into grazing lands. The partnership goals entail engaging individual landowners and partners in assessing their specific goals, finding opportunities to directly meet common goals, and developing plans that utilize habitat restoration and program assets as a tool to meet these goals.

Lack of native vegetative species composition within riparian corridors is also a growing trend attributed to water management, grazing regimes, and invasive species encroachment. The desired

biological outcome is to restore hydrology and riparian system function where practical and to promote a diversity of native plant species and plant structure within the riparian corridor and associated uplands for federal trust and local wildlife species of the service and its partners.

Playas are ephemeral lakes located on clay soils away from stream channels that have their own distinct watershed. Playas may be dry for multiple years, but most playas experience wet-dry cycles seasonally. Plant communities are adapted to this type of environment and change accordingly, which in turn influences faunal diversity. More than 340 species of plants have been identified in playas (Haukos and Smith 2003). Playas provide cover and native forage (seeds and invertebrates) important to the survival of waterfowl and other migrating and wetland dependent birds. Playas are a primary source of recharge for the Ogallala Aquifer (PLJV 2016).

The impacts that threaten these basins include: altered hydrology (pitting), upland erosion and subsequent sedimentation, overgrazing, pesticide and fertilizer runoff. Playa basins pose a unique restoration challenge as most basins are on private land; landowner awareness and perceptions, as well as land use needs have to be addressed.

Restoration practices that are often implemented include managing livestock use via exclusion or establishment of a grazing system (fencing, alternate water source development, and management), restoring hydrological function via filling livestock watering pits within the basin, and reestablishment of native vegetation both within the basin and adjacent uplands.

Desired biological outcomes for playa restoration include reduced basin sedimentation, improved aquifer recharge, wetland function, improved plant structure/ diversity,

and increased food production (seeds, macroinvertebrates, and amphibians). Key federal and state species in this focus area include a variety of waterfowl, shorebirds, greater prairie-chicken, northern leopard frog, and common garter snake.

There are approximately 1,400 playas in Logan, Morgan, Phillips, Sedgwick and Weld counties. The average number of playas that have pits is approximately 10%. Identified conservation threats and challenges include the spread of invasive noxious weeds (woody and herbaceous), fragmentation due to oil and gas drilling, conversion to cropland, increased demand for water and lowering of Oglala aquifer, overgrazing, drought and inflation of land/commodity prices. Precise impacts of climate change, here as elsewhere, are largely unknown but by restoring resiliency and resistance to habitat potential impacts will be mitigated to some degree. Increased habitat connectivity through riparian restorations in concert with availability through wetland and upland projects will help provide the flexibility needed to adjust to a changing climate.

Goals for both focus areas are based off of a previous five year average, potential internal and external future funding, and projected landowner interest.

#### Republican River Ecosystem Focus Area Priorities Species

- Mallard
- Northern pintail
- Mountain plover
- Greater prairie-chicken
- American avocet
- Wilson's phalarope
- Greater sandhill crane
- Long-billed curlew
- Loggerhead shrike
- Short-eared owl
- Grasshopper sparrow
- Lark bunting



*Waterfowl on restored South Platte River wetland. Photo by Greg Stoebner, USFWS.*

#### Republican River Ecosystem Focus Area Habitat Targets

- Upland Restoration / Enhancement: 4,000 acres
- Wetland Restoration / Enhancement: 100 acres
- Riparian / Stream Restoration / Enhancement: 7 miles

#### Republican River Ecosystem Focus Area Partnership Target

- Private Landowner Agreements: 20
- Partnerships: 180
- Technical Assistance: 300 staff days
- Percentage Leveraging (Ratio Service to Partner): 1:2

#### Republican River Ecosystem Focus Areas Plans

- North American Waterfowl Management Plan
- United States Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- North American Bird Conservation Initiative
- Ducks Unlimited 10-year strategic plan for the South Platte River
- South Platte Wetlands Focus Area Strategic Plan
- Partners in Flight
- State Wildlife Action Plan: A Strategy for Conserving Wildlife in Colorado (Colorado Parks and Wildlife 2015)
- Southern Rocky Mountains: An Ecoregional Assessment and Conservation Blueprint September 2001 (TNC, Neeley et al. 2002)
- The Nature Conservancy Central Shortgrass Prairie Ecoregional Assessment
- The Platte River Recovery Implementation Program Biological Opinion
- The Platte River Recovery Implementation Program Final Environmental Impact Statement

# Colorado Statewide Goals



## Partnerships

The tenets of the PFW program are based on the establishment of partnerships and collaborative efforts to restore habitat and benefit species. It also is based on the ability to be nimble and responsive to developing opportunities.

Within the South Platte and Arkansas River headwater areas, partnership development and work within the local wetland focus areas is the primary effort. Each area has a working group and they are developing their strategic plans and identifying or summarizing project efforts. The PFW effort will be to assist in these efforts and identify major ecological systems, species, and willing landowners to work with. One example of this is the Badger Creek Headwaters effort. Its watershed covers 96 square miles of South Park and has seen a 64% loss of wetland function due to land use stressors, primarily livestock grazing. There has been significant work done to assess this

watershed. A local partnership of state, federal, non-profit, and private stakeholders has been working to address this area's restoration. This restoration has been outlined for each of the tributaries in this watershed and addressing stressors such as sediment, alterations to stream morphology, and grazing practices. This is a great opportunity for CO PFW to engage and restore wetland function on private lands within this watershed as part of the collaborative. Additionally, Park County is developing their strategic master plan and has identified and allocated funding to improve riparian habitat condition, and to assist agricultural producers to link water resources to the landscape. Many other examples exist across the state, including a multi-organizational project in sagebrush habitat, a landowner-driven project with the Three Rivers Alliance in the Republican River watershed, to significant community-based conservation efforts in the San Luis Valley.



Multiple partnerships continue to drive program success. Photo by Greg Stoebner, USFWS.



*Looking for invertebrates in a spawning inlet channel for Colorado River cutthroat trout restored by CO PFW. Photo by Corey Kanuckel, USFWS.*

Other partnership endeavors involve continued efforts to assist rural communities striving to diversify operations, explore ecotourism, and benefit from land stewardship efforts. These efforts historically, have included sponsoring or assisting in organizing community workshops, youth events, or collaborative restoration efforts. In addition, this PFW focus area has worked to engage youth in restoration efforts and will continue to engage Americorp members and other community based youth groups. The goal is to establish an appreciation of wildlife, habitats, restoration and to develop a stewardship ethic.

Using the national guidance formula or calculating expected partnerships over the life of this 5 year Strategic Plan the CO PFW program anticipates a minimum of 1,456 partnerships over the life of the 2017–2021 Colorado Strategic Plan.

### **Improve Information Sharing and Communication**

The overarching CO PFW objective for this goal is to implement the major tenants of Strategic Habitat Conservation through strengthening existing lines of communication and the establishment of new feedback loops and information exchange.

### **Internal Communication**

- Continue to invite other Service divisions and operational functions to attend and participate in annual PFW staff meetings to foster cross-program cooperation and information exchange.
- Maintain regular communications (at least bi-monthly) with Ecological Services Field Supervisor and National Wildlife Refuge System Zone Supervisor.
- State Coordinator will coordinate on a regular basis with RW, ES, and FWCO Project Leaders in Colorado and with those in surrounding States as needed.
- Coordination and communication with all Landscape Conservation Cooperatives applicable to Colorado issues will be maintained and improved.
- Field trips for Headquarters and Regional office program managers will be arranged by the PFW State Coordinator at least once each fiscal year to view projects and meet cooperators.

### **External Communication**

- Maintain, and if possible, improve the Colorado PFW program's long-standing partnership with the CPW. We will continue to seek to expand habitat types and species which can be addressed with CPW funds.



*Colorado Parks and Wildlife surveying for Rio Grande suckers on CO PFW Project. USFWS Photo.*

- Seek out new funding partner to increase the programs financial stability.
- Continue bi-monthly meetings with the USDA NRCS State Conservationist and CDOW Private Lands Coordinator.
- State Coordinator will establish and maintain communications with Colorado Congressional Offices and staff. Field trips to meet landowners and visit projects will be arranged as appropriate. Field biologist will be encouraged to establish communications with Colorado Congressional Staff responsible for each Focus Area.
- Maintain Colorado PFW staff presence in the two NRCS offices (Sterling and Colorado Springs) currently providing office space. This arrangement has resulted in net habitat gains and productivity for both agencies.
- Community Based Partnerships: Many rural communities or groups strive to sustain their family operations, community viability, and to provide opportunity to their youth. The techniques related to this approach are largely opportunistic and strive to mesh the goals of the community or landowners with those of the program. The end goal is the building of community trust in the program, a means for the community to interact effectively with the Service, and to approach habitat restoration on a landscape and temporal scale.
  - o Specific examples of implementation include; participation in Wetland Focus Area Committees, landowner organizations (i.e. Three Rivers Alliance) and local Sage Grouse Working Groups
- Maintain and expand PFW assistance and collaboration with organizations pursuing North American Wetland Conservation Act and other grant programs.
- Invite state, NGO, local cooperators, and landowners on field trips arranged by the PFW State Coordinator at least once each fiscal year to view projects and meet cooperators.
- Colorado PFW staff will participate in local workshops/meetings as needed to increase landowner interest in habitat restoration.

## Enhance Our Workforce

- All PFW staff will be given the opportunity to acquire a minimum of 40 hours of training each year.
  - o This may include classes, conference/workshop attendance, and informational visits to other programs (Service, State, NGO).
  - o Training will be targeted to accomplish two primary functions: 1) improve program operations, and 2) improve career opportunity options for staff.
- Staff will be encouraged to take advantage of all Service training opportunities at NCTC and elsewhere as well as attendance at conferences and workshops.
- The PFW program would benefit from an entry level Biological Technician position to assist in project management and evaluation. This position would provide a career ladder within the PFW program.
- In accordance with the Employee Performance Appraisal System, performance awards will be given and special achievement awards will be used to recognize specific notable staff efforts.

## Increase Accountability

- Projects will be entered into HabITS as soon as the Private Landowner Agreement, Grant Agreement, Co-op Agreement, or similar instrument has been fully executed.
- The PFW State Coordinator will ensure HabITS data entry for accuracy and timeliness.
- The Monitoring and Evaluation Plan developed for the CO PFW program will be implemented.
- Projects will be closed out within the Service's financial system as soon as possible once the project is completed, inspected and invoiced.
- Before and after project photos will be uploaded into the HabITS database.

## Monitoring Plan

### Background

Since 1989 the CO PFW program has been delivering habitat restoration projects across the State. Colorado's elevation diversity results in a wide variety of ecosystems and attendant Federal Trust Species. Therefore, CO PFW projects range from prairie wetlands to boreal toad habitat to sage steppe restorations. Nearly all projects are in partnership with CPW along with a wide variety of Federal, State, and NGO partners. All these wide ranging efforts have been conceived, designed, and implemented with the use of the best science available to our field biologists. Close cooperation between the Colorado PFW program and research conducted by and for CPW and has provided an adaptive management feedback loop as prescribed by the Strategic Habitat Conservation model. This partnership and communication as well as the on-going research by others, form the foundation for CO PFW project selection and design. Several

CO PFW projects have intensive monitoring by our partners completed or on going. These tend to be the more complicated and involved efforts such as stream restoration and watershed level invasive tree removal. These collaborations, while productive can always be improved upon. Therefore, a key point for monitoring efforts is to better utilize existing studies and data applicable to our habitat and species work. At every opportunity, we will continue to work with our conservation partners in a team approach to conduct project monitoring and will share available data with each other. This monitoring plan will assist in these on-going efforts to improve our selection, design, and therefore also improve the biological response of our projects.

### Level I Monitoring: Verification

Level I Monitoring will be the collection of basic information required to determine if the scope was completed and close-out the financial assistance award. Level I monitoring will ensure that the on-the-ground habitat restoration practices that were identified within the Landowner Agreement were properly completed and are functioning as described in the Exhibit A. A site visit will be conducted at the time of project completion. Photo points for use in future Level II monitoring will be established at the time of Level I monitoring is completed. Level I monitoring will be conducted by the Service's private lands biologist in coordination with the landowner and, as appropriate, with other project partners. The Site Visit Report form developed by the R6 PFW program (Attachment 1) will meet the requirements for Level I monitoring as well as serve as the close-out report for the financial assistance award in PRISM.

### Monitoring Level II: Project Habitat Outcomes

The goal of Level II monitoring is to determine if implementing the actions described within Exhibit A achieved the expected habitat response. Level II—accomplishment level biological monitoring will be completed during the initial compliance monitoring and repeated on or about years 3 and 7 post project completion. During the site visits the project will be evaluated to determine if the vegetative composition and, when possible, the fish and wildlife use of the project is meeting anticipated goals. Photos will be taken from photo point(s) to document changes in project vegetation and other visible attributes. Factors such as the presence/absence of hydrophytes and hydrology for wetland projects, native grass and forbs for upland projects, and evidence of agreed upon grazing management will be recorded. The Colorado PFW Level II Accomplishment Monitoring form (Attachment 2) will be filled out, filed and recorded in appropriate data bases. The information will be shared with project specific cooperators and our programmatic partners.

At this time it is anticipated that all CO PFW projects going forward will be monitored at Level II per the schedule. Should that work load be determined to be impacting project delivery, projects for Level II



*Survey for native fishes after invasive tree removal project. Photo by Greg Stoebner, USFWS.*

monitoring will then be selected through use of a habitat/species priority ranking matrix to prioritize monitoring of projects by type and Service's investment. For example, in northwestern Colorado, projects targeting Colorado River cutthroat trout or sagebrush habitat restoration would receive a higher priority for monitoring efforts.

#### **Summary of Information to be Collected for Level II**

- Check to see if any changes in land ownership or that of any managing employees (when applicable) has occurred. Many counties have ownership records on-line.
- Perform site visits on or about years 3 and 7.
- Compare the project description and purpose within the Exhibit A against actual site conditions to see if the project is meeting its anticipated goals for habitat type and wildlife use, document any unexpected outcomes or use.
- Use the photo points established for Level I to document general project changes, including the plant community.
- Does the vegetation/habitat present support the project goal as presented in Exhibit A?
- Document presence of target species if possible including evidence of use. (CO PFW will experiment in the use of game cameras with willing landowners.)
- Recognize that our partners may also be monitoring the project(s) and therefore specific

time frames need to be flexible. i.e., NRCS doing the stream survey and modeling or CPW/TU fish biologists monitoring the native fish populations on their agencies timeframes and NRCS monitoring of SGI projects.

- Utilize competent/willing landowners and simple methodologies to provide reliable data.
- Make a note that if appropriate, the findings can be extrapolated to nearby projects of the same type.

#### **Monitoring Level III: Landscape Scale Biological Outcomes**

At this time the CO PFW team does not have the internal resources or staff capacity to conduct Level II monitoring to determine biological outcomes at the landscape scale. However, several of our project partners have initiated monitoring protocols for specific projects that will yield estimates of biological outcomes and those results will be uploaded into HabITS. Also, the CPW Wetlands Program is developing a monitoring protocol for projects it has funded. It is currently being developed in-house and then will be vetted past major partners. CO PFW will assist in plan development and implementation and the resulting data will be made available for our use. As several of CO PFW focal species/habitats are of significant importance to the Service and its partners, major efforts are now being developed and implemented which will generate landscape scale information we can use. Prominent examples

Table 1. Level II Monitoring Information

<b>Habitat Target</b>	<b>Key Habitat Attributes (Presence or Absence)</b>	<b>Federal Trust Species (Presence or Absence Only)</b>
Wetland Restoration/Enhancement	Hydrology (Y/N) Hydrophytes (Y/N) Mudflats (Y/N)	Shorebirds, T&E Species, Migratory Waterbirds, Amphibians (Y/N)
Native Grass Restoration/Enhancement	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N) Milkweed (Y/N)	Grassland Songbirds (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N)
Sage Steppe Restoration/Enhancement	Native Grass Species (Y/N) Native Forb Species (Y/N) Invasive trees (Y/N)	Greater sage-grouse Sage sparrow, sage thrasher (Y/N)
Stream Restoration/Enhancement	Installed Features Stable (Y/N) Channel Morphology within design Goals (Y/N)	Native fishes Riparian dependent species Desired Aquatic Invertebrates (Y/N)
Riparian Enhancement	Native Grass Species (Y/N) Wetland Plants (Y/N) Native Understory Shrubs (Y/N) Native Trees (Y/N)	Native Riparian Avian species, Amphibians Utilizing the Project (Y/N)

include greater and Gunnison's sage-grouse, lesser prairie-chicken, southwestern willow flycatcher, and native salmonids. We will utilize data from these efforts as they become available to feed back into the CO PFW program. Further, organizations such as

joint ventures, major conservation non-profits and universities have programs and efforts that can assist with our information needs. All other opportunities to add Level III monitoring to projects through our conservation partners will be explored.





Attachment 2  
CO PFW Level II



Accomplishment Monitoring Form

**To be completed prior to Monitoring Accomplishment**

Agreement Date: \_\_\_\_\_ Date Work Completed: \_\_\_\_\_

LA Number: \_\_\_\_\_ County: \_\_\_\_\_

Accomplishment Type: Upland \_\_\_\_\_ Wetland \_\_\_\_\_ Riparian \_\_\_\_\_

Primary Trust Resources: \_\_\_\_\_

Accomplishment Objectives: Acres: \_\_\_\_\_ Miles \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Photo Point Coordinates (UTM) Minimum of one photo point**

Photo Point # \_\_\_\_\_ UTM: \_\_\_\_\_

**Current condition of project, habitat, and any general observations (related to Exhibit A)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Factors that influence current condition: (i.e. climate, grazing, time since fire or other disturbances)**

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**Invasive Species Comments:**

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**Landowner/Manager Comments – If possible –: (are their objectives being met?)**

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**Are accomplishment objectives being met: Yes** \_\_\_\_\_ **No** \_\_\_\_\_

**General comments regarding the project, and/or larger landscape:**

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## Colorado PFW Monitoring Guidelines

- Bring a copy of the LA and any previous monitoring info for the site(s)
- Timing of Monitoring
  - To the greatest extent possible schedule monitoring to coincide with the projects purpose – if applicable (i.e. waterbird nesting habitat should be visited in the spring)
    - Attempt to monitor same time of year (i.e. Fall, Spring)
- Minimum of one photo point
  - Photo point establishment will follow the guidance provided by USDA publications concerning:
    - General selection criteria
    - Photo point marking
    - Reference point
    - GPS
    - Image management
- Standardized photo name  
(LA Number-Year-Month-Day-Photo Point #, Compass Direction)
- Monitoring Veg Response:
  - Ocular estimate of veg condition related to LA objectives to (height, density, species comp)
- Accomplishment objectives being met?
  - Concerns
  - Observations
  - Recommendations
  - Future Project Needs
- Use Google Earth or other timeline satellite photography if a site visit is not possible
- Determine if land ownership remains the same
- As an option: with owner/manager permission, place a game camera for longer term record of use/activity
- If time allows, utilize appropriate species or habitat specific monitoring. Examples may include: pellet surveys, fish sampling, line/point transects, etc.
- Be aware of and seek out data from monitoring efforts that have been performed by our partners

### Attachment 3

## Known current research and monitoring efforts that may fit the Level II and Level III information needs

CPW is quantifying grouse response to P/J treatments that will eventually be published

CPW has completed a number of published studies for GSG in the NW over the years

CPW will be using Sage Grouse Habitat Assessment Framework (HAF) on State Wildlife Areas

CPW is doing a GSG pellet survey on P/J treatments

TU and CPW are doing intensive monitoring of our native fish projects in the NW

CPW is monitoring PFW developed native fish projects in the SLV/SW

CPW is releasing and monitoring boreal toads on PFW project(s)

WRP assessments are being conducted by private contractor (Wetland Dynamics, LLC) in SLV for NRCS, many are also PFW projects

Dolores River Partnership/TC/TNC are budgeting for monitoring of all tamarisk/riparian projects – RMBO may be looking at bird response (point counts, etc) on tamarisk treated riparian areas

CSU, Learning from the Land Project, is currently monitoring PFW and other sage steppe project sites in the NW

NRCS SGI Science efforts: <http://www.sagegrouseinitiative.com/our-work/science-policy/>

NRCS line/point veg transect on SGI funded projects for both sage-grouse species

NRCS LPCI Science efforts: <http://lpcinitiative.org/our-work/science-research/>

Ducks Unlimited is monitoring many wetland projects throughout CO, and is currently working with CPW to further define that effort

Aquatic ecosystem monitoring program (USGS)

Bark Beetle Cooperative (CO)

BLM Eco-regional Assessments

Climate Change Initiative (WY/USGS)

Climate Change Scorecard (FS)

CO River basin study (TNC)

Ecological Restoration Institute - Northern Arizona University

    Colorado Forest Restoration Institute - Colorado State University

    NM Forest and Watershed Restoration Institute – NM Highlands University

Eco-regional assessments (TNC)

Endangered Fish Recovery Programs

    Upper Colorado

    San Juan

Intermountain West Joint Venture

Intermountain West Climate Change (Rocky Mountain Research Station – Forest Service)

Invasive species strategic plan (BLM)

Invasive spp. Program (CO)

Inventory and monitoring partnerships (NPS)  
National fish habitat assessments  
Western Native Trout Initiative (WNTI)  
Native plant seeds program (BLM)  
NatureServe programs  
NIDIS (national integrated drought information system)  
NRCS Sage-Grouse Initiative  
Partners in Amphibian and Reptile Conservation (Southwest PARC)  
Southwest climate change initiative (TNC, feds, universities)  
State Natural Heritage Programs  
Upper Colorado River Basin Watershed Assessment  
Western Association of Fish and Wildlife Agencies  
WGA climate adaptation  
WGA pilot project – modeling (wildlife)  
Wildlife protection program (CO)

**Landscape Conservation Cooperative Funded Science**

Great Plains LCC – <http://www.greatplainslcc.org/science/>  
Great Northern LCC – <http://greatnorthernlcc.org/supported-science>  
Southern Rockies LCC – <http://southernrockieslcc.org/products/science-projects/>

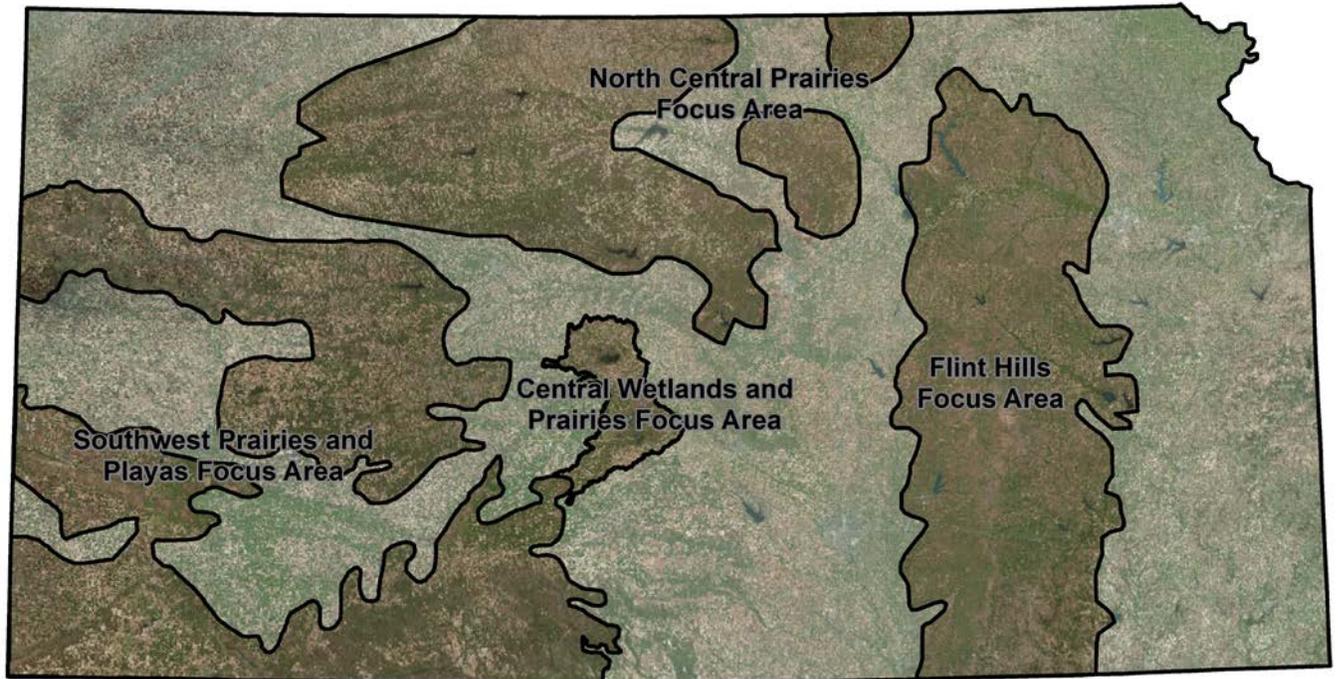
**Current WSFR Funded Projects in Colorado that Relate to CO PFW Focus Areas and Goals**

GIS Habitat Information (F13AF00558/FW-31-P-27)  
Threatened & Endangered Plant Database Development in Colorado  
Monitor and Improve Water Quality  
Colorado Wildlife Action Plan Enhancements  
Wetlands Conservation  
Sage-Grouse Research  
Conservation of Native Reptiles  
CO Habitat Water Quality Studies



*Landscape-scale habitat restoration project in the Northwest Focus Area of Colorado. USFWS Photo.*

# Kansas



*Kansas PFW program Focus Areas. USFWS map.*

## Introduction and Overview

Kansas is known as the “Prairie State” and is home to over 17 million acres of native prairie that hosts a multitude of grassland obligate Federal Trust Species. Current trends demonstrate that grassland obligate birds have shown the steepest long-term decline of any other avian guild in North America. Proper prairie management via appropriate grazing, prescribed fire and invasive species control are necessary to maintain native habitat for the species that depend on these systems. Native prairies evolved and were maintained through disturbances from grazing, fire and climate. Although historical grazing effects from native herbivores have been altered, we can attempt to mimic these events through livestock grazing and appropriate timing

of prescribed fire. Following a prescribed fire, livestock are attracted to recently burned areas. As new vegetation emerges, green sprouts provide more nutrients than areas with last year’s standing vegetation. Newly burned areas are great for livestock and some wildlife species such as the horned lark and buff breasted sandpiper. In addition, the standing grass from previous years’ growth provides other grassland birds just the right cover to reproduce and thrive. Finding the right balance of fire and grazing provides conditions suitable for both the livestock that need new grass to graze and the wildlife that need previous years’ vegetation to reproduce. With the right timing and frequency, patch burn grazing is a tool that attempts to mimic the historical impacts from fire and grazing that once maintained habitat for both native herbivores as well

as other wildlife that depend on the prairie. Through patch burn grazing, rangeland managers try to recreate the randomness of historical disturbances by altering fire return intervals on the landscape therefore altering impacts from grazing as the cattle prefer the newly burned areas. By not burning every acre every year, rangeland managers can maintain a healthy prairie system that supports both livestock and native wildlife. Recent research has demonstrated that patch burn grazing provides similar livestock gains compared to whole pasture burning. Limiting fire return intervals to once every two to four years also allows appropriate fuels to build that help create more intense prescribed burns that help keep many invasive species in check. Rotating livestock to newly burned areas has also been shown to reduce parasite loads



*With a goal to manage for the most susceptible species on the ranch, I feel that if I can manage the ranch and take care of that species, everything else will fall into place and take care of itself.*

**Private Landowner, Kansas**

*Grasshopper sparrow utilizing habitat restored by a Kansas PFW program project. Photo by Tony Ifland, USFWS.*

that can affect livestock gains. By maintaining appropriate fire return intervals and grazing events, both the landowner and grassland dependent wildlife benefit from a healthy prairie system. From the landowner to the lesser and greater prairie-chicken, or the upland sandpiper and monarch butterfly, management of Kansas's prairies is a critical piece to the conservation puzzle that enables healthy prairie communities to thrive.

Native prairies are not the only resource concern in Kansas. Central Kansas is home to wetlands associated with Quivira National Wildlife Refuge and Cheyenne Bottoms. Located in the bottleneck of the Central Flyway, both wetland complexes are RAMSAR Wetlands of

International Importance. These wetlands provide habitat for a host of migratory waterfowl and shorebirds as well as the federally endangered whooping crane and interior least tern. Kansas rivers, streams and riparian areas also provide habitats for numerous federally listed fish species such as the Topeka shiner, Arkansas River shiner and Neosho madtom as well as mussels including the Neosho mucket, rabbitsfoot and spectaclecase.

Across all of its native habitats, invasive species control is a high priority for the Kansas PFW (KS PFW) program. Invasive species such as *Sericea lespedeza*, old world bluestem, eastern redcedar, honey locust and salt cedar degrade native habitats leading

to undesirable plant community dynamics. At the same time, these species reduce the forage yield for cattle production, threatening the livelihood of rural families. By controlling invasive species within Kansas landscapes, habitat resources for native wildlife species can be enhanced and restored while also maintaining healthy rangelands for Kansas ranchers. The broader public benefits from ecosystem services such as carbon sequestration, water quality and quantity, soil health, reduced risk of catastrophic wildfire, wildlife and plant diversity as well as outdoor recreation opportunities.

Whether it's the tallgrass prairie of the Flint Hills or Mixed and Short grass prairies further west, it is within these prairie landscapes,



*PFW program project site along the Smokey Valley River, Kansas. Photo by Tony Ifland, USFWS.*

that the KS PFW program plays a pivotal role in conservation delivery. With 97% of the state in private ownership there are ample opportunities for the KS PFW program to assist ranchers and farmers with voluntary fish and wildlife habitat restoration projects. Threats to native habitats in Kansas such as, invasive species, fragmentation, and improper rangeland management have led to the degradation or loss of native habitats. Through educational efforts and the application of appropriate land management strategies, the KS PFW program provides technical and financial assistance to build and strengthen conservation partnerships that enhance, establish and restore habitat for Federal Trust Species.

Partnerships are critical to conservation delivery. Conservation stakeholders bring a variety of resources and abilities to the table that a single entity cannot efficiently and/or effectively provide. A key conservation

partner for the KS PFW program is the Kansas Grazing Lands Coalition (KGLC). The KGLC is a rancher-driven non-profit organization whose mission is “To regenerate Kansas grazing land resources through cooperative management, economics, ecology, production, education, and technical assistance programs.” The KGLC is comprised of local grazing groups such as the Comanche Pool Prairie Resource Foundation, The Tallgrass Legacy Alliance, and the Smoky Hills Grazers as well as an advisory committee that represents conservation stakeholders across the state including Federal and State conservation agencies, universities and NGOs such as TNC, the Kansas Prescribed Fire Council and Pheasants Forever. The KS PFW program coordinated with the KGLC, its advisory committee, and other partners throughout the development of this 5-year strategic plan and its associated Focus Areas. The KS PFW Focus Areas not only represent high priority areas

for Federal Trust Species and their habitats, they also coincide geographically with most of the landowner driven KGLC grazing groups. Throughout the duration of this plan the KS PFW program will continue to deliver PLAs through a cooperative agreement with the KGLC, its associated local grazing groups and other conservation partners.

### **Focus Area Selection**

Through continued communication with our conservation partners the KS PFW program maintains four focus areas across the state. The Southwest Kansas Prairies and Playas, North Central Prairies, Flint Hills, and Central Wetlands and Prairies Focus Areas prioritize our conservation efforts and help target habitats required by Federal Trust Species within the state. Using Geographic Information Systems (GIS) technologies, we incorporated datasets created by conservation partners that included spatially explicit decision support

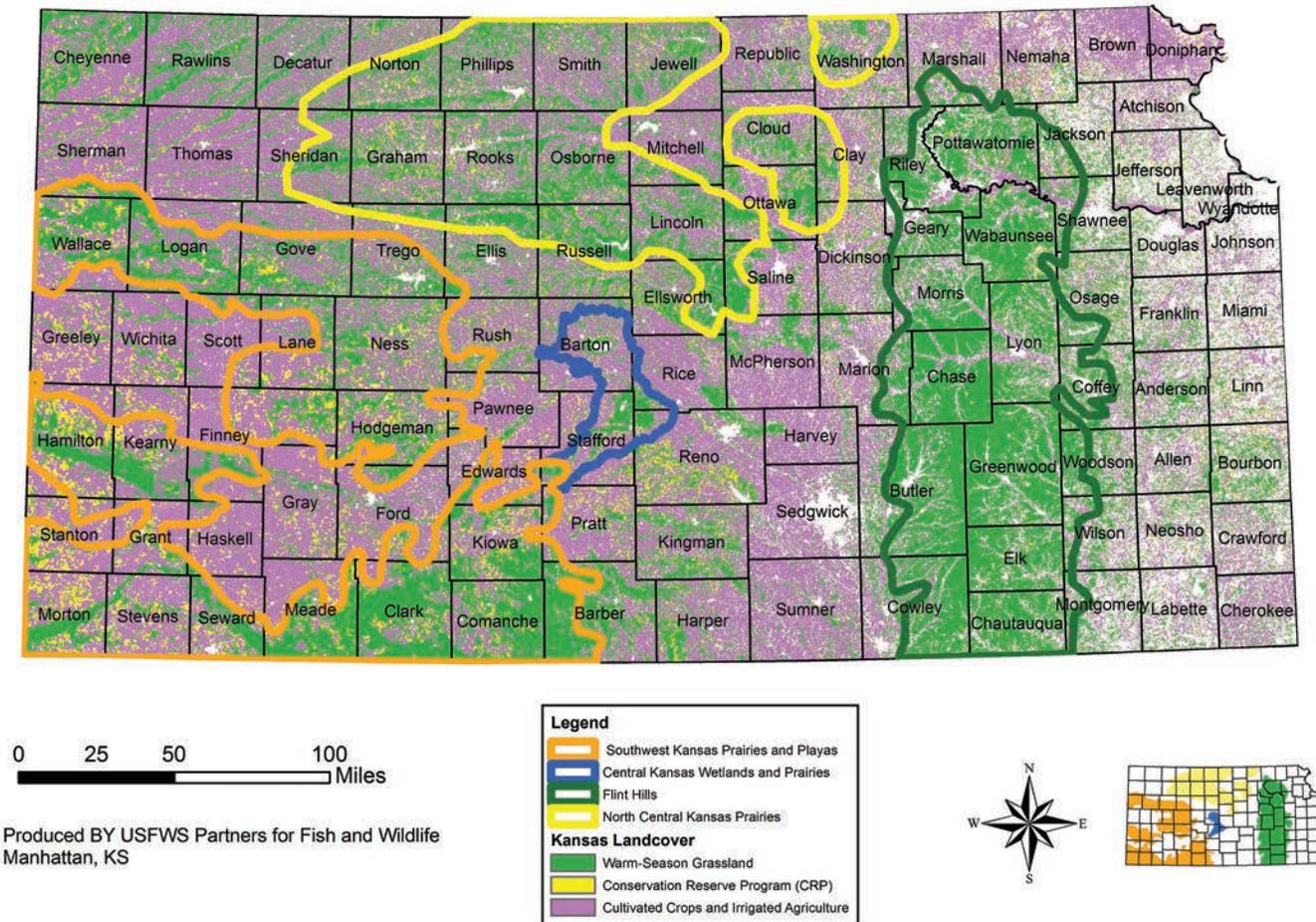
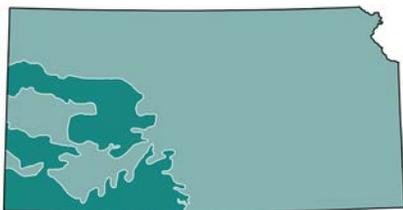


Figure 1. Kansas PFW program Focus Areas compared to Kansas Land cover data set. USFWS map.

tools created by the Service HAPET office (Fig. 2, 3), other strategic plans, landscape models such as the Western Governors’ Association Crucial Habitat Assessment Tool, and statewide land use/landcover (Fig. 1) data to create our focus areas.

**Southwest Prairies and Playas Focus Area**



The Southwest Prairies and Playas Focus Area is a complex and diverse landscape composed of mixed-grass, shortgrass, sand prairie and sand sagebrush prairie that extend throughout western and south central Kansas. Portions of this focus area also garner the highest densities of playa lakes in

the state. Physiographic regions within this focus area include the Red Hills, the Smoky Hills, the Arkansas River Lowlands and the High Plains of Kansas. Each of these regions is defined by unique soil characteristics, topography and plant communities. The Red Hills and Smoky Hills comprise the mixed-grass portion of this focus area. The red-colored Permian soil of the Red Hills with its many buttes, mesas and cave formations supports Kansas’s second largest intact tract of native prairie (second only to the Flint Hills). The Smoky Hills, so named for their dark shales that produce a “smoky” heat haze when viewed by settlers approaching from the east, comprises rolling to nearly level tallgrass and mixed grass prairie. Within this focus area the Smoky Hills can be considered a transition zone between the tallgrass and shortgrass prairies. Just south of the Smoky Hills lie the Arkansas River Lowlands. This area includes sand and sandsage

prairies composed of sandy soils supporting grass-covered (and at times exposed) sand dunes. Finally, the short-grass prairie portion of this area includes the High Plains region. This is the driest portion of the state due to being in the rain shadow of the Rocky Mountains. To some, this area seems a bleak and featureless expanse. Early settlers stated “You can see so far ... it hurts.” The High Plains are more functionally dynamic than a cursory view can assess. The geology of the High Plains paints a picture of river borne sands and gravels, windblown silts, volcanic ash beds and diatomite deposits.

The diversity of the Southwest Kansas Prairies and Playas Focus Area’s topography, geology and plant communities supports a multitude of Federal Trust Species. From waterfowl and shorebirds using its playa lakes, to lesser prairie-chickens and pollinators inhabiting its grasslands, the wildlife species that occur in this



*Kansas Southwest Prairies and Playas Focus Area. Photo by Aron Flanders, USFWS.*

area can be as diverse as the landscape, making this a high priority for conservation. Threats of habitat fragmentation, drought, and invasive species, including eastern redcedar, old world bluestem and Tamarisk, are major concerns. Additionally, the largest wildfire in recorded Kansas history (2016 Anderson Creek Wildfire) burned close to 400,000 acres with approximately 267,000 acres within this focus area. No human fatalities occurred; however, the wildfire caused significant loss of property that supports rangeland management and the livelihoods of livestock ranchers that are stewards of the prairie landscape. Ecologically, millions of eastern redcedar trees were killed, resulting in increased herbaceous production and water in springs, streams and the soil. In order to capitalize on the reduction of live seed-producing trees, dead standing trees will need to be removed in order to allow land management practices that maintain prairie communities. KS PFW coordinated with conservation partners to help address immediate needs after the fire and will continue to work with private landowners and partners in the impacted area. In addition to supporting wildfire recovery and monitoring efforts, two of the key priorities for the program in this focus area are controlling invasive trees, especially eastern redcedar,



*Lesser prairie-chicken nest. Photo by Tony Ifland, USFWS.*

and promoting proper prairie management. This will be done in cooperation with several partners and community-based partnerships, such as the Comanche Pool Prairie Resource Foundation (Comanche Pool). The Comanche Pool is an organized producer-driven interest group that promotes proper grassland management throughout 5.4 million acres of

Kansas's Red Hills and north-central Oklahoma. The Comanche Pool has a long track record of bringing landowners together for outreach and education. Working with KS PFW, Kansas Department of Wildlife, Parks and Tourism (KDWPT) and other partners, the Comanche Pool has helped leverage resources to deliver over 50 on-the-ground projects to impact over



*A lesser prairie-chicken chick being fitted with a radio telemetry transmitter for research conducted in the Southwest Prairies and Playas Focus Area. Photo by Tony Ifland, USFWS.*

120,000 acres of habitat in Kansas. Moreover, they recently assisted in putting boots on the ground with a prescribed fire specialist position that has significantly increased the capacity to conduct prescribed burns in the region. This portion of Kansas does not have as strong a fire culture compared to the Flint Hills; therefore, prescribed burn associations and prescribed fire specialist positions play a critical role in reintroducing fire management within local communities.

The lesser prairie-chicken, whose numbers have dropped by over 90% since the 1800s, is just one of the species the PFW program is working to conserve in this area. The recovery of lesser prairie-chicken is a Service national priority and Kansas is projected to produce 70% of the 5-state population goals within the Western Association of Fish and Wildlife Agencies' lesser prairie-chicken Rangewide Conservation

Plan. The lesser prairie-chicken serves as an umbrella species for numerous wildlife because it requires landscape scale contiguous grasslands that are spatially heterogeneous in structure and composition. Additionally, practices that benefit lesser prairie-chicken also support productive working ranchlands. Ranching is one of the major land-use patterns in this focus area and ranchers have been receptive to conservation strategies that incorporate their overall objectives. From the waterways of the Arkansas, Cimarron and Smoky Hill Rivers to the Medicine River and spring-fed streams that dissect the Red Hills, the Southwest Kansas Prairies and Playas Focus Area is home to many aquatic and riparian species. Through proper prairie management, PFW program staff and their conservation partners have already detected increased flows and better riparian habitat conditions due to the installation of proper grazing systems, fire return



*Prescribed fire is used to enhance native prairie by controlling invasive species like eastern redcedar. Photo by Travis Morisse, Hutchinson News.*

intervals and invasive woody species removal.

Across western Kansas, close to 10,000 depressions that formed years ago, store precious water from seasonal rains that provide a temporary oasis to wildlife on the semi-arid landscape. When



*Kansas PFW program staff often conduct or assist with ranch tours, workshops, and other educational events. Photo by Bill Barby.*

flooded, these depressions, called playas, attract ducks, geese, shorebirds, and waterbird species such as mallards, Canada geese, greater yellowlegs, long-billed dowitchers, whooping cranes and sandhill cranes. Playas provide important migratory stop-overs for these birds to rest and refuel, some traveling thousands of miles between breeding grounds and wintering sites. Precipitation is inconsistent in the playa region and drought is a common occurrence. Playa lakes may be the most important wetland habitat type for birds in the high plains region. Additionally, playas contribute up to 95% of the overall recharge of water to the Ogallala aquifer. Playas are often not suitable or marginal for planting and harvest of agriculture crops, leading to reduced production. Unfortunately, many playas do not function properly due to sedimentation, plowing, drainage, pitting, lack

of herbaceous buffers or altered watersheds that don't allow water to reach the playas. In addition to providing wildlife habitat, restoring hydrological function in farmed playas can contribute towards conservation of aquifer water levels that are declining drastically due to groundwater pumping for center-pivot crop irrigation. The KS PFW program is working with producers to increase awareness of the value playas hold in order to promote more participation in conservation programs and adoption of beneficial practices.



*A Kansas landowner signing a Private Landowner Agreement while he breaks from sorting cows. USFWS photo.*

### Southwest Prairies and Playas Focus Area Focal Species

- Lesser prairie-chicken
- Grasshopper sparrow
- Loggerhead shrike
- Cassin's sparrow
- Western burrowing owl
- Northern pintail
- Long-billed curlew
- Upland sandpiper
- Whooping crane
- Arkansas River shiner (Threatened)
- Arkansas darter
- Monarch butterfly
- Western meadowlark
- Mountain plover

### Southwest Prairies and Playas Focus Area Habitat Targets

- Upland Restoration/Enhancement: 17,000 acres
- Wetland Restoration/Enhancement: 250 acres
- River Miles: 20 miles

### Southwest Prairies and Playas Focus Area Partnership Targets

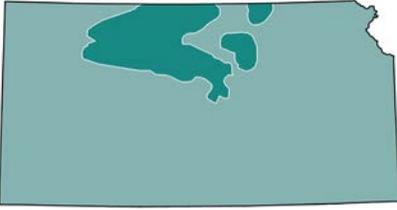
- Private Landowner Agreements: 25
- Partnerships: 225
- Technical Assistance: 125 days
- Cost-share:
  - 42% Service Funds
  - 48% Landowner Funds (in-kind or monetary)
  - 10% Other Partner funds

Please see KS PFW Implementation Strategies section following focus area narratives for additional information concerning habitat delivery in this Focus Area.



*Kansas Grazing Lands Coalition addressing private landowners about community based conservation on PFW program project tour. Photo by Aron Flanders, USFWS.*

### North Central Prairies Focus Area



The North Central Kansas Prairies Focus Area is considered a transition zone between the tallgrass and shortgrass prairies within the state. This area includes tallgrass on the eastern edge, mixed-grass in the middle and short-grass to the west. The Smoky Hills, a large area of north central Kansas, is the primary physiographic region within this focus area. Many theories exist that attempt to explain where the Smoky Hills got their name. One historian suggests they were named for their dark shales that produce a “smoky” heat haze observed by settlers as they approached from the east. Other tales include a vast grove of cottonwoods along the Smoky Hill River that when seen from afar looked like clouds or “smoke” in the

distance. The bulk of the Smoky Hills is located within the North Central Prairies Focus Area.

This region also contains abundant outcrops of sandstone and limestone. The sandstone and limestone rock, as well as a lack of rainfall, helped to keep much of this area in prairie. A particular layer of limestone, called Greenhorn limestone, is unique to north central Kansas with the formation found mostly within the North Central Prairies focus area. Due to the scarcity of trees for lumber, early residents to this region, dating back to the late 1800s, eventually began utilizing this layer of limestone to construct everything from cellars, barns, and homes, to downtown city buildings and extravagant banks. Perhaps the most significant use of this layer of rock was for fence posts. For this reason, much of this PFW focus area is referred to as “Post Rock” country. This landscape still contains some large tracts of high quality tallgrass and mixed-grass prairie that are used primarily for grazing. Both short-grass and tall-grass species exist throughout this

focus area. To the east, tallgrass species such as big bluestem, Indian grass, and switchgrass, are abundant in moist areas. As you move west, shortgrass species such as buffalo grass and blue grama, are found on the shallow soils of the uplands. Mixed throughout this area you will also find mid-sized grasses such as little bluestem, tall dropseed, and side-oats grama. Dominant woody species include hackberry, smooth sumac, and rough-leaved dogwood. These native prairie pastures provide important seasonal habitat for migrating birds such as the Baird’s sparrow. They also provide crucial nesting and brood rearing habitat for grassland nesting birds such as the upland sandpiper, grasshopper sparrow, greater prairie-chicken, and lesser prairie-chicken. Portions of this area contain some of the highest densities of greater prairie-chickens in the state. Much of the Smoky Hill River, Saline River, Solomon River, and a portion of the Republican River and their tributaries are found within this focus area and correlate with the bulk of remnant prairie that still exists.



*Blacksampson echinacea (Echinacea angustifolia) and a variety of other prairie wildflower species putting on a great show during early summer on this North Central Prairies Focus Area restoration project. Photo by Tony Ifland, USFWS.*



*Post rock country sunrise. Although PFW program restoration efforts center around controlling tree invasion, local limestone that was used for fence posts over a century ago still stand as a reminder of a more treeless era. Photo by Tony Ifland, USFWS.*

Threats of fragmentation and invasive species are a major concern. Proper grazing management systems and fire return intervals are two major conservation priorities in this area. The program has been successful in delivering these priorities due to increased cooperation with several partners, such as the Smoky Hills Grazers, a producer driven interest group that promotes proper grassland management throughout the region. Ranching is one of the major land-use patterns in this focus area and ranchers have been receptive to conservation strategies that incorporate their overall objectives.

The Smoky Hill, Saline and Solomon Rivers along with their associated tributaries provide in-stream and riparian habitat to multiple Federal Trust Species within this focus area. As demonstrated in other parts of Kansas, proper prairie

management through the installation of grazing systems, appropriate fire return intervals and invasive woody species removal can provide secondary benefits to riverine habitats via increased flows and overall water quality. The federally endangered Topeka shiner once occurred within many reaches of these rivers and is a focal species for this focus area.

The primary objective for KS PFW in the North Central Kansas Prairies Focus Area is to coordinate with USDA, KDWPT, KGLC, Kansas Prescribed Fire Council, TNC and other conservation partners to enhance/restore native habitat on large tracts of land in order to provide adequate habitat for Federal Trust Species. Kirwin NWR lies within the heart of the North Central Prairies Focus Area. The KS PFW program will continue to coordinate conservation efforts on private lands adjacent to the

refuge to expand benefits to Federal Trust Species beyond the border of the refuge. These collaborations enable KS PFW program to work with producers on large tracts of land owned by several landowners involved with many different programs, all with common goals. One of the priority conservation practices promoted by KS PFW is prescribed fire. Previous fire cycles across this focus area once kept the invasive woody species in check. However those cycles have been altered, with fire suppression becoming the norm across most of the focus area over the last 140 years. The absence of this critical component to healthy herbaceous prairies has undoubtedly been a key factor in the increase of eastern redcedar and other invasive woody species. The control of invasive woody species has become a primary conservation issue that KS PFW and other conservation partners deal with, requiring a substantial



*Remnant prairie within the Saline River valley at dawn. Photo Tony Iftand, USFWS.*

amount of time and funding to combat. A key component to foster and promote prescribed fire is the recent inclusion of a Regional Fire Coordinator position within this focus area that can provide technical guidance on prescribed burning to landowners and aid in the development of prescribed burn associations. This position, made possible through the Kansas Prescribed Fire Council and Kansas Grazing Lands Coalition, is a much welcomed addition as a KS PFW partner in the North Central Prairies Focus Area. Through the organization of burn associations our cooperators can share information, equipment, and techniques with others in the conservation community to better facilitate the enhancement/management of our native prairies. The KS PFW program will deliver information concerning how to get involved with these conservation efforts through landowner workshops, other organizations,

and the communication of participating landowners.

Greater prairie-chickens occupy most of the North Central Prairies Focus Area. However, the lesser prairie-chicken range does extend into the far south western portion. Currently, lesser prairie-chickens do not occupy the prairies directly adjacent to Kirwin NWR. However, they are documented as much as 30 miles beyond the northern boundary of their historic range, which places the species just south and west of the refuge. Climate change forecasts discuss warming trends and decreasing precipitation causing declining habitat quality in the southwest portion of lesser prairie-chicken range. Additionally, maximum entropy modeling has demonstrated a distribution for expected climate change scenarios in the future that depicted greater probability of climatic conditions appropriate for lesser prairie-chickens north and

east of the current occupied range. These predicted shifts in habitat conditions put future expansion of the lesser prairie-chicken range further into the North Central Prairies Focus Area, with Kirwin NWR directly in the path. As such, KS PFW has identified over 1,000 mi<sup>2</sup> of potential habitat connecting Kirwin NWR to the current lesser prairie-chicken range. This further substantiates an objective listed in the refuge's Comprehensive Conservation Plan to create a minimum grassland habitat block size of 42,000 acres that connects prairies on private lands through NWR restoration efforts. With this key connective habitat in need of restoration and desired goals in mind, a Cooperative Recovery Initiative (CRI) grant will be utilized to restore and/or enhance existing lesser prairie-chicken habitat for nesting and brood rearing on and near Kirwin NWR and Quivira NWR. The long-term goal is to assist lesser

prairie-chicken population recovery through support of formalized conservation plans. These projects will expand upon occupied acres to enhance the distribution and connectivity of lesser prairie-chicken populations and increase population size. These restoration efforts will also benefit greater prairie-chicken and other grassland obligate species.

With habitat fragmentation being identified as a primary driver in the decline of prairie-chicken, reducing these threats will help to enhance prairies to improve nesting and brood rearing habitat for these species. CRI projects will address impacts from grassland invasion by woody plants, improper grazing systems, altered fire regimes, and restore cropland to native herbaceous vegetation. Within the North Central Prairies Focus Area, CRI projects will address these impacts to private lands adjacent to Kirwin NWR in particular, and these high priority projects will compliment refuge grassland restoration efforts as well. While it is unknown to what extent the progression of time and distance that lesser prairie-chicken range expansion will ultimately take place, KS PFW will continue to assist KDWPT in conducting annual prairie-chicken lek surveys on strategically established routes to monitor this occurrence.



*All in a day's work. PFW program biologist, Tony Ifland, assists with prairie-chicken research in western Kansas. USFWS Photo.*

### North Central Prairies Focus Area Focal Species

- Greater prairie-chicken
- Grasshopper sparrow
- Loggerhead shrike
- Cassin's sparrow
- Western burrowing owl
- Lesser prairie-chicken
- Eastern meadowlark
- Upland sandpiper
- Dickcissel
- Monarch butterfly
- Western meadowlark
- Regal fritillary
- Baird's sparrow
- Bell's vireo
- Topeka shiner (Endangered)

### North Central Prairies Focus Area Habitat Targets

- Upland Restoration/Enhancement: 15,000 acres
- Wetland Restoration/Enhancement: 150 acres
- River Miles: 15

### North Central Prairies Focus Area Partnership Targets

- Private Landowner Agreements: 40
- Partnerships: 360
- Technical Assistance: 125 days
- Cost-share:
  - 40% Service Fund
  - 50% Landowner
  - 10% Other Partners (NGO, KDWPT)

Please see KS PFW Implementation Strategies section following focus area narratives for additional information concerning habitat delivery in this Focus Area.

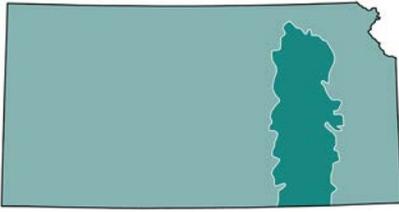


*Mechanical removal of eastern redcedar trees is used to enhance prairie habitat for grassland birds and other wildlife. Photo by Tony Ifland, USFWS.*



*The importance of fire in the prairie is evident with this small, but dead, eastern redcedar. Photo by Tony Ifland, USFWS.*

## Flint Hills Focus Area



The tallgrass prairie is the most altered ecological community in North America. Of the 142 million acres that once covered the American heartland, less than 3% remain. The greater Flint Hills area of Kansas is by far the largest tallgrass prairie landscape on the continent, with more acres remaining in Kansas than in all the other prairie states and provinces combined. The shallow soils and rough terrain managed to keep the plow and other disturbances to a minimum. Even so, a sizable portion of the Flint Hills has been degraded by invasive plants, urban sprawl, woody encroachment, and continued prairie fragmentation. Physiographic regions within this focus area include the Flint Hills uplands characterized by multiple layers of flint. The Osage Cuestas, made from alternating layers of



*Maintaining intact landscapes like the Flint Hills, are a priority for the PFW program in Kansas. Photo by Greg Kramos, USFWS.*

limestone and shale that form what resembles a slightly collapsed staircase across the landscape. The Chautauqua Hills are comprised of prehistoric sandstone that support dense groves of post and blackjack oak forest due to the porous sandstone's ability to retain water. Lastly, the Glaciated Region at the northern end of the Flint Hills

comprised of rolling hills containing glacial till composed of quartzite and other rocks transported by glaciers from the Great Lakes region.

Ranching is king in the Flint Hills, due to the fact that there are over 3 million acres of intact native grassland that make it ideal for



*Old world bluestem being treated to prevent further invasion into native tallgrass prairie. Photo by Greg Kramos, USFWS.*



Flower-loving Longhorn Beetle

Texas Horned Lizard

Monarch Butterfly

Scissor-tailed Flycatcher

Giant Swallowtail Butterfly

*Promoting spot-spraying techniques to control invasive species like *Sericea lespedeza* is important in maintaining a diverse native grass and forb community. This benefits not only grassland birds but also pollinators like monarch butterflies and other wildlife. Photo by Greg Kramos, USFWS.*

grazing. The ranching community in the Flint Hills has many threats. One which weighs heavy on ranchers' minds is the presence of invasive species, such as *Sericea lespedeza*, yellow and Caucasian bluestem, collectively known as Old World Bluestems, and the encroachment of trees like Osage orange and shrubs like rough-leaf dogwood. These invasive species add to fragmentation and threaten heterogeneity within native grassland plant communities. The KS PFW program is working with several partners to control these invasive species and maintain heterogeneity within the Flint Hills by promoting burning, grazing, and invasive species control strategies that preserve native plant communities. Leading these efforts is a grass-roots, landowner-driven, non-profit organization called the Tallgrass Legacy Alliance (TLA). The TLA has enhanced over 150,000 acres of tallgrass prairie in the Flint Hills and is essential to changing rancher's philosophies about grassland management

within the area. The PFW program in Kansas has a strong, working partnership with TLA and this partnership will remain a priority for the KS PFW program.

Conservation of monarch butterflies is a national priority for the Service and the Flint Hills in Kansas is one of their strong holds. The KS PFW program will continue to work with landowners, other conservation partners and other Service programs to maintain and protect the over 3 million acres of native tallgrass prairie and native prairie hay meadows the monarch butterflies call home.

Efficient delivery of on-the-ground habitat restoration for focal species is key to the success of the KS PFW program. In an effort to become even more efficient, KS PFW has been working with the Service Flint Hills HAPET Office to develop spatially explicit decision support tools (Fig. 2, 3) that identify where habitat restoration work will be the most effective

for focal species. KS PFW will continue to work with the HAPET office to refine and develop these and other models.

In 2010, the Service initiated the Flint Hills Legacy Conservation Area program which is a voluntary perpetual conservation easement program through the National Wildlife Refuge System. The support that the PFW program has provided to the Flint Hills Legacy Conservation Area has played an important role in its success. PFW program staff will continue to work with the Flint Hills Legacy Conservation Area by increasing awareness of the program through daily interactions with landowners and providing technical assistance to prospective easement holders as well as helping to deliver habitat restoration projects on private lands already enrolled in the program.



*Greater prairie-chicken on a lek in the Flint Hills. By providing quality habitat for greater prairie-chickens we enhance habitat for many other grassland species. Photo by Greg Kramos, USFWS.*



*Topeka shiner, Flint Hills, Kansas. Photo by Greg Kramos, USFWS.*

**Flint Hills Focus Area Focal Species**

- Greater prairie-chicken
- Monarch butterfly
- Topeka shiner
- Mead’s milkweed
- Dickcissel
- Eastern meadowlark
- Grasshopper sparrow
- Reagal fritillary
- Henslow’s sparrow
- American golden plover
- Short-eared owl
- Neosho mucket (Endangered)
- Upland sandpiper
- Buff-breasted sandpiper
- Neosho madtom (Threatened)
- American burying beetle (Endangered)
- Scissor-tailed flycatcher

**Flint Hills Focus Area Focus Area Habitat Targets**

- Upland Restoration/Enhancement: 20,000 acres
- Wetland Restoration/Enhancement: 200 acres
- River Miles: 10

**Flint Hills Focus Area Partnership Targets**

- Private Landowner Agreements: 35
- Partnerships: 315
- Technical Assistance: 125/days
- Cost Share
  - 40% Service Funds
  - 40% Landowners and In-Kind
  - 20% Other Partners (NGO, KDWPT)

Please see KS PFW Implementation Strategies section following focus area narratives for additional information concerning habitat delivery in this Focus Area.

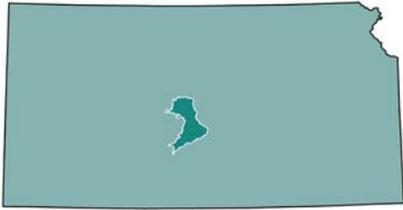


*Strong partnerships with private landowners ensure success of conservation efforts. USFWS photos.*



*Milkweed species like butterfly milkweed and Sullivant’s milkweed are just some of the native wildflowers found in the Flint Hills that are important for monarch butterfly survival. Photo by Greg Kramos, USFWS.*

## Central Wetlands and Prairies Focus Area



In central Kansas, the Arkansas River flows between the Smoky Hill River (to the north) and the Cimarron River (to the south). Over time, as the “Ark” (as it is called in Kansas) adjusted its course, it deposited vast amounts of sand and gravel creating a massive alluvial fan in the heart of the mixed-grass prairie of Kansas. These grass covered sand dunes associated with the river comprise the Great Bend Prairie. At the north end of this alluvial fan exists a unique geological phenomenon that includes closed depressional wetlands at the 19,857-acre Cheyenne Bottoms and a little to the south at the 22,135-acre Quivira NWR. Both of these

wetland complexes have been designated as RAMSAR Wetlands of International Importance and part of the Western Hemisphere Shorebird Reserve Network. Quivira NWR was also designated as an Important Bird Area by the National Audubon Society and the American Bird Conservancy. Cheyenne Bottoms and Quivira NWR are jointly considered one of the eight wonders of Kansas. It has been reported that nearly half of North American shorebirds migrating east of the Rocky Mountains and close to a quarter million waterfowl stopover at Quivira NWR and Cheyenne Bottoms annually as they travel through the bottleneck of the central flyway. For some species, such as stilt sandpiper and white-rumped sandpiper, 90% of the world’s population may utilize the area annually. Additionally, Quivira’s unique inland saltmarsh systems and alkali flats provide critical habitat for the federally endangered whooping crane. From shorebirds to waterfowl, these wetlands are considered one of the

most important stopover points for a multitude of Federal Trust Species and also provide breeding habitat for the American avocet, least tern, snowy plover and black-necked stilt.

The wetlands however, are not the only conservation priority in the area. The landscape surrounding both Cheyenne Bottoms and Quivira NWR include portions of the Great Bend Prairie. These native grasslands support focal species such as migrating and breeding monarch butterflies, dickcissel, burrowing owl, and upland sandpiper. Quivira NWR recently completed a Comprehensive Conservation Plan that included a strategy to utilize private land programs to promote sustainability of water resources, control invasive species and restore native plant communities in the Rattlesnake Creek watershed. Addressing resource concerns surrounding these conservation strongholds is a priority for the PFW program within this focus area. For example, a primary



*Long-billed dowitchers and other shorebirds utilize PFW program restored wetlands in Kansas. USFWS photo.*



*Kansas's Central Wetlands and Prairies Focus Area is recognized for its inland salt marshes that provide habitat for sandhill cranes and other waterbirds. USFWS photo.*

resource concern is invasive phreatophytes on Rattlesnake Creek and surrounding marshes that provide surface water and spring flow to Quivira NWR and Cheyenne Bottoms. Additionally, practices that restore, enhance and maintain natural hydrological processes will be pursued in order to positively influence water resources.

Proper prairie management is an additional conservation priority in this area. This focus area is a relatively new addition to the KS PFW Strategic Plan and we look forward to partnering with landowners within this focus area to deliver grassland, riparian and wetland centered technical assistance and restoration.



*The Central Wetlands and Prairies Focus Area provides important stopover and breeding habitat for whooping cranes and other migratory birds. USFWS photo.*



*Before (top) and after (middle) photos of a PFW program project site. Bottom, sandhill cranes and a radio-collared whooping crane utilize the project area after invasive phreatophytes (e.g., tamarisk, Russian olive) were removed. Photos by Aron Flanders, USFWS.*

**Central Wetlands and Prairies Focus Area Focal Species**

- Whooping crane
- American avocet
- Black-necked stilt
- Black rail
- Loggerhead shrike
- Dickcissel
- Western burrowing owl
- Snowy plover
- Northern pintail
- Upland sandpiper
- Greater prairie-chicken
- Arkansas shiner (Threatened)
- Arkansas darter
- Monarch butterfly
- Lesser prairie-chicken
- Eastern meadowlark

**Central Wetlands and Prairies Focus Area Habitat Targets**

- Upland Restoration/Enhancement: 1,000 acres
- Wetland Restoration/Enhancement: 100 acres
- River Miles: 2

**Central Wetlands and Prairies Focus Area Habitat Targets**

- Private Landowner Agreements: 5
- Partnerships: 45
- Technical Assistance: 40/days
- Cost-share:
  - 40% Service Fund
  - 50% Landowner
  - 10% Other Partners (NGO, KDWPT)

Please see KS PFW Implementation Strategies section following focus area narratives for additional information concerning habitat delivery in this focus area.



*Prescribed grazing and fire are the primary drivers that maintain prairies in Central Wetlands and Prairies Focus Area of Kansas. Photo by Aron Flanders, USFWS.*

**Kansas PFW Implementation Strategies**

- Upland, riparian, and wetland objectives will be met by conducting technical assistance and on-the-ground conservation efforts on private land within designated focus areas. Voluntary private landowner agreements (PLA) involve geospatial mapping and calculation of attributes associated with resource concerns, practices and priorities; consultations with landowner and partners; development of technical specifications; establishment of scope, timeline and budget; administration of archaeological clearance, biological evaluations, project selection and NEPA; evaluation

of benefits to Federal Trust Species and contribution to national/regional priorities and conservation plans; monitoring, and incorporation of long-term maintenance plans.

- Capacity building will be accomplished through on-going communication and coordination with conservation partners to enhance/restore native habitat in order to provide adequate habitat quantity and quality for Federal Trust Species. Strategic coordination of conservation projects that build upon past achievements will create biologically significant landscape scale areas benefiting wildlife. For playa and other wetland conservation, KS PFW will partner with DU, KDWPT,

KAWS and others to apply for NAWCA and other funding sources to increase restoration and conservation. KS PFW will assist in increasing awareness of the importance of playas and other wetlands across the state.

- Continue to incorporate biological planning into conservation delivery, based upon formalized conservation plans and coordination among our research partners, such as Kansas State University, Kansas Biological Survey, KDWPT, TNC, Service HAPET, NWR CCPs and others. Conservation practices will continue to be scientifically-based and adapted to the best available information to be effective and efficient. To help reduce

uncertainty, adaptive management processes will be utilized to apply a feedback loop of research results and experience to change management as needed. PFW, in consultation with its partners, will identify research needs and promote and support implementation of research projects through universities and other institutions.

- Monitoring and adaptive management will be applied as part of the strategic habitat conservation framework. Monitoring will be accomplished by following the established KS PFW Monitoring Plan in addition to other efforts, such as the lesser prairie-chicken Cooperative Recovery Initiative (CRI). The CRI monitoring protocol is consistent with NRCS lesser prairie-chicken and WAFWA monitoring efforts, which utilize established metrics for quantifying habitat-based biological outcomes. Additionally, WAFWA coordinates annual Lesser prairie-chicken aerial surveys that are coupled with KDWPT ground lek surveys.
- Priority will be given to conservation of intact landscapes, particularly in watersheds that still support high-value native fish and mussel communities, monarch butterflies and grassland nesting birds. Furthermore, stream channel restorations, fish passages and riparian buffers will be promoted in these priority watersheds.
- Maintain coordination with NRCS and Prescribed Fire Specialists to develop comprehensive prescribed grazing and burning plans. Patch-burn grazing and other techniques that maintain grassland processes and create heterogeneous landscapes will be delivered. A critical component of capacity building is the inclusion of prescribed fire specialist positions

across the state that can provide technical guidance on prescribed burning to landowners and aid in the development of PBAs. Through the organization of burn associations, our cooperators can share information, equipment, and techniques with others in the conservation community to better facilitate the enhancement/management of our native prairies. The KS PFW program will deliver information concerning how to get involved with these conservation efforts through landowner workshops, other organizations, such as the Comanche Pool, and the communication of participating landowners.

- Continue to utilize Farm Bill programs, such as Lesser Prairie-Chicken Initiative, CRP Grasslands, Continuous CRP practices, EQIP, and CSP. For example, TNC and other partners were awarded a Regional Conservation Partnership Program grant for projects in the Flint Hills and Red Hills of Kansas. Staff will continue to harness these resources to enhance conservation delivery to landowners.
- Continue to seek private conservation partner contributions and leverage other outside resources to deliver on-the-ground projects, outreach and education. For example, KS PFW coordinated with Quivira and Kirwin NWRs to acquire CRI funds to restore habitat on private lands and increase the NWR's capacity to undertake habitat restoration projects, such as native prairie plantings in retired cropland.
- Long-term conservation will be supported by increasing landowner awareness of easement opportunities through programs such as the Flint Hills Legacy Conservation Area. KS PFW will coordinate with FSA/

NRCS to provide review and recommendations for easements under the Agricultural Conservation Easement Program.

- Drought contingency planning will be included in prescribed grazing plans to avoid negative impacts to wildlife habitat and range condition due to environmental uncertainty.
- Stream channel restorations, fish passages and riparian buffers will be promoted in priority watersheds. For example; the Rattlesnake Creek and associated watershed will receive conservation emphasis in the Central Wetlands and Prairies Focus Area. Invasive species, such as Tamarisk, Russian olive and phragmites will be targeted.
- Continue to make Monarch Butterfly conservation a priority by maintaining and building new partnerships and leveraging other program dollars, such as the work being accomplished under the KGLC/NFWF Grazing Lands as Monarch Habitat Grant.
- Continue to work with Service Flint Hills HAPET to evaluate conservation benefits to focal species through the development of spatially explicit decision support tools.
- Deliver information concerning how to get involved with ongoing conservation efforts through landowner workshops, other organizations, and the communication of participating landowners.
- Explore the development of Service Cooperative Agreement(s) with TLA, Comanche Pool and other conservation groups to designate specific funding for targeted areas, when available. PFW PLA's will be the mechanism to deliver on-the-ground habitat restoration projects with individual



*The sun sets on a working cattle ranch within the Flint Hills, Kansas. Photo by Dominic Barrett, USFWS.*

- landowners. PFW will assist these groups in increasing awareness of the importance of preserving native prairies and the ranching communities they support.
- New partnerships will be sought, such as recent work completed in coordination with the Commission for Environmental Cooperation (CEC). The CEC projects generated over 70% outside funding for projects completed as part of their North American initiative.
  - Continue to assist partners in conducting essential annual surveys. For example, such as prairie-chicken lek routes and Breeding Bird Survey routes.
  - Sand sagebrush prairies will have conservation emphasis in Southwest Prairies and Playas Focus Area due to severe long-term declines in quantity and quality.
  - Efforts will be made within the Central Wetlands and Prairies Focus Area to develop community-based partnerships and the formation of landowner-driven initiatives, similar to Comanche Pool and TLA.
  - In the Anderson Creek Wildfire area, removal of dead standing trees will be included in projects because they will shelter cedars emerging from the seed bank, provide perches for songbirds to deposit new invasive tree seeds, logistically prevent beneficial land management practices (i.e. grazing, firebreaks, herbaceous weed control), act as raptor perches and cause lesser prairie-chicken avoidance behavior. KS PFW will work with landowners impacted by the wildfire to support rangeland health recovery.

# Kansas Statewide Goals

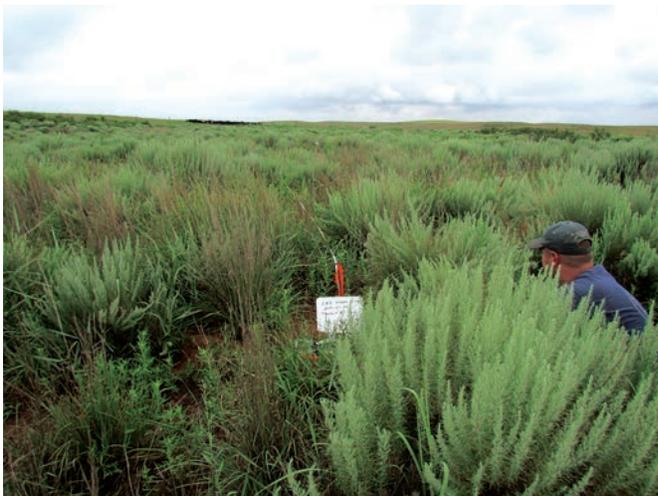


## Improve Information Sharing and Communication

The KS PFW program staff has excellent relationships with many partners and conservation stakeholder groups. It is a high priority to maintain these relationships. This will be achieved through the following:

- Participating in semi-annual coordination meetings with NRCS and KDWPT staff
- Continuing to be active members of the state technical committee and sub-committee members for the Environmental Quality Incentive Program, Conservation Reserve Program and Agriculture Conservation Easement Program
- Coordinating with/Supporting NGOs, such as the:
  - Kansas Grazing Lands Coalition
  - Kansas Prescribed Fire Council
  - Comanche Pool Prairie Resource Foundation
  - Tallgrass Legacy Alliance
  - Smoky Hill Grazers
  - Kansas Alliance for Wetlands and Streams
  - TNC
  - Ducks Unlimited
  - Kansas Livestock Association
  - Western Association of Fish and Wildlife Agencies
  - Pheasants Forever
  - National Wild Turkey Federation
- Maintaining working relationships with state agency partners such as KDWPT, KFS, KDHE

This will be accomplished through attending meetings/conferences/workshops, leading tours and being involved in educational programs across the state.



KS PFW program staff will continue to maintain information concerning habitat restoration efforts and technical assistance that will be entered into the PFW program HabITS database.

## Measurable Objectives

- Participate in 45 workshops, ranch tours, conferences or meetings involving partners in Kansas
- Contribute to 10 media events involving the KS PFW program
- Participate in 10 Semi-annual Coordination meetings with NRCS and KDWPT staff
- Sponsor 10 rancher conferences, workshops or tours throughout Kansas
- Conduct 5 Congressional Outreach activities (i.e. events, tours, briefings, correspondence materials, etc)
- Conduct 10 events that connect children with nature (i.e. community outreach events, presentations, outdoor classrooms, Boy/Girl scout activities, etc.)
- Maintain active role in USDA State Technical Committees and Sub-Committees

## Enhance our Workforce

The KS PFW program staff is responsible for large geographic areas and must have the skills to effectively deliver technical and financial assistance concerning conservation delivery for a wide variety of landscapes and habitat types. These range from wildlife ecology, invasive species management/control, plant ecology, water law, grazing management and other agricultural



*Kansas PFW program and National Wildlife Refuge System staff perform monitoring to quantify habitat metrics before and after projects. Photo by Aron Flanders, USFWS.*

practices. KS PFW staff are required to maintain a broad knowledge-base of conservation practices within a landscape that is maintained via disturbance events such as grazing and fire. Appropriate timing and duration of these disturbance events is the key to maintaining desired ecological states. These skills are maintained through experience, mentoring and training. Providing an opportunity to take appropriate training is a cornerstone to maintaining a highly motivated and effective team.

**Measurable Objectives**

- KS PFW staff will spend 40 hours in another KS PFW biologist's area to exchange techniques, ideas and address challenges.
- KS PFW staff will attend at least 40 hours training annually. This may include formal coursework, workshops, conferences, mentoring,

work details, regional program meetings, required training, etc.

- Work with KS PFW staff to update Individual Development Plans and provide opportunities to achieve goals identified within each plan.
- Annually assist PFW staff in attending pertinent training for cutting edge habitat restoration techniques.
- Semi-annual staff meeting to provide policy updates, issues of concern across the state and guest speakers.
- Annual award recognition for outstanding accomplishments

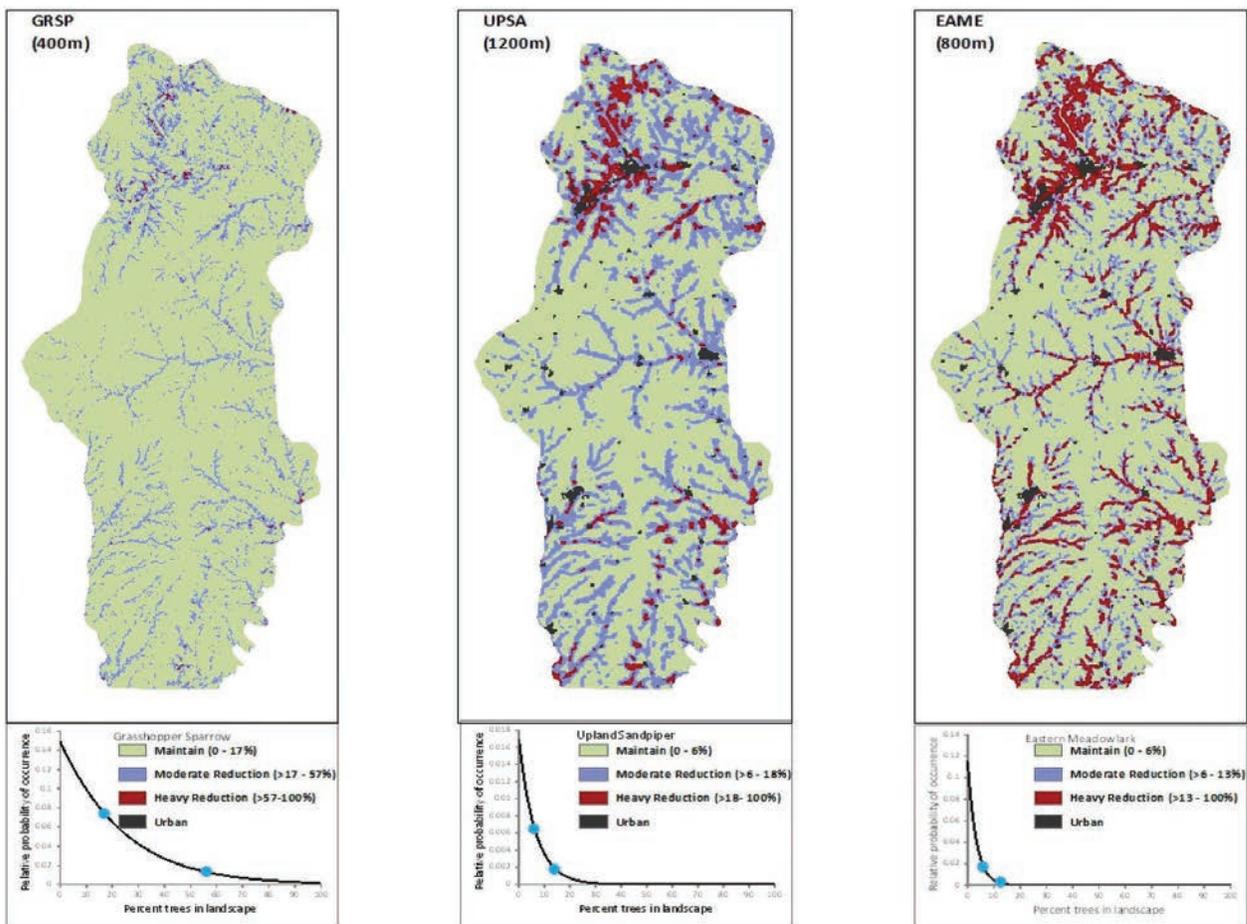


Figure 2. Service HAPET model depicting grassland bird response to tree removal within the Flint Hills Focus Area. Using Breeding Bird Survey data, HAPET isolated bird response to woody vegetation and plotted the response curve (below each map). Based on the response curve we can see maximum benefit from removing trees or preventing encroachment in the green areas, moderate response in the blue (needs moderate levels of tree removal) and low response in the red areas (needs extensive tree removal to obtain response). Also note each species responds at a different landscape size (400m, 800m, and 1200m) as well as to different thresholds of % trees (grasshopper sparrow (GRSP) high response up to 17% trees in landscape while upland sandpiper (UPSA) and eastern meadowlark (EAME) drop off sharply at around 6% trees).

### Highest Priority for Four Species Combined (EAME, GRSP, UPSA, WEME)

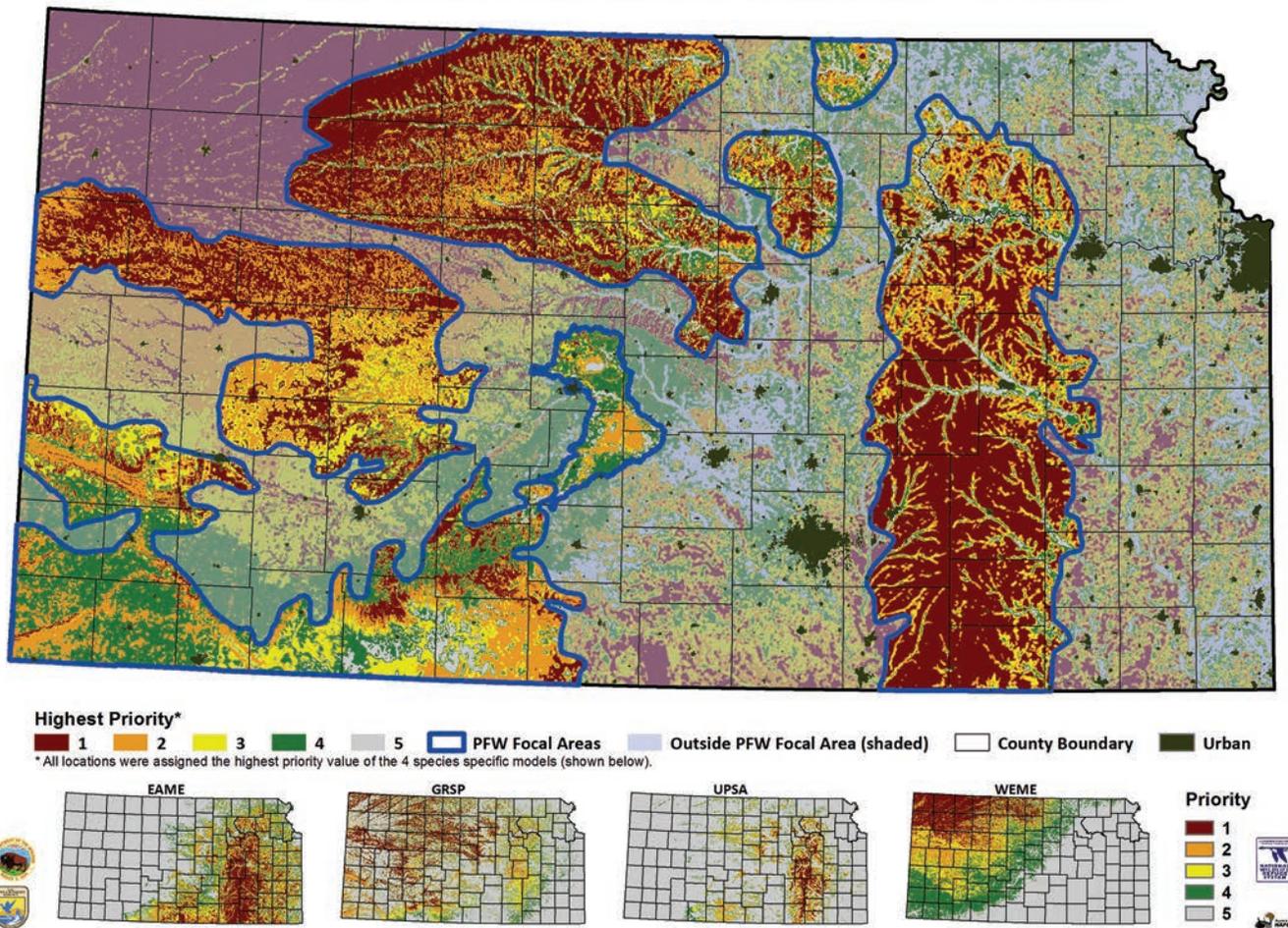


Figure 3. Service HAPET model depicting highest priority grasslands for the eastern meadowlark, grasshopper sparrow, upland sandpiper and western meadowlark in Kansas using Breeding Bird Survey and landcover data. Areas in red indicate where restoration efforts will have the most benefit for at least one of the modeled species. Models such as this provide valuable input when prioritizing landscapes and delineating Kansas PFW program Focus Areas.

#### Increase Accountability

The KS PFW program will use many factors in prioritizing projects under this strategic plan. Criteria evaluated for each PLA will include an analysis of conservation benefits to Federal Trust Species and other focal species as demonstrated by the following:

- Determining most cost-effective means to deliver project accomplishments (this will include exploring all possible options to leverage PFW funds)
- Using best available science to document benefits to target species within each PLA
- Evaluating conservation benefits to focal species defined by Spatially Explicit Habitat Models
  - o FWS HAPET Treatment Specific prioritization models (Fig. 2)
  - o FWS HAPET Relative Probability of Detection models for priority grasslands (Fig. 3)
  - o Southern Great Plains Crucial Habitat Assessment Tool for the lesser prairie-chicken
- Proximity to National Wildlife Refuges

- Projects within the identified four conservation focus areas will be given the highest priority

To ensure conservation objectives have been met and benefits to Federal Trust Species are captured, all funded projects will be monitored via the established KS PFW Monitoring Protocol. Level I monitoring will be conducted on all funded projects and reported in the HABITS Database. Level II (photo points and qualitative habitat response evaluation) and Level III monitoring (biological outcomes) will occur on a subset of projects.

#### Measurable Objectives

- Implementation of KS PFW PLA Monitoring Plan for Level I, II and III monitoring efforts (this includes establishment of photo points, documenting accomplishment effectiveness, measuring habitat response to conservation practices)
- Produce/publish an annual accomplish report concerning conservation delivery and coordination via technical and financial assistance

- Relating proposed benefits to focal species as defined by Spatially Explicit decision support tools within PLAs (i.e. HAPET Treatment and Species Models, SGPCHAT for lesser prairie-chicken)
- Increase the amount of photos entered into HabITS by 10%
- Provide summary updates to partners at semi-annual coordination meetings
- Work with Service-HAPET office to continue development of statewide spatially explicit species and treatment prioritization decision support tools.
- Work with universities and extension service to increase monitoring of KS PFW project sites

### External Factors

Invasive species present on the landscape and those yet to come will continue to be a major threat to native prairies in Kansas. Control methods for invasive species are continually being enhanced and updated. KS PFW will use the best available science and methodology to address current and future impacts from invasive species. Prescribed fire is a necessary management tool to maintain native prairie systems. Climate and local regulations can impact the ability to deliver prescribed fire in any given year. KS PFW will maintain flexibility when delivering prescribed fire via PLAs and apply the practice when feasible. The conversion of native prairie is also a factor that the PFW program has to anticipate. Whether it is conversion to cropland, cool-season grasses, or urban development, all are threats to native prairies and may cause fragmentation of large intact grasslands. How much conversion actually occurs can depend on the ever-changing agricultural community. Continuing drought cycles will also impact the number of projects that landowners may be able to complete. Availability of funds for leveraging may be reduced for projects if profits are small. Also, an increase in fuel and material prices drastically impacts contractor prices and reduces the number of restoration acres the PFW program is able to fund.

### Monitoring Plan

The KS PFW program has been working with Kansas private landowners to conserve habitat for Federal Trust Species since 1988. Kansas is a “Prairie” state noted for its native grasslands, streams and wetlands, abundant blue skies and green prairie vistas. The Kansas landscape includes almost 16 million acres of native grasslands or rangelands. The native grasslands that exist throughout Kansas are one of the State’s most important renewable natural resources. These grasslands help maintain the landscape and its watersheds and aid in maintaining the water quality in our streams, wetlands and lakes. Grasslands in Kansas are home to a rich diversity of native plants and wildlife species. Grassland-dependent birds have shown a steeper, more consistent decline than any avian group in North America. Fragmentation, land conversion, invasive species encroachment, decoupling of the fire and grazing interaction and the

lack of heterogeneity resulting from inflexible grazing management regimes are all causes in the precipitous decline of grassland bird populations. With 97% of the State held in private ownership, partnerships are the key to delivering habitat conservation. Locally-lead, rancher-driven grazing groups across the state have played a critical role in conservation delivery through the KS PFW program. These groups include the Comanche Pool Prairie Resource Foundation, the Tallgrass Legacy Alliance, the Smoky Hills Grazers and the Kansas Grazing Lands Coalition. These partnerships, along with collaboration with other federal/state/local agencies and NGOs have resulted in the KS PFW program working with over 500 private landowners to restore/enhance/establish 460,000 acres of upland, 23,000 acres of wetland and 205 miles of riparian/stream habitat for Federal Trust Species. Just as partnerships were the key in delivering habitat conservation, these same partnerships will be critical when implementing the KS PFW program monitoring plan. Monitoring conducted by local landowner driven groups, other federal/state/local agencies and NGOs will provide valuable information concerning the effectiveness and overall benefits derived from strategic habitat conservation delivery by the KS PFW program.

### KS PFW program Level I, II and III Monitoring

#### Level I - Compliance Monitoring for On-the-Ground Practices

To ensure that the on-the-ground habitat restoration practices identified within the Private Landowner Agreement were completed and are functioning, per the scope of work identified in the Exhibit A, an annual site visit will be conducted when restoration practices are completed, and repeated at least once between years 3 and 6 and again between years 8 and 10. Compliance monitoring will be conducted by the Service’s private lands biologist in coordination with the landowner and other partners to the project. The Site Visit Report form developed by the R6 PFW program (Attachment 1) will be filled out, recorded in HabITS and filed in the official file. The initial Site Visit Report form will meet the requirements for compliance monitoring as well as serve as the close-out report for the financial assistance award in PRISM.

Note: In years when Level II monitoring occurs (described below) the Level II monitoring will take place of Level I efforts.

#### Level II - Biological Monitoring at the Project Level

Biological monitoring (Level II) will be completed on a subset of projects prior to initiating habitat restoration work and repeated at least once between years 3 and 6 and again between years 8 and 10. During the site visits the project will be evaluated to determine if the vegetative composition and fish and wildlife use of the project is meeting anticipated goals. Photos will be taken from established photo points to document changes in project conditions over time. The KS PFW program Level II Accomplishment Monitoring

Table 1. Biological and Habitat Monitoring Metrics		
KS PFW Conservation Practice	Key Habitat Attributes (Presence or Absence)	Federal Trust Species (Presence or Absence Only)
Prairie Enhancement	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N) Milkweed (Y/N)	Invasive Species (Y/N)
Prairie Restoration	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N) Milkweed (Y/N)	
Wetland Establishment	Hydrology (Y/N) Hydrophytes (Y/N) Mudflats (Y/N)	Grassland Songbirds (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N)
Wetland Restoration	Hydrology (Y/N) Hydrophytes (Y/N) Mudflats (Y/N)	Number of Shorebirds, T&E Species and Waterbirds Utilizing the Project
Riparian Enhancement	Native Grass Species (Y/N) Wetland Plants (Y/N) Desirables Shrubs (Y/N) Desirable Trees (Y/N)	Number of Shorebirds, T&E Species, Riparian species, Waterbirds Utilizing the Project

form (Attachment 2) will be filled out, recorded in HabITS, to tie biological data to spatial and other project information data, and filed in the official file. Information to be entered in the fillable sections of the Level II Accomplishment Monitoring form will address attributes from Table 1 above.

**Level III - Biological Monitoring at the Landscape Level**

The KS PFW program staff will work with both internal and external partners to determine those species and landscapes that the KS PFW program, in coordination with its partners, can reach Level III biological monitoring at the landscape level. Level III biological monitoring will contribute towards evaluating the biological outcomes for target species from the acres/miles of habitat being restored throughout conservation focus areas, where the opportunity exists. Level III biological monitoring will take place at a landscape scale. When achievable,

Level III biological monitoring at the landscape level will involve coordination with conservation partners (i.e., Kansas Department of Wildlife and Parks and Tourism, Playa Lakes Joint Venture, Refuge I&M Team, universities, and other partners) to assist in identifying, prioritizing, implementing, and funding Level III biological monitoring efforts. Outcomes for Level III biological monitoring efforts will include (a) decision support tools, (b) habitat use models, and (c) other tools to help guide future conservation efforts throughout our high priority conservation focus areas. As a part of this process, each KS PFW program private lands biologist worked with their State counterparts and other conservation partners to identify and list ongoing monitoring efforts that are occurring throughout each of the KS PFW program conservation focus areas. A list for each conservation focus area is provided in Attachment 3.

## Example of Ongoing Level III Landscape Level Biological Monitoring

### Lesser Prairie-Chicken Cooperative Recovery Initiative Monitoring

#### Project Name

Lesser prairie-chicken conservation and recovery in Kansas

#### Project Goal

The primary goal of this project is to restore/enhance over 15,000 acres of lesser prairie-chicken habitat and maintain quality nesting and brood-rearing habitat into the foreseeable future through prescribed grazing and burning on private lands and NWRs within the current range of the lesser prairie-chicken. This project will implement on-the-ground recovery efforts for the lesser prairie-chicken on private lands through PFW Private Landowner Agreements (PLAs). Other goals of this project include establishing, maintaining and enhancing partnerships with stakeholders focused on lesser prairie-chicken conservation, including state/federal agencies, private landowner groups, and NGOs. This project will also increase the coordination of lesser prairie-chicken conservation between Service staff within Ecological Services, NWR and the KS PFW program.

#### Monitoring

Kirwin NWR staff will perform habitat based monitoring (Pitman et al. 2005, Grisham 2012, Van Pelt et al. 2013), in accordance with monitoring for NRCS Lesser Prairie-Chicken Initiative and the Western Association of Fish and Wildlife Agencies (WAFWA) lesser prairie-chicken Range Wide Plan, on project sites. Baseline information will be collected prior to project implementation. Metrics for high quality lesser prairie-chicken nesting and brood-rearing habitat will quantify biological outcomes relative to established objectives for quality habitat (Hagen et al. 2013, Van Pelt et al. 2013; pp. 75-76). Range Technical Note 8 techniques will be utilized to estimate ERC cover before and after tree control projects. Achievement of habitat objective measures will be monitored annually.

The WAFWA coordinates annual aerial Lesser prairie-chicken surveys (<http://www.wafwa.org/>) during the lekking season within Kansas' sand sagebrush, mixed-grass prairie and short grass-CRP prairie regions (2014 McDonald et al.) in order to estimate lesser prairie-chicken populations, lek sizes and distribution among ecoregions. Results from these surveys will be used to evaluate potential population level benefits provided by the KS PFW lesser prairie-chicken CRI projects.





Attachment 2  
KS PFW Level II



Accomplishment Monitoring Form

**To be completed prior to Monitoring Accomplishment**

Agreement Date: \_\_\_\_\_ Date Work Completed: \_\_\_\_\_

PLA Number: \_\_\_\_\_

Accomplishment Type: (Acres &/or Miles) Upland \_\_\_\_\_ Wetland \_\_\_\_\_ Riparian \_\_\_\_\_

Primary Trust Resources: \_\_\_\_\_

Accomplishment Objectives:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Photo Point Coordinates (Decimal Degrees)**

Photo Point # \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_

**Observed Biological and Habitat Monitoring Metrics: (related to accomplishment objectives)**

**Factors that influence current condition: (i.e. climate, grazing, time since fire or other disturbances)**

\*See Table 1 in KS PFW Level II Monitoring Guidelines

**Cooperator Comments: (are cooperator's objectives being met?)**

**Are accomplishment objectives being met: Yes No**

**Observations:**

## Kansas PFW Level II Monitoring Guidelines

- **Timing of Monitoring:**  
 Attempt to monitor same time of year (i.e. Fall, Spring)  
  
 Monitoring for specific wildlife species should adhere to established  
  
 Monitoring protocols if applicable. (i.e. shorebird surveys following National Shorebird Survey/Cornell dates, grassland birds following the Breeding Bird Survey time frames.)
- **Minimum of one photo point per accomplishment**
  - Photo point establishment will follow guidance provided by USDA publications concerning:
    - General selection criteria
    - Photo point marking
    - Reference point
    - GPS
    - Image management
- **Standardized photo name (i.e. 64860-14-RL01-2014-04-15-P1N)**  
 (PLA Number-Year-Month-Day-Photo Point # Direction)
- **Monitoring Veg Response:**  
 Estimate veg condition related to accomplishment  
  
 Objectives related to (height, density, species comp)
- **Comments regarding whether accomplishment objectives are being met could include:**  
 Concerns, Observations, Recommendations, Future Project Needs

### Attachment 3

## Kansas Ongoing Monitoring Efforts Listed by Focus Area

### Statewide Monitoring Efforts

- A. KDWPPT Stream Survey and Monitoring
  - i) River and stream monitoring May-August on public and private land in order to assess the biological community of stream systems in the state
- B. Mid-Winter Waterfowl Survey
  - i) Aerial survey to look at numbers and distribution of waterfowl
  - ii) Conducted by Service and KDWPPT
- C. Breeding Bird Survey
  - i) Standardized survey routes and methodology for long-term monitoring of breeding bird trends that is conducted by numerous individuals and organizations
- D. Kansas State University Old World Bluestem Invasion Monitoring and Control
  - i) Mapping known patch populations of Yellow old world bluestem to track rate of increase
  - ii) Investigating herbicide application strategies to control Caucasian and Yellow old world bluestems
- E. Wichita State University Biological Field Station
  - i) Current monitoring efforts include:
    - (1) prairie restoration and recovery
    - (2) plant-insect interactions
    - (3) ecology of aquatic invertebrates
    - (4) fitness maximization of birds in the non-breeding season
    - (5) monitoring riparian and prairie bird nesting communities
    - (6) stopover ecology of long distance Neotropical avian migrants
    - (7) monitoring of fish, reptile and mammal population dynamics
- F. Kansas Forest Service
  - i) GIS-Based Riparian Forest Assessment
  - ii) Identify Riparian Restoration Areas above Federal Reservoirs
  - iii) Conducted by Kansas Forest Service, NRCS, Kansas Dept. of Ag.
- G. Kansas Forest Service
  - i) State-wide Forest Inventory
  - ii) 20% of the state is inventoried each year and compiled every 5 years.
  - iii) US Forest Service - Northern Research Station, Kansas Forest Service
- H. Fort Hays State University
  - i) Northern long-eared bat and associated species surveys
  - ii) Monitoring maternal roost sites, winter hibernacula, diet and foraging across 68 counties in Kansas

### Southwest Prairies and Playas Focus Area

- A. USDA NRCS LPCI
  - i) Annual habitat monitoring relative to lesser-prairie chicken habitat requirements
  - ii) Monitoring efforts primarily occur
  - iii) Conducted by NRCS staff and Pheasants Forever Farm Bill biologists
- B. WAFWA Lesser prairie-chicken Rangewide Plan
  - i) Annual habitat monitoring relative to lesser prairie-chicken habitat requirements
  - ii) Monitoring efforts primarily occur
  - iii) Conducted by KDWPPT staff and WAFWA lesser prairie-chicken coordinators
- C. KDWPPT Lesser Prairie-Chicken Lek Surveys
  - i) Annual ground based transect surveys for monitoring lesser prairie-chicken lek trends
  - ii) Monitoring efforts occur in spring
  - iii) Conducted by KDWPPT, TNC, and Pheasants Forever Farm Bill Biologists

- D. Kansas State University Lesser-Prairie Chicken Research
  - i) Investigating influence landscape characteristics on nest survival and nest site selection
  - ii) Monitoring efforts occur throughout spring and summer
  - iii) Conducted by Kansas State University graduates students and technicians
- E. WAFWA Lesser Prairie-Chicken Aerial Surveys
  - i) Annual surveys along transects utilizing distance sampling techniques across the Lesser prairie-chicken range in order to estimate population trends within ecoregions
  - ii) Occur in the spring
  - iii) Conducted by West Ecosystems, Inc.
- F. Lesser-Prairie Chicken Interstate Working Group Crucial Habitat Assessment Tool (CHAT)
  - i) Ranked geospatial areas of relative importance to Lesser prairie-chicken population
  - ii) Updated periodically when new information and resources are available
- G. PLJV Playa Lakes Decision Support Tool
  - i) Geospatial analysis and mapping of playas of high conservation priority
- H. KDWPT Biannual Bat Surveys
  - i) Monitor traditional bat roost areas in the Red Hills and monitor for signs of white-nose syndrome
  - ii) Conducted by KDWPT and TNC
- I. Playa Lakes Joint Venture IMBCR Monitoring
  - i) Attempt to estimate bird densities, population sizes and occupancy rates at local and regional scales for birds in the short and mixed grass prairies
  - ii) Trends can be used to determine which species require additional conservation action
  - iii) Population estimates can be used to formulate population goals which can trigger conservation action when populations reach a predetermined level
- J. Rocky Mountain Bird Observatory
  - i) Grassland Bird Surveys
  - ii) Evaluating the effectiveness of LPCI prescribed grazing for increasing populations of grassland birds
  - iii) Determining habitat relationships for grassland birds at local and landscape scales
  - iv) Investigating the extent that the Lesser prairie-chicken served as an umbrella species for other species of grassland birds

### **North Central Prairies Focus Area**

- A. Kirwin National Wildlife Refuge Annual Sandhill Crane Survey
  - i) Long term survey conducted during spring to survey numbers of sandhill cranes
  - ii) Conducted by Service
- B. Kirwin National Wildlife Refuge Whooping Crane Monitoring/Surveys
  - i) Ongoing monitoring of whooping cranes during migration
  - ii) Monitoring efforts in spring and fall
  - iii) Conducted by Service
- C. Kirwin National Wildlife Refuge Least Tern Surveys
  - i) Annual nest surveys and habitat use
  - ii) Conducted by Service
- D. USDA NRCS LPCI
  - i) Annual habitat monitoring relative to lesser-prairie chicken habitat requirements
  - ii) Monitoring efforts primarily occur
  - iii) Conducted by NRCS staff and Pheasants Forever Farm Bill biologists
- E. WAFWA Lesser Prairie-Chicken Rangeland Plan
  - i) Annual habitat monitoring relative to lesser-prairie chicken habitat requirements
  - ii) Monitoring efforts primarily occur
  - iii) Conducted by KDWPT staff and WAFWA lesser prairie-chicken coordinators

- F. KDWPT Lesser Prairie-Chicken Lek Surveys
  - i) Annual ground based transect surveys for monitoring Lesser prairie-chicken lek trends
  - ii) Monitoring efforts occur in spring
  - iii) Conducted by KDWPT, TNC, and Pheasants Forever Farm Bill Biologists
- G. Kansas State University Lesser-Prairie Chicken Research
  - i) Investigating influence landscape characteristics on nest survival and nest site selection
  - ii) Monitoring efforts occur throughout spring and summer
  - iii) Conducted by Kansas State University graduates students and technicians
- H. WAFWA Lesser Prairie-Chicken Aerial Surveys
  - i) Annual surveys along transects utilizing distance sampling techniques across the Lesser prairie-chicken range in order to estimate population trends within ecoregions
  - ii) Occur in the spring
  - iii) Conducted by West Ecosystems, Inc.
- I. Lesser-Prairie Chicken Interstate Working Group Crucial Habitat Assessment Tool (CHAT)
  - i) Ranked geospatial areas of relative importance to Lesser prairie-chicken population
  - ii) Updated periodically when new information and resources are available
- J. PLJV Playa Lakes Decision Support Tool
  - i) Geospatial analysis and mapping of playas of high conservation priority
- K. Playa Lakes Joint Venture IMBCR Monitoring
  - i) Attempt to estimate bird densities, population sizes and occupancy rates at local and regional scales for birds in the short and mixed grass prairies
  - ii) Trends can be used to determine which species require additional conservation action
  - iii) Population estimates can be used to formulate population goals which can trigger conservation action when populations reach a predetermined level
- L. Kansas State University Honey Locust Research and Monitoring
  - i) Investigating best methods and herbicides to control invasive honey locust trees
  - ii) Monitoring mortality and resprouting capability of herbicide treated trees
- M. KDWPT Greater Prairie-Chicken Lek Surveys
  - i) Annual ground based transect surveys for monitoring GPC lek trends
  - ii) Monitoring efforts occur in spring
  - iii) Conducted by KDWPT, TNC, and Pheasants Forever Farm Bill Biologists
- N. KDWPT Greater Prairie-Chicken Aerial Survey
  - i) Aerial survey along transects utilizing distance sampling techniques across the GPC range in order to estimate population trends across Kansas
  - ii) Conducted by West Ecosystems, Inc.

#### **Flint Hills Focus Area**

- A. Kansas State University Cooperative Wildlife Research Unit
  - i) Wildlife Response to Restoration of Sericea Invaded Grasslands
    - 1) 4-year study involving fire, cattle, and sheep to reduce Sericea in grasslands
    - 2) Surveys conducted annually in Geary and Woodson Counties
  - ii) Ecology of Regal Fritillary
    - 1) A multi scale examination of the distribution and habitat use patterns of the Regal fritillary (*Speyeria idalia*) within the Fort Riley Military Reservation
    - 2) 3-year study relating Fritillary population to land management on Konza and Fort Riley
    - 3) Kansas Cooperative Fish & Wildlife Research Unit, Department of Defense & National Science Foundation
- B. Emporia State University
  - i) Marsh bird surveys; Investigation of habitat associations of rails and bitterns
  - ii) Flint Hills National Wildlife Refuge, Marais des Cygnes Wildlife Area, Marais des Cygnes National Wildlife Refuge, McPherson Valley Wetlands
  - iii) March-June and Sept-Nov

- C. Kansas State University Dept of Biology and Emporia State University
  - i) Grassland Bird Surveys
  - ii) Effects of patch-burn grazing on species diversity and abundance of grassland birds
  - iii) Conducted annually (27 May - 30 Jun) on Konza Prairie Biological Station, Riley Co.
  
- D. Service KS Ecological Services
  - i) Least Tern and Piping Plover Surveys
  - ii) Jeffrey Energy Center and (when habitat is suitable) the Kansas River
  - iii) May – August
  - iv) Conducted by Service & Westar Energy
  
- E. Kansas State University Dept of Animal Sciences and Industry
  - i) Effects of intensive late-season sheep grazing following early-season steer grazing on population dynamics of sericea lespedeza in the Kansas Flint Hills
    - 1) 4-year study monitoring frequency, seed production, herbivory, and whole-plant DM weight of sericea lespedeza in native tallgrass prairie
    - 2) May 2013 to November 2016
    - 3) National Fish and Wildlife Foundation & K-State
  - ii) Effects of growing-season prescribed burning on vigor of sericea lespedeza (*Lespedeza cuneata*) in the Kansas Flint Hills
    - 1) 4-year study monitoring frequency, seed production, herbivory, and whole-plant DM weight of sericea lespedeza in native tallgrass prairie
    - 2) May 2014 to November 2017
    - 3) National Fish and Wildlife Foundation & K-State
  - iii) Measuring the response of grassland avian and lepidopteran communities to the management of an invasive forb with prescribed fire and targeted livestock grazing
    - 1) 2-year study monitoring abundance, density, species diversity, species richness, and species evenness of grassland passerines and lepidopterans to management of sericea lespedeza with targeted livestock grazing and growing-season prescribed burning
    - 2) May 2015 to November 2017
    - 3) National Fish and Wildlife Foundation & K-State
  
- F. Department of Defense, Fort Riley, KS
  - i) Anuran Surveys
    - 1) Determine the status and population trends of 10 species of frogs and toads
    - 2) Since 2002 - Several times during the calling season, to catch the early through late breeding species
  - ii) Annual Bat Conservation & Monitoring
    - 1) Identify species, populations, and habitats of bats on Fort Riley
  - iii) Grassland Bird Surveys
    - 1) Locate and document Henslow's sparrow, Grasshopper sparrow, Dickcissel, Meadowlark sp., Upland sandpiper and other grassland bird species on Fort Riley, to census suitable habitat, and to establish an index of these bird species numbers in the habitat surveyed
    - 2) Point count method – Annually – Since 1994
  - i) Greater Prairie-Chicken Lek Surveys
    - 1) Monitor population trends and to obtain data on the distribution of the breeding population of the greater prairie chicken on Fort Riley
    - 2) Annually – (Mar 1 – Apr. 15)
  - ii) Regal Fritillary Butterfly Survey
    - 1) Determine and monitor breeding populations of Regal Fritillary Butterflies on Fort Riley
    - 2) Annually – since early 2000s
  - iii) Shorebird Surveys
    - 1) Determine and monitor shorebird use on Fort Riley
    - 2) Started in 1994 – Annually Since 2002 – (July 1-October 31)
  - iv) Stream Fish Sampling Survey
    - 1) Determine the status of the federally listed endangered Topeka Shiner in Fort Riley streams and produce a general portrait of fish assemblages
    - 2) Seining or use of electro-fish sampling equipment in late summer when stream flows are low
    - 3) Annually since 1991

- G. KDWPT Greater Prairie-Chicken Lek Surveys
  - i) Annual ground based transect surveys for monitoring GPC lek trends
  - ii) Monitoring efforts occur in spring
  - iii) Conducted by KDWPT, TNC, and Pheasants Forever Farm Bill Biologists
- H. KDWPT Greater Prairie-Chicken Aerial Survey
  - i) Aerial survey along transects utilizing distance sampling techniques across the GPC range in order to estimate population trends across Kansas
  - ii) Conducted by West Ecosystems, Inc.
- I. Konza Prairie Biological Station
  - i) Long Term Ecological Research (LTER) on the tallgrass prairie
  - ii) Research primarily focused on fire, grazing and climatic variability
  - iii) Encompasses studies across multiple ecological levels (organismic, population, community and ecosystem) and spatial (plot-level, watersheds, regional landscapes) and temporal (days to decades) scales
- J. Service Flint Hills Spring Shore Bird Surveys
  - i) Roadside surveys to determine migrant shorebird habitat use throughout the Flint Hills
  - ii) Conducted by Service and TNC 2011-2014
- K. Kansas State University Department of Entomology
  - i) Long term monitoring of pollinator (native bee and butterfly) response to grassland management
- L. Tallgrass Prairie Preserve National Park Service – The Nature Conservancy
  - i) Aquatic Monitoring
    - 1) Annual monitoring of population trends of prairie stream fish (including T. shiner)
    - 2) Periodic monitoring of population trends of Macro-invertebrates
  - ii) Terrestrial Monitoring
    - 1) Breeding Bird Surveys
    - 2) Monitoring population trends of breeding birds
    - 3) Annually select sites and every few years all sites
  - iii) Native Plant Transects
    - 1) Periodic monitoring of population trends of prairie plants
    - 2) Every few years
  - iv) Invasive Plant Monitoring
    - 1) Periodic monitoring of population trends of invasive plants
  - v) Monitoring Bat Populations
    - 1) Annual Bat Acoustic Monitoring
- M. The Nature Conservancy Tallgrass Prairie Preserve (Oklahoma Flint Hills)
  - i) Reintroduction of fire for restoration of post oak-blackjack oak savannah in the crosstimbers
  - ii) Coyote movement and landscape use on the Tallgrass Prairie Preserve
  - iii) Greater prairie-chicken annual lek monitoring
  - iv) Determining the impacts of energy development on greater prairie-chickens
  - v) American burying beetle population distributions, movement patterns and response to patch-burn fire regimes
  - vi) Interactions between fuel, fire, and climate: effects on aquatic biota across landscapes
  - vii) Tallgrass prairie forb reduction and impacts to native pollinators, grassland birds, and livestock performance
- N. Kansas Department of Wildlife Parks and Tourism
  - i) American burying beetle surveys in southern Flint Hills
  - ii) Annual unionid mussel population surveys across multiple rivers in Flint Hills
  - iii) Neosho mucket and rabbitsfoot mussel propagation and reintroduction
  - iv) Reptile and amphibian population trend surveys

### **Central Wetlands and Prairies Focus Area**

- A. Quivira National Wildlife Refuge Annual Sandhill Crane Survey
  - i) Long term survey conducted during spring to survey numbers of sandhill cranes
  - ii) Conducted by Service

- B. Quivira National Wildlife Refuge Whooping Crane Monitoring/Surveys
  - i) Ongoing monitoring of whooping cranes during migration
  - ii) Monitoring efforts in spring and fall
  - iii) Conducted by Service
- C. Quivira National Wildlife Refuge Secretive Marsh Bird Surveys
  - i) Conducted on the Quivira NWR and Cheyenne Bottoms Wildlife Area with refinements to national marsh bird protocol development,
  - ii) Performed periodically with data provided for large-scale analysis
- D. Cheyenne Bottoms and The Nature Conservancy
  - i) Whooping crane migration surveys
  - ii) Waterfowl migration abundance and chronology monitoring
  - iii) Mid-continent sandhill crane survey
  - iv) Mid-winter waterfowl survey
  - v) Grassland bird surveys
  - vi) Bald eagle surveys
  - vii) Conducted by KDWPT and TNC staff
- E. Fort Hays State University Grassland Bird Monitoring
  - i) Examining grassland bird abundance during the breeding season in relation to habitat types and grazing management on Cheyenne Bottoms and adjacent TNC property
- F. Quivira National Wildlife Refuge Annual Shorebird Surveys
  - i) Conducted following International Shorebird Survey (Audubon and Cornell Lab of Ornithology 2014) protocol within Refuge boundaries
  - ii) Examine trends in use, diversity, and abundance in relation to habitat conditions
  - iii) Conducted by Quivira NWR staff
- G. Fort Hays State University Amphibian and Reptile Surveys
  - i) Monitoring diversity, distribution, and relative abundance of amphibians and reptiles in varying Refuge habitats during spring and summer
  - ii) Coordinated by Quivira NWR, Fort Hays State University and R6 Inventory and Monitoring Program
- H. Quivira National Wildlife Refuge Pending Monitoring Efforts
  - i) Grassland Meadow Composition and Structure
  - ii) Water Quality
  - iii) Grassland Bird Surveys
  - iv) Wetland Food Production
  - v) Arkansas Darter Presence/Absence
  - vi) Plant and Animal Phenology
  - vii) Interior Least Tern and Snowy Plover Trend and Habitat Use

*As long as I incorporate fire in my management, I'm not going to have a tree problem. I'm going to have more wildlife and I'm going to produce more pounds of beef.*

Ed Koger, KS PFW Cooperator



***Partners working together helped me accomplish long-term goals and support the future of healthy grasslands and sustainable, profitable ranching.***

**Landowner Bill Barby, Kansas**

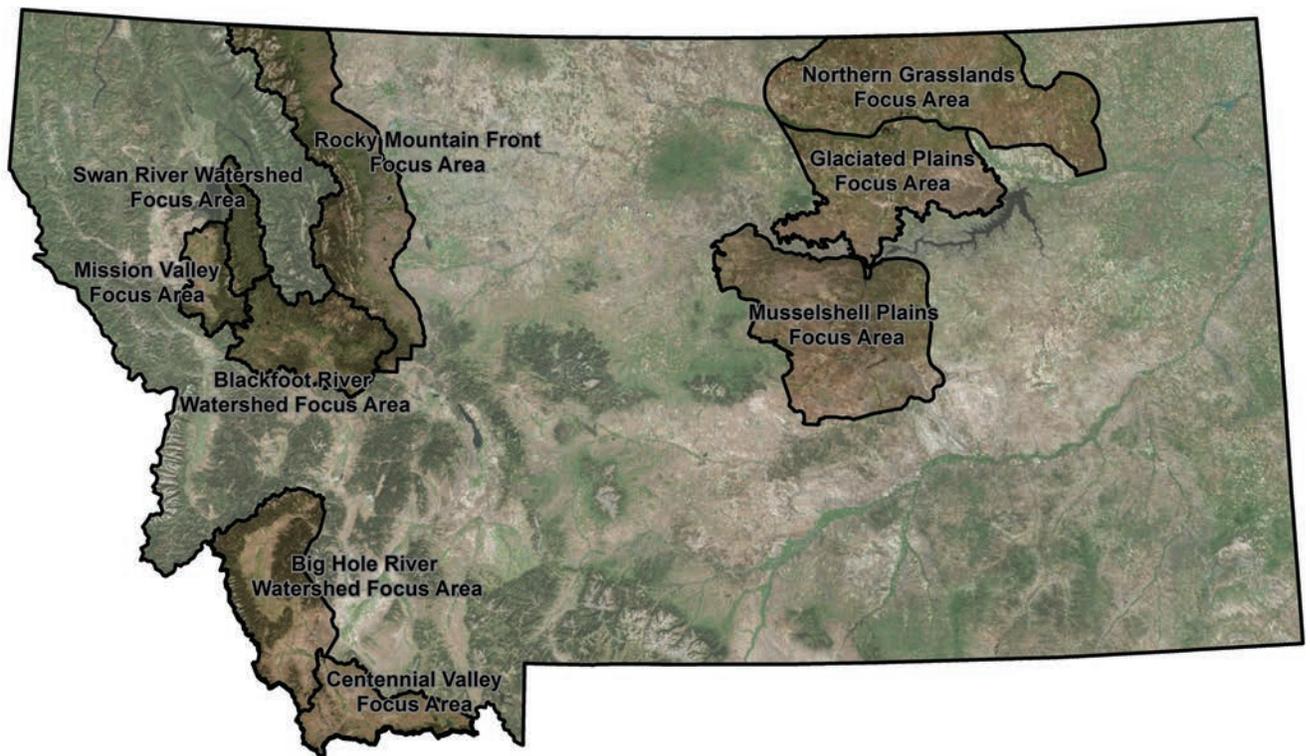


***I am absolutely certain that without the network of great people and vast knowledge in the conservation world in Kansas the undertaking of management of family heritage land would have been vastly different. It is truly a precious gift of a lifetime to have the opportunities coincide with my need for them.***

**Landowner Lisa Ballout, Kansas**



# Montana



Montana PFW program Focus Areas. USFWS map.

## Introduction and Overview

The Montana PFW program (MT PFW) began discussing the merits of conservation focus areas in the mid-1990s. In 1999, the MT PFW program developed its first strategic plan using intact habitats and proximity to National Wildlife Refuges as the basis for selecting conservation focus areas. This process led to the selection of 7 Conservation Focus Areas (CFA) covering approximately 30% of the lands in Montana.

During Fiscal Year 2007, the Montana Step-Down Strategic Plan refined the conservation planning process. The 2007 Plan (covering the years 2007–2011) identified geographic planning areas, selected priority focal species for each geographic planning area, analyzed biological models and incorporated other scientifically

based conservation plans. The processes also included a robust in-reach and out-reach effort. This led to the selection of 10 CFAs encompassing 11% of the private lands in Montana.

For the 2012–16 planning cycle, the MT PFW program developed a 10-step approach for selecting CFAs. The ten steps identified geographic areas for basis of the planning, selected focal species, analyzed biological models, identified overlap in other conservation plans, assessed landscape intactness, identified existing community-based conservation groups, evaluated potential threats that led to selecting CFAs. This process also led us to 10 CFAs and increased the amount of private lands covered to 13%.

The 2017–2021 planning process relied heavily on the previous

three strategic plans for the MT PFW program. We again adopted a ten-step process for our prioritization; however, this fourth iteration of the MT PFW plan has a significant emphasis on species population/range within Montana. This shift of emphasis to focal species populations is based on two primary objectives/principles. The first is to be consistent with the Service Strategic Habitat Conservation model where selecting focal species and understanding their population dynamics is fundamental. Secondly, if we are going to positively affect the populations of focal species, then we need to be working in landscapes that support a large percent of the species population.

One of the other significant changes in the 2017–2021 MT PFW Strategic Plan is the inclusion of a monitoring framework based off of



*Jones Lake in the Blackfoot Valley of Montana. Photo by Joe Milmoie, USFWS.*

our focal species. The monitoring component links our habitat goals for our focal species to biological outcomes at the Focus Area landscape. This new addition of monitoring is key for completing the loop in Strategic Habitat Conservation.

#### **2017–2021 Ten-step CFA Approach**

1. Service focal species
2. Percent of species population/range in Montana
3. Is there enough Strategic Habitat Conservation data available for a given species
4. Private/public ownership
5. Social and political considerations
6. Prioritize species in a tiered format
7. Analyze priority habitat for Tier I species
8. Landscape scale assessment of multiple species
9. Threat analysis
10. Select final Conservation Focus Areas

The 2017–2021 Strategic Planning process begins with selecting focal species that will be the basis of our

on-the-ground conservation work. We developed a list of potential focal species using six different sources including: federally threatened and endangered species, Federal Trust Species; Montana Fish, Wildlife & Parks (MFWP) Species of Concern; Service Director’s 2016 Priorities; Service Regional Director for the Mountain Prairie Region 2016 Priorities; and Service Refuge Chief for the Mountain Prairie Region 2016 Priorities. Only those species that occur in Montana from the above sources were used as part of this process.

We then evaluated each of the potential focal species based on the percentage of their known populations or range that occurs in Montana. After evaluating the proportion of each species population and range in Montana, selection of 10% or greater was determined to be a natural break for selection of a focal species. For many species we have breeding population numbers associated with the individual species. An example for known population is Sprague’s pipit, where 26% of the

global breeding population occurs in Montana (Lipsey 2015). For those species where we didn’t have population level data, we relied on the best available information related to percentage of range of the species habitat that occurs in Montana. Canada Lynx is an example where we don’t have a solid population number occurring in Montana, but we have the species range in the form of designated critical habitat. The Service designated critical habitat for this Distinct Population Segment (DPS) shows 33% of the species range occurs in MT (Service 2015).

The third step in the process involves evaluating data availability for each potential focal species based on the Strategic Habitat Conservation model. In order for a species to be considered as a focal species we must be able to answer these four data questions:

- 1) Is there spatial population/range data available at a statewide basis that will allow prioritization for on-the-ground conservation efforts to affect the largest percentage of the population?

- 2) Is there enough scientific data available that documents the threats to an individual species?
- 3) Can we link threats to conservation measures for implementation of on-the-ground conservation to alleviate those threats?
- 4) Is there long-term (greater than 5 years) population trend data available for the given species within Montana, and will that data be collected for at least the next 5 years?

The fourth step in the process is evaluating the spatial population/range data available for the potential focal species to assess what proportion of the population or habitat is occurring on privately owned lands in Montana. The PFW program can only work on private or tribal lands for our on-the-ground conservation activities. In some cases we have species or distinct population segments for a species that occur primarily on public lands. In our Strategic Plan we want to document those, but understand that it will need to be a different program or entity that works on conservation delivery in those cases. An example of this would be Bull Trout in the Saint Mary's DPS on the Rocky Mountain Front of Montana. The threats (fish passage and fish entrainment) associated with this DPS are either largely on public lands or are associated with a federal (Bureau of Reclamation) irrigation diversion.

The fifth step involves assessing whether a specific species has any special political or social challenges associated with selecting it as a focal species and focusing on-the-ground conservation projects during the next five years. In private lands conservation we need to be able to sell the product (species) at a landscape scale if we are going to be able to affect the population of that given species. With a small number of species, current political and social acceptance will hinder accomplishments and positive impacts to the species. An



*Chestnut-collared longspur. Photo by John Carlson.*

example is black-footed ferret, the species ranks high in every other category, but it's not politically or socially accepted across the landscape at this time. The MT PFW program will work with individual landowners on projects for these species but we will not select landscapes for our work based on this. These species will be reevaluated as part of our next strategic planning process.

The sixth step involves placing each of the individual species into a five-tier format. Tier I Focal species are those species that we can answer yes to on all five of the categories above. Tier IIA – Secondary Species are those species that we can answer yes for questions 1–4 above but not step 5 (see step 5). Tier IIB – Secondary Species are those species where less than 10% of their population occurs in Montana, but that portion that does occur in Montana occurs in a concentrated area where we believe we could have an effect on the population. Tier III – Data Needs or science needs are those species where the necessary SHC data isn't available to select them as a Tier I or II Species (see step 3). Tier IV – Limited Private Lands Responsibility as it relates to the MT PFW program abilities

to effect the overall population an individual species on private lands verses public lands (see step 4). Tier V – All other species are those species where less than 10% of the population occurs in MT and they are not covered under Tier IIB.

#### **Focal species Tiers**

- I. Focal Species
- II. Secondary Species
  - A. Special political and social challenges
  - B. Low MT responsibility but locally important areas
- III. Data Needs
- IV. Limited Private Lands Responsibility
- V. All Other Species

The seventh step in the process is analyzing priority habitat for Tier I Focal species. For each of the Tier I species we assessed the species distribution and population densities then mapped what we are calling priority habitat. Priority habitat varies from species to species and is data driven. In all cases we reached out to the experts for each Tier I species for selecting the parameters around priority habitat. Two examples are westslope cutthroat trout (Fig. 1) Conservation Populations in Montana (MTFWP 2015) and

Tier I	Tier II	Tier III	Tier IV	Tier V
Arctic Grayling	Black-footed Ferret - A	Wolverine	Pallid Sturgeon	Gadwall
Grizzly Bear	Piping Plover - B	Greater Sandhill Crane		Brewer's Sparrow
Bull Trout	Whooping Crane - B	Canada Lynx		Blue-winged Teal
Trumpeter Swan		Long-billed Curlew		Golden Eagle
McCown's Longspur				Sage Thrasher
Westslope Cutthroat Trout				Sagebrush Sparrow
Baird's Sparrow				Monarch Butterfly
Sprague's Pipit				Least Tern
Northern Pintail				White Sturgeon
Mallard				Norther Long-eared Bat
Yellowstone Cutthroat Trout				Red Knot
Greater Sage-grouse				Mountain Plover
Northern Shoveler				

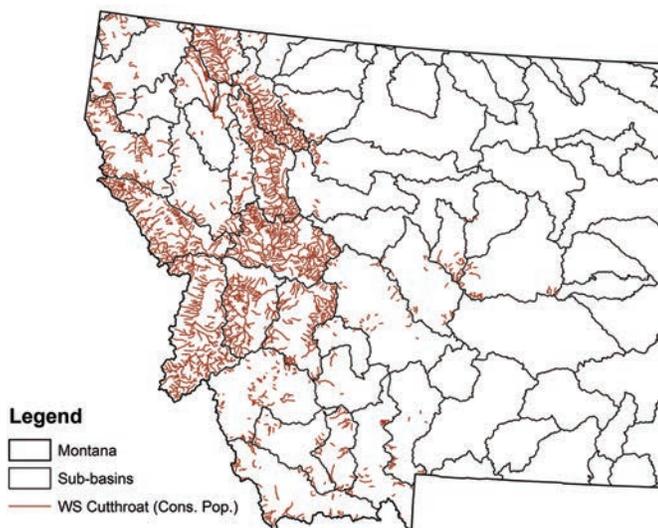


Figure 1. Westslope Cutthroat Trout.

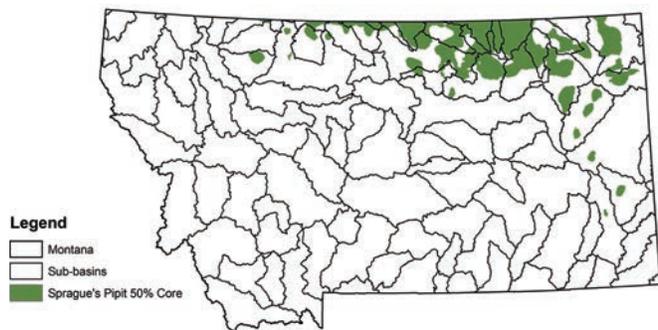


Figure 2. Sprague's Pipit.

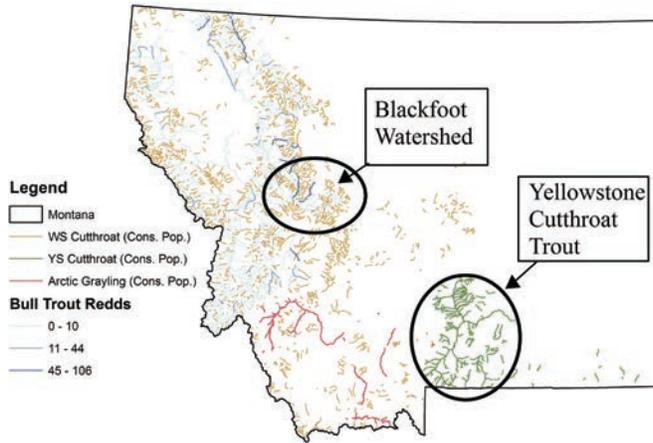


Figure 3. Native Fish Overlap.

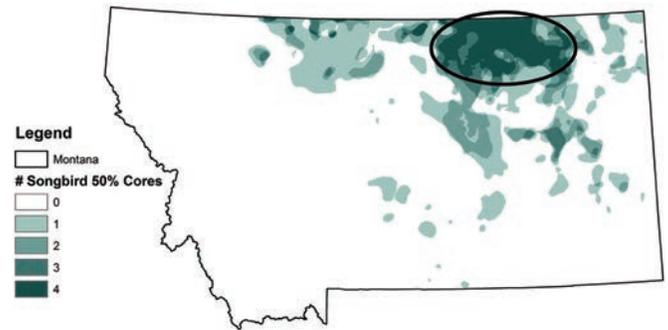


Figure 4. Grassland Bird Overlap.



Figure 5. MT PFW Draft Focus Areas.

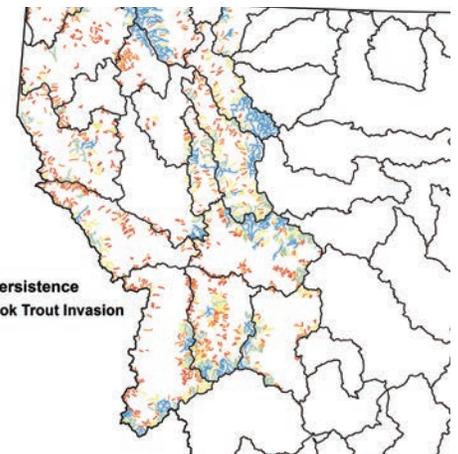


Figure 6. Climate Shields Model (Service 2014b).

Sprague’s pipit 50% of the Montana population Core Areas (Fig. 2; Lipsey 2015).

The eighth step involved landscape scale assessments of grouping multiple species priority habitats. This assessment helped identify landscapes that benefit multiple species. During this process, we were careful not to put too much emphasis on overlapping regions where we were no longer focusing conservation efforts in the best places for individual species. Figure 3 displays the overlap of the four native fish species that are Tier 1 Focal Species. In many cases, we did not find direct overlap of priority habitat for those focal species (e.g., Yellowstone cutthroat trout). However, both bull trout and westslope cutthroat trout in the Blackfoot River watershed had direct overlap of high priority habitats. Figure 4 displays the 50% Core Areas for the four grassland birds that are Tier I Focal species.

As with native fish, several areas were important to a single bird species. However, the area north of the Missouri River extending to the Canada border highlights a large area where high priority habitats occur for all four species.

Assessing priority habitat for individual Tier I Focal species (step 7) as well as suites of Tier I Focal species (step 8) was the basis to populate our draft focus areas as shown in Figure 5. The draft map highlights 25 potential focus areas covering 28.3 million acres or approximately 30% of the land ownership in Montana. In this final step we also evaluated what percentage of each species population occurs within each of the individual Draft Focus Areas. For example, the Northern Grassland Focus Area covers 44% of the Montana population of Sprague’s pipit habitat.

The ninth step involved evaluating potential threats and assessing landscape intactness for Tier I Focal Species and the draft priority Focus Areas. Threats to individual species were evaluated with available scientific data. Examples include climate change models for bull trout (Fig. 6) and cropland suitability for grassland birds (Fig. 7). Overlaying priority habitats with potential threats allowed us to assess the potential for long-term persistence of the individual or suites of species but it also helps prioritize focus areas that are still functional but the threat is imminent.

The ninth step also involved assessing landscape intactness from the perspective of ecological sustainability. One of the tools we used was the Human Footprint model (Fig. 8) developed by Leu et al. (2008). This data set looked at a variety of human activities on the landscape and ranked them from

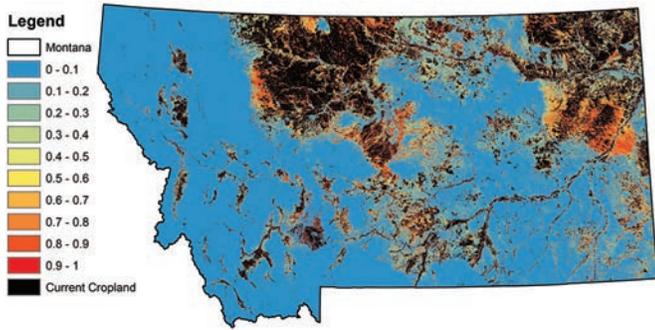


Figure 7. Cropland suitability (Smith et al. 2016).

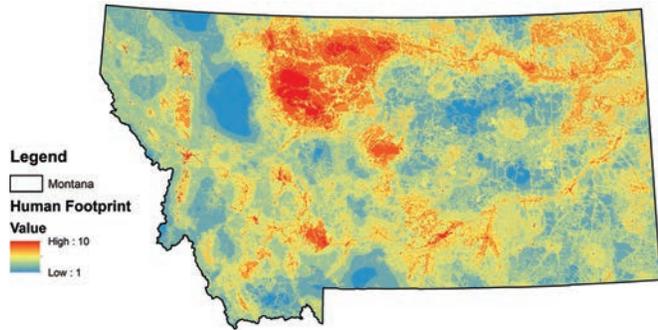


Figure 8. Human Footprint (Leu et al. 2008).

1-10 with 10 having the greatest footprint or impact. Priority habitats that ranked higher than 5.0 were considered highly fragmented and no longer functioning in an ecological sustainable way.

The tenth and final step was selecting the final set of Focus Areas based on the nine steps outlined above. Considerations were also given to present and projected budget and realistic staff levels expected during this planning timeline. Figure 9 shows our final Focus Areas for 2017–2021. The nine Focus Areas highlighted on the map include 17.9 million acres or 19% of the total land area in Montana. The private lands component within the final Focus Areas is 9.1 million acres or 15% of the private land in Montana.

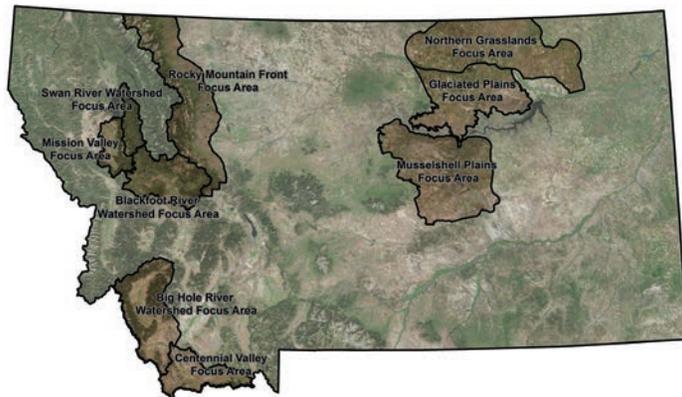


Figure 9. Montana PFW program Focus Areas for 2017–2021.

**Monitoring**

In 2014, the MT PFW program brought together over 50 conservation professionals from numerous agencies and conservation groups to discuss monitoring and evaluation of focal species based on habitat implementation. Included in the group of conservation professionals

were key science leaders that assisted with selection of MT PFW Focal species. The conservation professionals identified the highest priority for biological monitoring as species response at the landscape scale to habitat implementation at the site scale. The conservation professionals had lengthy discussions about the scale of conservation and temporal responses from different species to habitat implementation.

Understanding the difference between site scale and landscape scale is a key process in evaluation of on-the-ground conservation efforts (Poiani et al. 1998). Site

scale is described as an individual on-the-ground restoration and management activities for a specific focal species (Lindenmayer et al. 2002). In the simplest term it is where our boots hit the ground on individual projects such as wetland, instream, riparian or grassland restoration. Site scale also covers individual enhancement activities such as grazing management, riparian and wetland enhancements. Site scale monitoring is further described under Level II Monitoring.

Effective conservation planning must clearly define biologically relevant landscape elements

Order	Definition	Site Scale	Landscape Scale
First	Geographic Range of Species		X
Second	Population or Sub-Pop. within the Range of the Species (Distinct Population Segment [DPS])		X
Third	Home Range of Species	X	X
Fourth	Nesting, Spawning, Rearing, Feeding or Roosting	X	

Table 1. A unifying framework for determining the appropriate scale at which to be monitoring on-the-ground implementation projects.

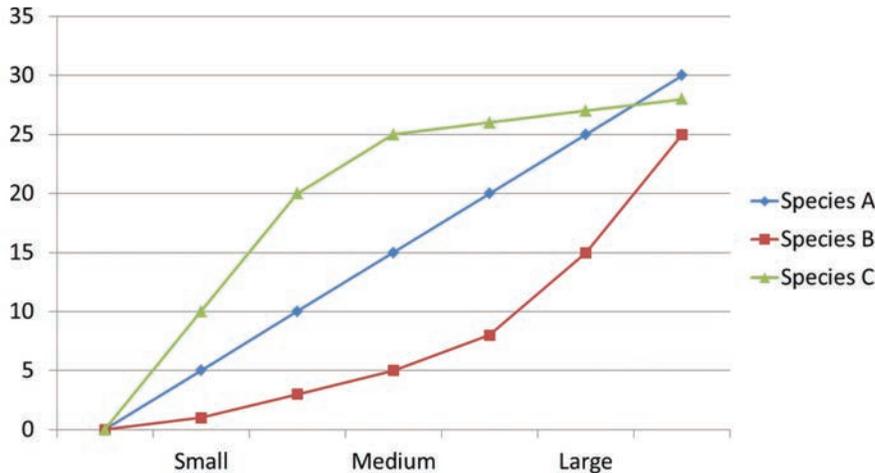


Figure 10. Graph depicting a conceptual temporal response (lag effect) to three hypothetical species based on the amount of habitat that needs to be implemented within a landscape.

for planning at the appropriate scales (Sanderson et al. 2002). Recent developments in landscape conservation are beginning to link spatial patterns and ecological processes at broad spatial and temporal scales (Turner 2001). Breaking down the size of spatial patterns and temporal scale is key to answering the question of size and time for evaluation of conservation efforts on a landscape scale. Hierarchical ordering of selection processes by individual species begins to resolve the question of spatial scale for individual species (Johnson, 1980; Table 1).

Use of this hierarchical ordering process for individual species will help determine at what order monitoring should be done based on projected habitat accomplishments over a period of time (Table 1). This process will be species specific and will be in each appendix for the individual species. In most cases, landscape scale monitoring will be completed at the population or sub-population for the species (Second Order) or at the home range of the species (Third Order).

Assessing the temporal response of individual species from on-the-ground habitat implementation projects is highly variable. Generally, wildlife processes operating at relatively small spatial scales (site scale) occur over short periods of time, whereas processes at large spatial scales (landscape

scale) take place over long periods of time (George 2001). Unlike site scale, biological monitoring where five years may be long enough to identify trend information on a specific species, landscape scale monitoring has more variables and will likely require monitoring over a longer time frame. The MT PFW program will begin to develop power analyses for certain species to assess timelines needed to detect changes resulting from implementation. The two key variables are the amount of habitat within the landscape that needs to be restored or managed and the individual species biological response time to the habitat work.

### Landscape Scale Impact

The rate of a species or population response to habitat implementation projects will vary with its patterns of distribution, reproductive rates and life history strategies (Flather 2002). The ability of a monitoring program to detect responses also depends strongly on the program's sampling design. To determine time horizons necessary to detect changes at the site and landscape scales, the MT PFW program will use the best available knowledge for each focal species to estimate rates of biological response and combine these with a power analysis for monitoring design. When possible, power analysis will be used to optimize the sampling strategy to balance maximum detectability of changes against

the cost of data collection. In the absence of data to inform more detailed analysis, the MT PFW program suggests that biological monitoring should continue for a minimum of 5 years at the site scale and 20 years at the landscape scale.

The above background information combined with the following literature reviews were the foundation used to develop the monitoring goal and monitoring framework: Big Hole Arctic Grayling Strategic Habitat Conservation Plan (Service 2014), Revised Draft Recovery Plan for the Coterminous United States Population of Bull Trout (Service 2014), Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy (NCDE 2013), North American Waterfowl Management Plan (Service 2012), Northern Great Plains Piping Plover Recovery Plan (Service 1988), Sage-Grouse Habitat Assessment Framework: A Multiscale Assessment Tool (Stiver et. al. 2014), Rocky Mountain Population of Trumpeter Swans Pacific Flyway Implementation Plan (Service 2002), and Fisheries Investigations in the Big Blackfoot River Basin, 2011-2012 (MTFWP 2013) were the foundations.

*Monitoring Goal: Link Habitat/Biological Outcomes at the Site Scale to Biological Outcomes at the Appropriate Landscape Scale Over-time.*

From this goal, the MT PFW program has developed three levels of project monitoring that will be completed for each Focal Species in each of the Conservation Focus Areas. Monitoring will be completed by either existing MT PFW staff or with reliance on our internal and external partners.

### Level I Status Review

Level I Status Review monitoring will be a site-specific monitoring effort to inspect every project upon completion to ensure that the structure and function of the project is sound and built to the specifications laid out in the Private Landowner Agreement (PLA).



*Big Hole River, Montana. Photo by Greg Neudecker, USFWS.*

Beginning in FY2017, MT PFW staff will complete a standardized Region 6 PFW Status Review (SR) form for each newly finished PFW project. The SR form will be completed before the payment process is initiated and the SR form will be submitted to the state MT PFW Office as part of the payment initiation request. Completed SR forms will be incorporated into the official landowner file at the field level and also attached to the landowner agreement copies retained at the state MT PFW office.

### **Level II Site Specific Monitoring**

Level II is monitoring of individual on-the-ground restoration and management activities that assesses the effectiveness of that site scale project. Level II monitoring is further broken out into two separate categories.

IIA. Biological monitoring for the Focal Species at the site scale. The

type of biological monitoring at the site scale will be species specific and dependent on data availability, with consideration of time and resources.

IIB. Habitat monitoring for the Focal Species at the site scale. If habitat is used as the preferred monitoring tool at the site scale, habitat monitoring will be linked to the identified limiting factors (threats) of the Focal Species.

For each site scale (Level II) project monitored, we will address threats to the species, goals to address threats, conservation practices implemented, habitat outcomes and biological outcomes. This information is in the attachments and is broken out by species.

If appropriate for the Focal Species and when time and resources are available, biological monitoring will be the priority over habitat monitoring. Monitoring will occur

on a minimum of one new project each year for each of our Focal Species in each of our Conservation Focus Areas. Biological monitoring at the site scale will occur for a minimum of five years after completion of the on-the-ground project for the sites selected for monitoring. Monitoring for each Focal Species in each Conservation Focus Area may vary and will be addressed in length in the attachments of this plan.

### **Level III Landscape Scale Monitoring**

Level III monitoring is described as monitoring an area larger than the site scale to obtain a biological objective for a species over a minimum of 20 years. Level III monitoring is further broken out into two separate categories.

IIIA. Biological monitoring for Focal Species at the appropriate landscape scale over-time. The type of biological monitoring at the



Northern Grasslands Focus Area, Montana. Photo by Marisa Sather, USFWS.

landscape scale will be species-specific and dependent on data availability, with consideration of time and resources.

IIIB. Habitat monitoring for the Focal Species at the appropriate landscape scale over time. Habitat monitoring at the landscape scale will be linked to the identified limiting factors (threats and stresses) of the Focal Species.

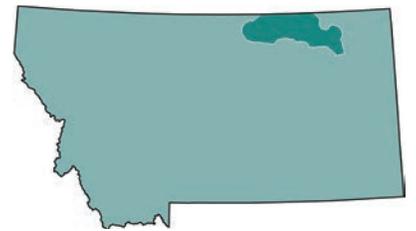
Biological monitoring at the landscape scale will be required for all priority Focal Species in their identified Conservation Focus Areas. Biological monitoring will be done at the appropriate scale and will be repeatable and completed over a long period of time (minimum of 20 years) to assess the effectiveness of conservation implementation activities on the selected priority Focal Species. The MT PFW program acknowledges there are many other factors at play than just habitat restoration and management as it relates to a species response at the landscape

scale to conservation. Long term data collection and basic understanding of the effect of other threats outside of the control of the MT PFW program will be critical in assessing biological outcomes associated with on-the-ground conservation.

Habitat monitoring at the landscape scale will not be completed for all Focal Species in all Conservation Focus Areas. When habitat monitoring is completed at the landscape scale it will be in addition to the biological monitoring being completed at the landscape scale.

For landscape scale (Level III) monitoring, we will address threats to the species, goals to address threat, conservation practices implemented, habitat outcomes and biological outcomes. This information is in the attachments and is broken out by species.

#### Northern Grasslands Focus Area



North of the Milk River in northeast Montana, rich glacial soils underlie a vast landscape of productive, rolling grasslands. Today, this region represents one of the best remaining examples of northern mixed-grass prairie in the world. Bordered by intact Canadian prairies to the north and intact shrub-steppe to the south (see section on Montana's Glaciated Plains), the Northern Grasslands focus area contains nationally significant populations of target waterfowl species and boasts the highest densities of priority grassland songbird species in the U.S. Strong ranching traditions in the local community built on a base of publicly-owned lands have



*Sprague's pipit (left) and McCown's longspur. Photos by John Carlson.*

allowed this grassland landscape to persist in spite of pressures from rapidly encroaching land-use change.

The Northern Grasslands Focus Area today remains a critically important landscape for numerous Federal Trust Species of high conservation concern including greater sage-grouse, Sprague's pipit, Baird's sparrow, McCown's longspur, chestnut-collared longspur, long-billed curlew, and numerous waterfowl species. The Northern Grasslands also provide a key linkage corridor for greater sage-grouse and pronghorn antelope populations that migrate from Canada to winter farther south. The Northern Grasslands Focus Area encompasses about 3.5 million acres. Land ownership is a mixture of private land, Bureau of Land Management (BLM), tribal land (Fort Peck Assiniboine and Sioux Tribes), State school section lands, National Wildlife Refuge lands (Bowdoin NWR) and

Waterfowl Production Areas, and private non-profit conservation lands. Ownership is comprised of 67% private land and 33% public land.

Key partners in the Northern Grasslands include; MFWP, BLM, TNC, NRCS, DU, Tribes and private landowners. North American Wetland Conservation Act (NAWCA) funding has been an important conservation delivery funding source for habitat projects in the Northern Grasslands.

PFW activities will concentrate on restoring and enhancing native prairie habitat and wetlands for Tier 1 Focal Species. Under the MT PFW Focal Species criteria; eight Tier 1 species have been selected for the Northern Grasslands. The site specific plan developed for the Northern Grasslands will link habitat projects to explicit population objectives for these eight species as described in the monitoring section. Refer to the

MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.

**Northern Grasslands Focus Area  
Tier 1 Focal Species**

- Sprague’s pipit
- Baird’s sparrow
- McCown’s longspur
- Chestnut-collard longspur
- Greater sage-grouse
- Northern pintail
- Mallard
- Northern shoveler

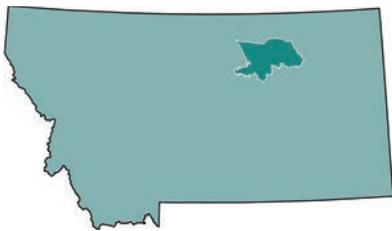
**Northern Grasslands Focus Area Habitat Targets**

- Wetland Acres Restored/Enhanced: 1,000 acres
- Upland Acres Restored/Enhanced: 10,000 acres
- Riparian Restored/Enhanced: 3 miles
- Fish Passage: 0

**Northern Grasslands Focus Area Partnership Targets**

- Private Landowner Agreements: 30
- Partnerships: 180
- Cost-share: 2:1
- Technical Assistance: 125 total staff days

**Glaciated Plains Focus Area**



The Glaciated Plains Focus Area, an extensive region in north central Montana, is characterized by undulating plains dominated by sagebrush and mixed-grass native prairie. Large river systems include the Milk and Missouri

Rivers with smaller prairie streams and accompanying riparian habitat are scattered through drier uplands. Moderate to high densities of pothole-type wetlands are scattered across the focus area. Important migratory bird species found in the Focus Area include; mountain plover, burrowing owl, greater sage-grouse, ferruginous hawk, chestnut-collared longspur, McCown’s longspur, Sprague’s pipit, Baird’s sparrow, and long-billed curlew. Livestock production and some limited farming are the primary land-uses.

The Glaciated Focus Area encompasses about 2.4 million acres. Land ownership is a checkerboard of public and private lands. Charles M. Russell National Wildlife Refuge lies at the southern boundary of the Focus Area and BLM manages numerous large allotments. The Matador Ranch, a 60,000 acre preserve owned by TNC, lies in the heart of the focus area. Private ownership is dominated by large working ranches. Ownership is 47% private and 53% public lands.



*Glaciated Plains Focus Area, Montana. Photo by Ken Plourde.*



*Members of the Rancher's Stewardship Alliance. Photo by Brian Martin.*

Key partners in the Glaciated Shale Plains Focus Area include; The Rancher Stewardship Alliance, MFWP, NRCS, BLM, TNC, DU, and private landowners.

PFW activities will concentrate on restoring and enhancing native prairie habitat and wetlands for Tier 1 – Focal Species. Under the MT PFW Focal Species criteria; eight Tier 1 species have been selected for the Glaciated Plains. The site specific plan developed for the Glaciated Plains will link habitat projects to explicit population objectives for these eight species as described in the monitoring section. Refer to the MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.

#### **Glaciated Plains Focus Area Tier 1 Focal Species**

- Sprague's pipit
- Baird's sparrow
- McCown's longspur
- Chestnut-collard longspur
- Greater sage-grouse
- Northern pintail
- Mallard
- Northern shoveler

#### **Glaciated Plains Focus Area Habitat Targets**

- Wetland Acres Restored/Enhanced: 250 acres
- Upland Acres Restored/Enhanced : 15,000 acres
- Riparian Restored/Enhanced: 3 miles
- Fish Passage: 0

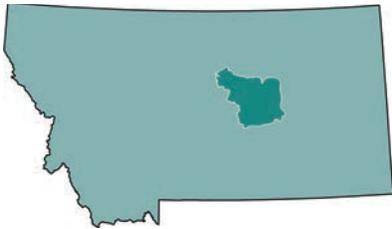
#### **Glaciated Plains Focus Area Partnership Targets**

- Private Landowner Agreements: 25
- Partnerships: 150
- Cost-share: 2:1
- Technical Assistance: 145 total staff days



Greater sage-grouse. Photo by John Carlson.

#### Musselshell Plains Focus Area



The Musselshell Plains Focus Area is located south of the Missouri River in central Montana at the mouth of the Musselshell River. The name Musselshell comes from the mussel shells found in the river of which Lewis and Clark are credited with naming. The Musselshell Plains Focus Area lies south of Charles M. Russell National Wildlife Refuge and contains important habitat for greater sage-grouse, baird's sparrow and chestnut collared longspur.

Strong ranching traditions in the local community built on a base of publicly-owned lands have allowed this sagebrush/grassland landscape to persist in spite of pressures from rapidly encroaching land-use change.

The Mussel Plains Focus Area is located within three separate greater sage-grouse Priority Areas for Conservation (PACs) and have significant core habitat for both Baird's sparrow and chestnut collared longspur. The landscape also lies at the southern edge of a key linkage corridor for greater sage-grouse and pronghorn antelope populations that migrate from Canada to winter. The Musselshell Plains Focus Area encompasses about 3.4 million acres. Land ownership is a mixture of private land, BLM, State school

section lands, and National Wildlife Refuge lands (CMR NWR and Satellite Refuges). Ownership is comprised of 67% private land and 33% public land.

Key partners in the Musselshell Plains include; MFWP, BLM, TNC, NRCS, Montana Association of Conservation Districts and private landowners. This is a new focus area for the MT PFW program so we anticipate numerous other partners both technically and financially in the coming years.

PFW activities will concentrate on restoring and enhancing native prairie habitat for Tier 1 Focal Species. Under the MT PFW Focal Species criteria; three Tier 1 species have been selected for the Musselshell Plains. A site specific plan will be developed for



*Sagebrush landscape of central Montana. Photo by Joe Smith.*

the Musselshell Plains that will link habitat projects to explicit population objectives for these three species as described in the monitoring section. Refer to the MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.

*Baird's sparrow.  
Photo by John Carlson.*



### **Musselshell Plains Focus Area Tier 1 Focal Species**

- Baird's sparrow
- Chestnut-collared longspur
- Greater sage-grouse

### **Musselshell Plains Focus Area Habitat Targets**

- Wetland Acres Restored/Enhanced: 100 acres
- Upland Acres Restored/Enhanced: 6,000 acres
- Riparian Restored/Enhanced: 2 miles
- Fish Passage: 0

### **Musselshell Plains Focus Area Partnership Targets**

- Private Landowner Agreements: 15
- Partnerships: 60
- Cost-share: 2:1
- Technical Assistance: 125 total staff days



*Crawford Ranch within the Rocky Mountain Front Focus Area. USFWS photo.*

**Rocky Mountain Front Focus Area**



The Rocky Mountain Front Focus Area is a spectacular and expansive landscape at the juncture of the Rocky Mountains and the western margin of the Northern Great Plains. The abrupt change from rolling native grasslands to rugged mountain topography produces significant elevation and climatic gradients, creating amazing species and habitat diversity. The transition from alpine tundra and

montane forest to foothills and mid-grass prairie includes incredible stream and riparian habitat. Glaciated wetlands are scattered throughout the Rocky Mountain Front. The species diversity is remarkable. This Focus Area includes some of the best remaining grizzly bear habitat in the lower-48 states. Livestock ranching has been the primary land-use since settlement.

The Rocky Mountain Front Focus Area encompasses about 2.9 million acres. This focus area is a mixture of public and private land, including Service Waterfowl Production Areas; MFWP Wildlife Management Areas and Department of Natural Resources and Conservation lands; Blackfeet

tribal lands; TNC and Boone and Crockett Club's private preserves; and privately owned ranch and farm land. Ownership is 55% private and 45% public.

Key partners in the Rocky Mountain Front Focus Area include the USDA - Forest Service, USDA - NRCS, Blackfeet Nation, MFWP, MT Department of Natural Resources and Conservation, TNC, county conservation districts, four county weed control districts, the Sun and Teton Watershed groups, the Rocky Mountain Front Weed Roundtable, the Boone and Crockett Club, and the North American Wetlands Conservation Act program.

PFW activities will concentrate on restoring and enhancing riparian, wetland and upland habitat as well as conflict abatement projects for Tier 1 – Focal Species. Under the MT PFW Focal Species criteria; two Tier 1 species have been selected for the Rocky Mountain Front. A site specific plan for the Rocky Mountain Front will link habitat projects to explicit population objectives for these eight species as described in the monitoring section. Refer to the MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.



*Landowners Lisa and Mike Bay overlooking a Montana PFW program riparian enhancement project. USFWS photo.*

### Rocky Mountain Front Focus Area Tier 1 Focal Species

- Grizzly bear
- Mallard

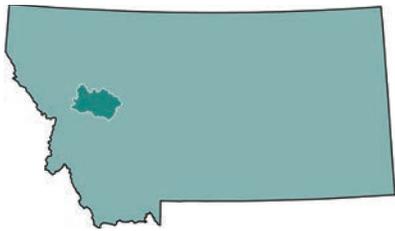
### Rocky Mountain Front Focus Area Habitat Targets

- Wetland Acres Restored/Enhanced: 20 acres
- Upland Acres Restored/Enhanced: 0 acres
- Riparian Restored/Enhanced: 0 miles
- Fish Passage: 0
- Grizzly Bear Fences: 3

### Rocky Mountain Front Focus Area Partnership Targets

- Private Landowner Agreements: 3
- Partnerships: 18
- Cost-share: 2:1
- Technical Assistance: 20 total staff days

### Blackfoot River Watershed Focus Area



From the Continental Divide, the Blackfoot River flows 132 miles westerly to its confluence with the Clark Fork River near Missoula, Montana. The Watershed totals 1.5 million acres and is nestled between the Continental Divide, Bob Marshall/Scapegoat Wilderness and Garnet Mountain Range. Land ownership is extremely diverse with public lands covering much of

the higher mountainous elevations, while highly productive private lands are located in the foothills and valley floor. The Blackfoot Valley was shaped by glacial ice and a large glacial lake. Geologic, hydrologic, and topographic features combine to produce a wide array of plant and animal communities. Wetland features include; glacial lakes, ponds, bogs, fens, basin-fed creeks, spring creeks, large rivers, scrub/shrub riparian areas and cottonwood forests. The uplands are dominated by native grasslands, sagebrush, aspen groves and conifers. Fish and wildlife assemblages are highly diverse. The Watershed is home to grizzly bears, gray wolves, wolverines, Canada lynx, elk, deer and moose. Breeding migratory

birds include such species as, trumpeter swans, sandhill cranes, long-billed curlews, red-necked grebes, common loons, great gray owls, and Brewer's sparrow. The Blackfoot has maintained its rural lifestyle with livestock ranching and timber production being the predominant land-use.

The Blackfoot River Watershed Focus Area encompasses about 1.5 million acres. Land ownership patterns in this focus area are a mixture of private, U.S. Forest Service, BLM, Waterfowl Production Areas, MFWP Management Units, TNC and state school lands. Ownership is comprised of 45% private land and 55% public land.



*2013 Trumpeter Swan Release on the Rolling Stone Ranch in the Blackfoot Valley. Swan releasers from left to right are Jeff Hagener, Director MT Fish, Wildlife & Parks; Traci Stone Manning, Director MT Department of Environment Quality; Richard Joe, Director The Nature Conservancy of Montana; Noreen Walsh, Service Regional Director; Steve Bullock, Governor of Montana. USFWS photo.*

Key partners in the Blackfoot River Valley Watershed are members of The Blackfoot Challenge and the Big Blackfoot Chapter of Trout Unlimited which includes over 500 landowners and 160 partner organizations that support the overall conservation work in the Blackfoot Valley.

PFW activities will concentrate on restoring and enhancing instream, riparian and wetland habitats as well as conflict abatement projects for Tier 1 Focal Species. Under the MT PFW Focal Species criteria; four Tier 1 species have been selected for the Blackfoot River Watershed. The site specific plan developed for the Blackfoot River Watershed will link habitat projects to explicit population objectives for these four species as described in the monitoring section. Refer to the MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.

#### Blackfoot River Watershed Focus Area Tier 1 Focal Species

- Grizzly bear
- Bull trout (Threatened)
- Westslope cutthroat trout
- Trumpeter swan

#### Blackfoot River Watershed Focus Area Five Year Targets

- Wetland Acres Restored/Enhanced: 155 acres
- Upland Acres Restored/Enhanced: 4,000 acres
- Riparian Restored/Enhanced: 20 miles
- Fish Passage: 10
- Grizzly Bear Fences: 5

#### Blackfoot River Watershed Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 120
- Cost-share: 2:1
- Technical Assistance: 150 total staff days

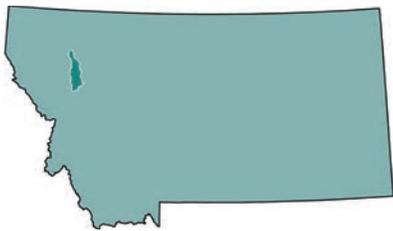


*Westslope cutthroat trout in the Blackfoot River. Photo by Pat Clayton.*



*Swan River Watershed, Montana. Photo by Luke Lamar.*

### Swan River Watershed Focus Area



The abundance of wetlands in the Swan River watershed makes this valley unique among all watersheds in western Montana. The valley floor holds more surface water than any other Montana watershed; 16% of the land base is comprised of wetlands. Water collects in over 4,000 potholes, ponds, lakes, marshes, and peatlands, and a 1,300 mile network of streams transports water throughout the valley. These wetlands, and all of the connected riparian linkages that run between them, function as high quality habitat for many of our most sensitive species, both plant and

animal. The Swan River originates at Gray Wolf Lake in the Mission Mountains and flows through Swan Lake at the northern end of the valley, before entering the Flathead Lake watershed, ultimately flowing into the Columbia River System.

Swan River Watershed lies at the western edge of the Crown of the Continent ecosystem (CoCE) which still supports the full assemblage of large mammalian predators including grizzly bears, gray wolves, wolverine, and Canada lynx. The Swan Valley provides important habitat and connectivity for wildlife travelling east-west between the Bob Marshall and Mission Mountains Wilderness areas, as well north and south along the chain of Rocky Mountains. The lowlands support over 170 different species of wetland plants, including the water howellia (federally threatened). The Swan Watershed contains the only known

occurrences of water howellia in Montana and 72% of the global occurrences. The ecosystems that exist between the valley bottom and mountain summits provide a wide diversity of habitat for fish and wildlife.

The Swan Valley's large expanses of public land, relatively intact habitat and historic wildlife corridors combined with restoration/enhancement activities on private lands would benefit Federal Trust Species such as the grizzly bear, gray wolf, wolverine, pine marten and Canada lynx; migratory birds such as harlequin ducks, common loons, red-necked grebes, black tern, olive-sided flycatcher, peregrine falcons, greater sandhill cranes and trumpeter swans; westslope cutthroat trout and bull trout.

The Swan River Watershed Focus Area encompasses approximately 470,000 acres. Until recently the valley bottom had a large checkerboard ownership between the U.S. Forest Service and Plum Creek Timber Company (PCTC). TNC and Trust for Public Lands purchased the remaining PCTC lands as part of the Montana Legacy Project and transferred the bulk of the ownership to state and federal partners. Today ownership is comprised of 10% private lands and 90% public lands with the U.S. Forest Service, Montana State Forest and the Service Swan River National Wildlife Refuge as the largest public land managers.

Key partners in the Swan River Valley Focus Area include; Private landowners, MFWP, MT Department of Natural Resources and Conservation, U.S. Forest Service, Swan Valley Connections, Swan Valley Community Council, Missoula County, TNC, Trust for Public Lands, Vital Ground, Swan Lakers, and the Montana Land Reliance.

PFW activities will concentrate on restoring and enhancing instream, riparian and wetland habitats as well as conflict abatement projects for Tier 1 Focal Species. Under the MT PFW Priority Species criteria; three Tier 1 species have been selected for the Swan River Watershed. A site specific plan will be developed for the Swan River Watershed that will link habitat projects to explicit population objectives for these three species as described in the monitoring section. Refer to the MT PFW Strategic

Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.

**Swan River Watershed Focus Area Tier 1 Focal Species**

- Bull trout (Threatened)
- Trumpeter swan
- Grizzly bear

**Swan River Watershed Focus Area Habitat Targets**

- Wetland Acres Restored/Enhanced: 100 acres
- Upland Acres Restored/Enhanced: 320 acres
- Riparian Restored/Enhanced: 5 miles
- Fish Passage: 2
- Grizzly Bear Fences: 3

**Swan River Watershed Focus Area Partnership Targets**

- Private Landowner Agreements: 10
- Partnerships: 60
- Cost-share: 2:1
- Technical Assistance: 65 total staff days

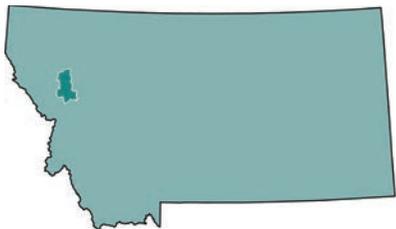


Grizzly bear. Photo by Randy Smith.



*One of many glaciated wetlands in the Mission Valley. USFWS photo.*

### Mission Valley Focus Area



The Mission Valley Focus Area is a glacially gouged remnant of 12,000 years past. It is located in Lake County of western Montana and is within the exterior boundaries of the Flathead Indian Reservation of the Confederated Salish and Kootenai Tribes. The southern shore of Flathead Lake defines the northern boundary with the main stem of the Flathead River to the west. The Jocko River watershed forms the southern boundary and the magnificent Mission Mountains tower above the eastern valley edge. The Valley floor is covered with glaciated wetlands. Wildlife and fish species inhabiting the Mission landscape are diverse and abundant. The wetlands and grasslands attract breeding and

migrating waterfowl, shorebirds, raptors, and passerine birds. The streams and spring creeks are home to native west-slope cutthroat trout and bull trout. Grizzly bears are regularly observed in the Valley.

The Mission Valley Focus Area encompasses about 600,000 acres. Land ownership patterns in this area are a mixture of private, tribal, Service refuges and waterfowl production areas and state wildlife management areas. Ownership is comprised of 92% private land and 8% public land, with farming and livestock ranching being the predominant land use of the private lands.

Key partners in the Mission Valley include; Confederated Salish and Kootenai Tribes, MFWP, NRCS, DU, Pheasants Forever, TU, Lake County Conservation District, Flathead Land Trust, Five Valleys Land Trust and private landowners.

PFW activities will concentrate on restoring and enhancing wetland, stream and riparian habitat as well as conflict abatement projects for Tier 1 Focal Species. Under the MT PFW Focal Species criteria; Three Tier 1 species have been selected for the Mission Valley. A site specific plan will be developed for the Mission Valley that will link habitat projects to explicit population objectives for these three species as described in the monitoring section. Refer to the MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.



Pair of trumpeter swans with cygnets in the Mission Valley, Montana. USFWS photo.

**Mission Valley Focus Area Tier 1 Focal Species**

- Grizzly bear
- Bull trout (Threatened)
- Trumpeter swan

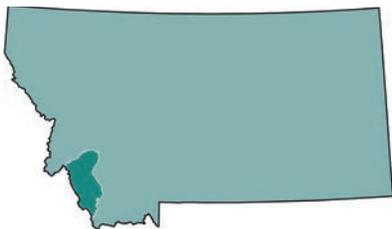
**Mission Valley Focus Area Habitat Targets**

- Wetland Acres Restored/Enhanced: 125 acres
- Upland Acres Restored/Enhanced: 750 acres
- Riparian Restored/Enhanced: 5 miles
- Fish Passage: 3
- Grizzly Bear Fences: 2

**Mission Valley Focus Area Partnership Targets**

- Private Landowner Agreements: 20
- Partnerships: 120
- Cost-share: 2:1
- Technical Assistance: 150 total staff days

**Big Hole River Watershed Focus Area**



The Big Hole River Watershed Focus Area includes 1.97 million acres of the Big Hole, Grasshopper, Horse Prairie and Medicine Lodge watersheds that straddle the Beaverhead Mountains and the Continental Divide along the Idaho-Montana border in southwest Montana. The area is characterized by numerous high elevation mountains ranges, expansive

sage steppe and large productive valleys that provide a diversity of habitat for many species. The valleys are largely privately-owned with livestock and hay production being the primary land-use. At northern end of the Focus Area the Big Hole River emanates from the Beaverhead Mountains and winds for nearly 156 miles to its confluence with the Beaverhead River to create the Jefferson. The Big Hole River is a considered a “blue-ribbon” wild trout fishery and is one of the last free-flowing rivers in the West. The Big Hole River is also home to one of the only populations of fluvial Arctic grayling in the contiguous states.

To the south the Grasshopper, Medicine Lodge and Horse Prairie

watersheds are headwaters of the Beaverhead River. These watersheds are largely undeveloped and are key wildlife connectivity corridors between the Greater Yellowstone Ecosystem and the Salmon\Selway Wilderness to the west and the Crown of the Continent to the north. Land ownership is a mixture of private (28%) and public (72%) lands that include U.S. Forest Service, BLM and state lands.

The Big Hole Focus Area is home to a myriad of native species. Tier I focal species include Arctic grayling and greater sage-grouse. Enhancing habitat at a landscape scale for these species will benefit habitat and connectivity for many aquatic, avian and terrestrial



North Fork of the Big Hole River. USFWS photo.

species. Additional species include westslope cutthroat trout, trumpeter swans, pygmy rabbits, pronghorn, sandhill cranes, Canada lynx, wolverines, wolves, elk, mule deer, Shiras moose and numerous migratory birds.

Key partners in the Big Hole Focus Area include; private landowners, Arctic Grayling Recovery Program, Big Hole Watershed Committee, Big Hole River Foundation, MFWP, NRCS, MT Department of Natural Resources and Conservation, TNC, The Wildlife Conservation Society, U.S. Forest Service, BLM, TU, the High Divide Collaborative, Beaverhead Watershed Committee.

PFW activities will concentrate on restoring and enhancing instream, riparian, wetland and upland habitats for Tier 1 Focal Species. Under the MT PFW Focal Species criteria; two Tier 1 species have been selected for the Big Hole River Watershed. The site specific plan developed for the Big Hole Watershed will link habitat projects to explicit population objectives for these two species as described in the monitoring section. Refer to the MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.

#### Big Hole River Focus Area Tier 1 Focal Species

- Arctic grayling
- Greater sage-grouse

#### Big Hole River Watershed Focus Area Habitat Targets

- Wetland Acres Restored/Enhanced: 200 acres
- Upland Acres Restored/Enhanced: 10,000 acres
- Riparian Restored/Enhanced: 30 miles
- Fish Passage: 10

#### Big Hole River Partnership Targets

- Private Landowner Agreements: 30
- Partnerships: 180
- Cost-share: 3:1
- Technical Assistance: 225 total staff days

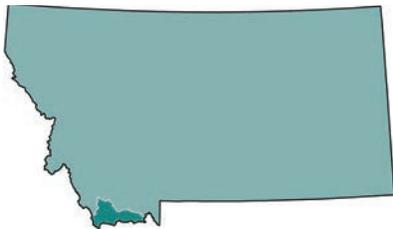


Director Ashe at the Arctic Grayling celebration in the Big Hole River Watershed, 2014. USFWS photo.



Alaska Basin in the Centennial Valley. Photo by James (Newt) Perdue, USFWS.

**Centennial Valley Focus Area**



The Centennial Valley Focus Area encompasses 1.0 million acres of private and public lands. The area is characterized by numerous high elevation mountains ranges, expansive sage steppe and large productive valleys that provide a diversity of habitat for many species. The valleys are largely privately-owned with livestock and hay production being the primary land-use. The Centennial Valley is one of wildest and most intact landscapes in the contiguous U.S. The Centennial Valley lies on the northwest border of the Greater Yellowstone Ecosystem (GYE) and serves as a corridor between the GYE and the High Divide to the west. In the center

of Centennial Valley is the Red Rock Lakes National Wildlife Refuge (Refuge) which includes 51,386 acres and encompasses the largest wetland complex in the Greater Yellowstone Ecosystem. The Refuge also manages 23,806 acres of conservation easements on private lands.

The Red Rock River meanders through Centennial valley floor and lies north and east of the Continental Divide along the Montana-Idaho border. To the west, Big Sheep, Muddy and Sage Creek watersheds are largely undeveloped with diverse habitat and serve as connectivity corridors to the Salmon\Selway wilderness. Land ownership is a mixture of private (31%) and public (69%) lands that include the U.S. Forest Service, BLM and state lands.

Centennial Valley Focus Area is home to a myriad of native species. Tier I Focal species include grizzly bears, trumpeter swans, Arctic grayling and greater sage-grouse.

Enhancing habitat at a landscape scale for these species will benefit habitat and connectivity for many aquatic, avian and terrestrial species. Additional species include westslope cutthroat trout, trumpeter swans, pygmy rabbits, pronghorn, sandhill cranes, Canada lynx, wolverines, wolves, elk, mule deer, Shiras moose and numerous migratory birds.

Key partners in the Centennial Valley Focus Area include; private landowners, Red Rock National Wildlife Refuge, Arctic Grayling Recovery Program, Centennial Valley Landowners Association, MFWP, NRCS, MT Department of Natural Resources and Conservation, U.S. Forest Service, BLM, TNC, and the Wildlife Conservation Society.



*Arctic grayling. Photo by Mark Conlin.*

PFW activities will concentrate on restoring and enhancing instream, riparian, wetland and upland habitats as well as conflict abatement projects for Tier 1 Focal Species. Under the MT PFW Priority Species criteria; four Tier 1 species have been selected for the Centennial Valley Watershed. The site specific plan developed for the Centennial Valley will link habitat projects to explicit population objectives for these four species as described in the monitoring section. Refer to the MT PFW Strategic Plan Introduction for a detailed explanation on the process used to select and prioritize focal species.

#### **Centennial Valley Focus Area Tier 1 Focal Species**

- Arctic grayling
- Greater sage-grouse
- Trumpeter swan
- Grizzly bear

#### **Centennial Valley Focus Area Habitat Targets**

- Wetland Acres Restored/Enhanced: 200 acres
- Upland Acres Restored/Enhanced: 10,000 acres
- Riparian Restored/Enhanced: 10 miles
- Fish Passage: 10
- Grizzly Bear Fences: 2

#### **Centennial Valley Focus Area Partnership Targets**

- Private Landowner Agreements: 30
- Partnerships: 180
- Cost-share: 2:1
- Technical Assistance: 165 total staff days

# Montana Statewide Goals



## Improve Information Sharing and Communication

The MT PFW program operates under the principle that successful community-based, landscape conservation is multi-dimensional, working across spatial, temporal, ecological, and social scales. Communication, collaboration and outreach with conservation partners are an integral part of a successful conservation delivery program. To be successful, the MT PFW program will strive to maintain, build and strengthen relationships with internal and external partners.

### Five-year Targets

- Participate in 10 congressional staff meetings regarding the MT PFW program.
- Initiate/participate in 10 activities that connect youth to nature, trumpeter swan releases, classroom visits, restoration site visits, etc.
- Organize and participate in 100 (20/yr.) landowner/watershed meetings, conferences or workshops throughout Montana.
- Enter into 12 Cooperative Agreements, Contribution Agreements or Memorandums of Understanding with partners or landowner based groups in MT.
- Sponsor or directly assist in 10 field tours that promote the MT PFW program.
- Assist in five National Conservation Training Center courses as instructors or guest speakers.
- Host five coordination meetings with MFWP to assure program consistencies.
- Attend 5 NRCS State Technical Committee meetings.
- Provide 15 MT PFW updates to Regional and Washington Service offices.
- Hold 10 MT PFW staff meetings to improve internal communication.

## Enhancing Our Workforce

All MT PFW staff will be provided an opportunity to acquire at least 40 hours of training each year. This training may include the following categories:

- Technical Proficiency: restoration techniques (i.e. Rosgen), GIS, Candidate Conservation Agreements/Safe Harbor/ESA Recovery
- Enhancing Cooperative Community Conservation
- Leadership
- Communication
- Congressional Operations
- Administrative Procedures

Training needs will be met through internal and external training facilities. MT PFW staff will be encouraged to take advantage of the Service's National Conservation Training Center, workshops, seminars, and other continuing education opportunities.

Currently, the Swan River Watershed and the Rocky Mountain Front Focus Areas are understaffed. When and if new field biologists are needed to staff these focus areas, they will be trained and mentored by senior MT PFW staff.

In accordance with the Service Employee Performance Appraisal Plan (EPAP) system, performance and special achievement awards will be used to recognize exceptional projects and employees.

## Increasing Accountability

### Objectives

- Produce an annual accomplishment report
- 100% of projects will have completed implementation & compliance monitoring
- By 2021 develop site specific plans for each MT PFW conservation focus area. These plans will be developed in consultation with the MT HAPET Office and will include GIS layers, data sets, and habitat assessments. Key partners will also be engaged in this process
- Field biologists will GPS all new habitat projects
- Create GIS layer of all MT PFW habitat projects.
- By 2021, each MT PFW Conservation Focus Area will have at least one peer reviewed biological assessment. These assessments may be conducted by; Universities, U.S. Geological Survey, The MT Natural Heritage Program, MT Fish, Wildlife & Parks, Service Research Centers or conservation organizations.
- The MT PFW State Coordinator and HabITS Coordinator will ensure that HabITS data entries are timely and accurate.

### External Factors

Generally, the nine MT PFW Conservation Focus Areas identify intact landscapes with a livestock ranching based-economy. The economic and social pressures to develop or fragment these areas could have a significant impact on our ability to deliver an effective PFW program.

Global climate change accompanied by persistent droughts and rapid snowmelt could affect project availability and the response of Federal Trust Species to PFW restoration projects.

Other external factors that could have adverse effects on the MT PFW program include; budget shortfalls, personnel turnover, apathy by Service leadership, and restrictive policies.

**Table 1A: Arctic Grayling**

**Landscape: Big Hole River Watershed**

Level II and Level III Monitoring

<b>Threat</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>De-watering</b>	Improve Connectivity and Instream Flows	Irrigation improvement	Measured instream flows returned to stream	II &/or III
		Installed measuring devices	Site visit assessment	II
		Instream Flow Conservation Plans	Measured instream flows returned to stream	II & III
		Water Rights Compliance	Measured instream flows returned to stream	II & III
		Alternative Stock water	Measured instream flows returned to stream	II &/or III
<b>Migration Barriers</b>	Improve Connectivity and Remove Barriers	Installed Fish Ladders	Site visit assessment	II
		Remove/replace non-functioning crossings	Site visit assessment	II
		Installing Fish Friendly Diversions	Site visit assessment	II
<b>Fish Entrainment</b>	Improve Connectivity and Reduce Entrainment	Installed Fish Screens	Site visit assessment	II
		Irrigation Improvement	Site visit assessment	II
<b>Riparian Degradation</b>	Improve Riparian Conditions	Plant shrubs & trees	Survival rate	II &/or III
			Riparian condition score	II &/or III
		Riparian Fences	Riparian condition score	II &/or III
		Grazing systems	Riparian condition score	II &/or III
		Alternative Stock Water	Riparian condition score	II &/or III

<b>Biological Outcomes **</b>	<b>Level Measured</b>
Increased Distribution	III
Increased Abundance	III
Stable Age Structure	III
Genetic Diversity	III

\*\*Biological Outcomes for Level III (landscape scale) and in some cases Level II (site scale) are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented based on the threats and goals established.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. Examples: Increased instream flows after conservation practice implemented, or riparian score pre- and post-conservation practice implemented. At a landscape scale (Level III), habitat monitoring will roll up individual Level II monitoring to evaluate if overall conservation practices address threats at the landscape level. Example: Instream flows increased in landscape; average riparian score pre- and post-restoration in the landscape.

\*\*Biological monitoring covers four categories for Arctic Grayling in the Big Hole River Watershed. All four categories are monitored annually by MT FWP, Service, DNRC and NRCS. Biological monitoring of these four categories at the Landscape Scale (Level III) assess the threats identified and implemented as conservation measures at the site and landscape scale. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

All habitat and biological monitoring for the Arctic grayling in the Big Hole River Watershed is housed with MT FWP in Dillon, MT.

**Table 1B: Arctic Grayling**

**Landscape: Centennial Valley**

Level II and Level III Monitoring

<b>Threat</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>De-watering</b>	Improve Connectivity and Instream Flows	Irrigation Improvement	Measured instream flows returned to stream	II &/or III
		Installed Measuring Devices	Site visit assessment	II &/or III
		Instream Flow Conservation Plans	Measured instream flows returned to stream	II &/or III
		Water Rights Compliance	Measured instream flows returned to stream	II &/or III
		Alternative Stock water	Measured instream flows returned to stream	II &/or III
<b>Migration Barriers</b>	Improve Connectivity and Remove Barriers	Installed Fish Ladders	Site visit assessment	II &/or III
		Remove/replace non-functioning crossings	Site visit assessment	II &/or III
		Installing Fish Friendly Diversions	Site visit assessment	II &/or III
<b>Fish Entrainment</b>	Improve Connectivity and Reduce Entrainment	Installed Fish Screens	Site visit assessment	II &/or III
		Irrigation Improvement	Site visit assessment	II &/or III
<b>Riparian Degradation</b>	Improve Riparian Conditions	Installed shrubs & trees	Survival rate	II &/or III
			Riparian condition score	II &/or III
		Riparian Fences	Riparian condition score	II &/or III
		Grazing systems	Riparian condition score	II &/or III
		Alternative Stock Water	Riparian condition score	II &/or III

<b>Biological Outcomes **</b>	<b>Level Measured</b>
Increased Distribution	III
Increased Abundance	III
Stable Age Structure	III
Genetic Diversity	III

\*\*Biological Outcomes for Level III (landscape scale) and in some cases Level II (site scale) are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented based on the Threats and Goals established.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. Examples: Increased instream flows after conservation practice implemented or riparian score pre- and post-conservation practice implemented. At a landscape scale (Level III), habitat monitoring will roll up individual Level II monitoring to evaluate if overall conservation practices address threats at the landscape level. Example: Instream flows increased in landscape; Average riparian score pre- and post-restoration in the landscape.

\*\*Biological monitoring covers four categories for Arctic Grayling in the Centennial Valley. All four categories are monitored annually by MT FWP, Service, and NRCS. Biological monitoring of these four categories at the landscape scale (Level III) assess the threats identified and implemented as conservation measures at the site and landscape scale. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

All habitat and biological monitoring for the Arctic grayling in the Centennial Valley is housed with MT FWP in Dillon, MT.

**Table 2: Bull Trout**

**Landscape: Blackfoot River Watershed, Mission Valley & Swan River Watershed**

Level II and Level III Monitoring

<b>Threat</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>Elevated Water Temperatures</b>	Cold Water	Irrigation Improvement	Water temperature	II &/or III
			Measured instream flows returned to stream	II &/or III
		Instream Flow Conservation	Water temperature	II
			Measured instream flows returned to stream	II &/or III
		Alternative Stock water	Water temperature	II
			Measured instream flows returned to stream	II &/or III
		Installed shrubs & trees	Water temperature	II
			Survival rate	II
			Riparian condition score	II &/or III
		Riparian Fences	Water temperature	II
			Riparian condition score	II &/or III
		Grazing systems	Water temperature	II
			Riparian condition score	II &/or III
		Instream Restoration	Water temperature	II
Width to depth measurements	II			

<b>Water Quality Impairment</b>	Clean Water	Instream restoration	McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Alternative Stock water	McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Riparian Fences	Measured instream flows returned to stream	II &/or III
			McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Grazing systems	Riparian condition score	II &/or III
			McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Riparian condition score	II &/or III	
<b>Migration Barriers</b>	Connectivity	Removing barriers	Site visit assessment	II
		Install fish ladders	Site visit assessment	II
		Install fish screens	Site visit assessment	II
		Instream restoration	Pattern, Profile and Dimensions before, as built and after	II
		Instream Flow Conservation	Measured instream flows returned to stream	II &/or III
<b>Lacks complexity</b>	Improve instream complexity	Instream restoration	Pattern, Profile and Dimensions before, as built and after	II
			Large Woody Debris Assessment (> 4" DBH & > 6')	II
		Instream Flow Conservation	Measured instream flows returned to stream	II &/or III

<b>Biological Outcomes **</b>	<b>Level Measured</b>
Redd surveyed	III
CPUE before and after	II
Juvenile surveys	II &/or III
Abundance in River	III
Fish screen effectiveness (CPUE)	II
Fish friendly barrier assessments	II
Other telemetry or genetic assessments	II &/or III

\*\*Biological Outcomes for Level III (landscape scale) and in some cases Level II (site scale) are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented based on the Threats and Goals established.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually on selected sites to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. Examples: Increased instream flows after conservation practice implemented or riparian score pre- and post-conservation practice implemented. At a landscape scale (Level III), habitat monitoring will roll up individual Level II monitoring to evaluate if overall conservation practices address threats at the landscape level. Example: Instream flows increased in landscape; Average riparian score pre- and post-restoration in the landscape.

\*\*Biological monitoring covers numerous categories for bull trout in the selected Conservation Focus Areas. Most categories are monitored by the same standards across the different landscapes. Redd surveys are completed each year in each Conservation Focus Area. Catch per unit effort is site specific and is completed on most bull trout instream projects pre- and post-restoration. Long term juvenile bull trout counts are completed by MT FWP in most Bull Trout Core Areas. Abundance in the larger rivers is completed by MT FWP bi-annually. Biological monitoring of these categories at the landscape scale (Level III) assess the threats identified and implemented as conservation measures at the site and landscape scale. Other biological monitoring may occur on connectivity projects that relate to removing barriers, assessing fish screens and larger scale telemetry to genetic assessments. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

All habitat monitoring for bull trout will be housed with the MT PFW program. Biological monitoring for bull trout will mostly be housed with MT FWP and occasionally with the Service or the U.S. Forest Service.

**Table 3: Grizzly Bear**

**Landscape: Blackfoot River Watershed, Mission Valley, Rocky Mountain Front & Swan River Watershed**

Level II and Level III Monitoring

<b>Threat</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>Human caused mortalities</b>	Minimize human caused mortalities by reducing conflicts	Livestock carcass pickup	Carcasses picked up (composted, rendered, landfill or dispersed)	II & III
		Bone yards removed	Site visit assessment	II
		Bone yards fenced	Site visit assessment (electric fence assessment)	II
		Calving yards fenced	Site visit assessment (electric fence assessment)	II
		Bee yards fenced	Site visit assessment (electric fence assessment)	II
		Secure attractants	Site visit assessment	II
		Conservation Easement	Site visit assessment	II
<b>Habitat Fragmentation</b>	Connectivity	Riparian Restoration	Survival rate	II
			Riparian condition score	II
		Riparian Enhancement	Riparian condition score	II
		Conservation Easement	Intact habitat	II

<b>Biological Outcomes **</b>	<b>Level Measured</b>
Population trend	III
Mortalities	II &/or III
Conflicts	II &/or III
Presence/absence	II

\*\*Biological Outcomes for Level III and in some cases Level II are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually on selected sites to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. Examples: Site visit to ensure electric fences are working properly or riparian condition score pre- and post-conservation practice implemented. At a landscape scale (Level III), habitat monitoring will roll up individual Level II monitoring to evaluate if overall conservation practices address threats at the landscape level. Example: Number of livestock carcasses removed or average riparian condition score pre and post restoration in the landscape.

\*\*Biological monitoring covers four categories for grizzly bears in the selected Conservation Focus Areas. The first three categories are measured and monitored the same way across the different Conservation Focus Areas. Population trends are monitored at the Northern Continental Divide Ecosystem (landscape scale) by MT FWP and other agencies. The population has been growing at 3.06% each year with an estimated 942 bears in 2011. Mortalities and conflicts are monitored annual by MT FWP at both the 2nd & 3rd Order landscape scale. Presence and absence will be very site specific and will rely on MT FWP collaboration and data sharing. Biological monitoring of these four categories at the landscape scale (Level III) assess the threats identified and implemented as conservation measures at the site and landscape scale. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

Most habitat monitoring for grizzly bears will be housed with the MT PFW program. Biological monitoring for grizzly bears will mostly be housed with MT FWP and occasionally with the Service or the U.S. Geological Survey.

**Table 4: Dabbling Ducks – Northern Pintail, Mallard & Northern Shoveler**

**Landscape: Glaciated Plains, Northern Grasslands, & Rocky Mountain Front (Mallards)**

Level II and Level III Monitoring

<b>Threat</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>Wetland Loss</b>	Wetland Restoration	Restore wetland hydrology	HAPET 4-square mile card	II
	Perpetual Protection	Conservation Easement	Intact habitat	II
<b>Wetland Degradation</b>	Wetland Enhancement	Grazing system	HAPET 4-square mile card	II
		Water development	HAPET 4-square mile card	II
<b>Grassland Loss</b>	Grassland Restoration	Grassland reseeding	Perennial cover (Y/N)	II
			Native Grass Species (Y/N)	II
			Native Forbs (Y/N)	II
			Invasive Species (Y/N)	II
	Perpetual Protection	Conservation Easement	Intact habitat	II
			Rotational system followed (Y/N)	II
Grassland maintained	Grazing system	Site visit assessment	II	
		Water development	II	

<b>Grassland Degradation</b>	Grassland Enhancement	Grazing system	Rotational system followed (Y/N)	II
			Robel Pole Readings	II
			Herbaceous biomass	II
		Water development	Utilization measurements	II
			Robel Pole Readings	II
			Herbaceous biomass	II
		Invasive species management	Utilization measurements	II
			Invasive Species (Y/N) map –before and after	II

<b>Biological Outcomes **</b>	<b>Level Measured</b>
4 square mile pair counts	II
Breeding pair trend data	III
Brood counts	II

\*\*Biological Outcomes for Level III and in some cases Level II are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually on selected sites to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. Examples: Site visit using a HAPET four square mile card to assess wetland condition, or Robel Pole readings in selected pastures associated with a grazing system. At a landscape scale (Level III), habitat monitoring will roll up individual Level II monitoring to evaluate if overall conservation practices address threats at the landscape level. Example: Four square mile cards for wetland restoration conditions across landscape.

\*\*Biological monitoring covers three categories for mallards in the selected Conservation Focus Areas. All three categories are measured and monitored the same way across the different Conservation Focus Areas. For wetland restoration or enhancement projects at the site scale, monitored wetlands will follow the HAPET four square mile pair survey

procedures. HAPET will use these numbers to compare to other existing wetlands being surveyed. Breeding pair trend data will also come from HAPET four square mile monitoring and will be rolled up at the appropriate landscape scale within the different Conservation Focus Areas to track the long term trend of pairs within our Conservation Focus Area. Brood surveys will be used to do biological monitoring on those grassland areas that have been restored or enhanced by the MT PFW program. Biological monitoring of these three categories assess the threats identified and implemented as conservation measures at the site and landscape scale. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

All habitat monitoring for mallards will be housed with the MT PFW program. Biological monitoring for mallards will mostly be housed with HAPET and occasionally with the MT PFW program on brood surveys.

**Table 5: Priority Grassland Songbirds – Sprague’s Pipit, Baird’s Sparrow, McCown’s Longspur and Chestnut Collared Longspur**

**Landscape: Northern Grasslands, Glaciated Plains, Musselshell Plains (Baird’s Sparrow and Chestnut Collared Longspurs)**

Level II and Level III Monitoring

<b>Threat</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>Grassland Loss</b>	Grassland Restoration	Grassland reseeded	Perennial cover (Y/N)	II & III
			Native Grass Species (Y/N)	II
			Native Forbs (Y/N)	II
			Invasive Species (Y/N)	II
	Perpetual Protection	Conservation Easement	Intact habitat	II & III
			Rotational system followed (Y/N)	II
	Grassland maintained	Grazing system	Site visit assessment	II
		Water development	II	
<b>Grassland Degradation</b>	Grassland Enhancement	Grazing system	Rotational system followed (Y/N)	II
			Vegetation density/biomass	II & III
			Range condition	II
			Utilization measurements	II
			Vegetation density/biomass	II & III
		Water development	Range condition	II
			Utilization measurements	II
			Invasive Species (Y/N) map –before and after	II
			Invasive species management	II

<b>Biological Outcomes **</b>	<b>Level Measured</b>
Point counts	II &/or III
Trends in point counts	II &/or III

\*\*Biological Outcomes for Level III and in some cases Level II are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually on selected sites to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. The extent of perennial grassland cover will be monitored at the landscape scale (Level III) with geospatial land use data (e.g. USDA’s National Agricultural Statistics Service maps). MT PFW program is currently working to help develop a method of remote sensing for herbaceous biomass. If successful, this will allow us to monitor the annual distribution of biomass at the landscape scale (Level III) using satellite imagery.

\*\*Biological monitoring for priority grassland songbirds will be achieved using repeated point count surveys, both on project sites (Level II) and in the broader landscape (Level III). Data will be collected collaboratively by Service, MT FWP, BLM and other conservation partners in the focal landscapes. Preliminary power analysis indicates 47-99% power to detect a 5% change in abundance of species of concern using a set of 40, 10-point transects repeated annually over a five year period. These data will be used at both the site scale and landscape scale to assess productivity of our conservation work. Biological monitoring of these three categories assesses the threats identified and implemented as conservation measures at the site and landscape scale. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

All habitat monitoring for priority grassland songbirds will be housed with the MT PFW program. Biological monitoring for priority grassland songbirds will be housed with the Service.

***PFW provided us with assistance in implementing projects we wouldn't have typically been able to afford in today's cattle market. They were so easy to work with and in turn our operation now has better conservation practices in place.***

**Landowner  
Brittany Allestad,  
Montana**



**Table 6: Greater Sage Grouse**

**Landscape: Big Hole River Watershed, Centennial Valley, Glaciated Plains, Musselshell Plains and Northern Grasslands**

Level II and Level III Monitoring

<b>Threats</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>Sage Steppe Loss</b>	Sage steppe restoration	Sage steppe reseeded	Perennial cover (Y/N)	II
			Native grass Species (Y/N)	II
			Native forbs (Y/N)	II
	Sage steppe maintained	Conservation easement	Native sage brush (Y/N)	II
			Non-native invasive species (Y/N)	II
			Intact habitat	II
Water development	Grazing system developed	Site visit assessment	II	
		Rotational system followed (Y/N)	II	
<b>Sage Steppe Degradation</b>	Sage steppe enhancement	Rotational grazing systems	Rotational system followed (Y/N)	II
		Water development	Site visit assessment	II
<b>Fence Collisions</b>	Reduce mortalities from collisions	Remove/change fences	Site visit assessment	II
		Mark fences	Site visit assessment (marker assessment)	II
<b>Conifer Encroachment</b>	Restore historic open sage steppe habitat	Conifer Removal	Re-growth assessment	II
<b>Wetland Degradation</b>	Restore wetland hydrology	Wetland restoration	Cowardin assessment	II
<b>Invasive exotic species</b>	Remove invasive exotic species	Invasive species management	Invasive Species (Y/N) map –before and after	II

<b>Biological Outcomes **</b>	<b>Level Measured</b>
Male lek count trends	II & III
Fence collision assessment	II

\*\*Biological Outcomes for Level III and in some cases Level II are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually on selected sites to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring.

\*\*Biological monitoring covers two categories for greater sage-grouse in the selected Conservation Focus Areas. The two categories are measured and monitored the same way across the different Conservation Focus Areas. Lek surveys at the site scale and rolled up into the appropriate landscape scale will require our PFW biologists to work closely with MT Fish, Wildlife & Parks and partners on surveys and data sharing. Examples: Annual lek surveys at both the site scale and landscape scale (will rely closely on partners for inventory and data sharing), fence collision assessments will, on sites selected, be done by walking the marked fence lines immediately after the lek season, looking for dead birds and feathers.

Biological monitoring of these two categories assess the threats identified and implemented as conservation measures at the site and landscape scale over time. Biological monitoring at the landscape scale will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

There are many factors at play that will affect lek numbers, some of which are within the control of the PFW program and some that are not. The MT PFW program understands we need long term data and a very good understanding of other threats to effectively evaluate biological outcomes based on our conservation practices.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

All habitat monitoring for greater sage-grouse will be housed with the MT PFW program. Biological monitoring for greater sage-grouse will mostly be housed with MT FWP and occasionally with the MT PFW program on fence collisions.

**Table 7: Trumpeter Swans****Landscape: Blackfoot River, Centennial Valley, Mission Valley and Swan River Watershed**

Level II and Level III Monitoring

<b>Threats</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>Wetland Drainage</b>	Restore Territorial and foraging wetlands	Wetland Restoration	Cowardin classification	II
<b>Altered Wetland Hydrology</b>	Minimize negative effects of altered hydrology to nesting swans	Wetland Restoration  Water management agreements  Install floating islands	Cowardin classification  Site visit assessment (water level evaluation)  Site visit assessment  Site visit assessment	II  II  II  II
<b>Power line/Fence Collisions</b>	Reduce mortalities from collisions	Remove/change power lines/fences  Mark Power Line/Fences	Site visit assessment  Site visit assessment (marker assessment)	II  II
<b>Predation</b>	Increase nest success	Construct nesting islands  Install floating islands	Site visit assessment  Site visit assessment	II  II
<b>Human caused disturbance</b>	Decrease human caused disturbance	Conservation Easement	Site visit assessment	II &/or III

<b>Biological Outcomes **</b>	<b>Level Measured</b>
Presence/Absence	II
# of Territorial Wetlands	II & III
# of Nesting Pairs	II & III
Hatched cygnets	II & III
Fledged cygnets	II & III
Total white/gray bird surveys	III

\*\*Biological Outcomes for Level III and in some cases Level II are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually on selected sites to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. Examples: Assessing altered hydrology by doing a (or multiple if needed) site visit during the nesting season to assess wetland level fluctuations or assessing power line markers to make sure they are still up and functioning. At a landscape scale (Level III), habitat monitoring will roll up individual Level II monitoring to evaluate if overall conservation practices address threats at the landscape level.

\*\*Biological monitoring covers six categories for trumpeter swans in the selected Conservation Focus Areas. All six categories are measured and monitored the same way across the different Conservation Focus Areas. For selected site scale sites the first five categories data will be collected annually for at least five years on each category. At a landscape scale items 2-5 will be collected and tallied yearly and compared to long term trend data for a minimum of 20 years. Category six will be completed at a minimum of every five years and correspond to the Pacific Flyway trumpeter swan surveys. Biological monitoring of these six categories assess the threats identified and implemented as conservation measures at the site and landscape scale. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

All habitat monitoring for trumpeter swans will be housed with the MT PFW program. Biological monitoring for trumpeter swans will also be housed with the MT PFW program and shared annually with the Tri-State Trumpeter Swan Working Group.

**Table 8: Westslope Cutthroat Trout**

**Landscape: Blackfoot River Watershed**

Level II and Level III Monitoring

<b>Threat</b>	<b>Goal</b>	<b>Conservation Practices</b>	<b>Habitat Outcome*</b>	<b>Level Measured</b>
<b>Elevated Water Temperatures</b>	Cold Water	Irrigation Improvement	Water temperature	II &/or III
			Measured instream flows returned to stream	II &/or III
		Instream Flow Conservation	Water temperatures	II
			Measured instream flows returned to stream	II &/or III
		Alternative Stock water	Water temperature	II
			Measured instream flows returned to stream	II &/or III
		Installed shrubs & trees	Water temperature	II
			Survival rate	II
			Riparian condition score	II &/or III
		Riparian Fences	Water temperature	II
			Riparian condition score	II &/or III
		Grazing systems	Water temperature	II
			Riparian condition score	II &/or III
		Instream Restoration	Water temperature	II
Width to depth measurements	II			

<b>Water Quality Impairment</b>	Clean Water	Instream restoration	McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Alternative Stock water	McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Riparian Fences	Measured instream flows returned to stream	II &/or III
			McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Grazing systems	Riparian condition score	II &/or III
			McNeal core sample	II
			Bank Erosion Hazard Index (BEHI)	II
		Riparian condition score	II &/or III	
<b>Migration Barriers</b>	Connectivity	Removing barriers	Site visit assessment	II
		Install fish ladders	Site visit assessment	II
		Install fish screens	Site visit assessment	II
		Instream restoration	Pattern, Profile and Dimensions before, as built and after	II
		Instream Flow Conservation	Measured instream flows returned to stream	II &/or III
<b>Lacks complexity</b>	Improve instream complexity	Instream restoration	Pattern, Profile and Dimensions before, as built and after	II
			Large Woody Debris Assessment (> 4" DBH & > 6')	II
		Instream Flow Conservation	Measured instream flows returned to stream	II &/or III

<b>Biological Outcomes **</b>	<b>Level Measured</b>
CPUE before and after	II
CPUE compared to reference reach	II &/or III
Abundance in River	III
Fish screen effectiveness (CPUE)	II
Fish friendly barrier assessments	II
Other telemetry or genetic assessments	II and/or III

\*\*Biological Outcomes for Level III (landscape scale) and in some cases Level II (site scale) are not tied to specific conservation practices, rather they will show outcomes based on the suite of conservation practices implemented based on the Threats and Goals established.

Level II is measured at the site scale and Level III is measured at the landscape scale. Level II or III habitat outcome indicates whether that activity is monitored for that specific conservation practice that was implemented based on the threat for that species.

\*Habitat Monitoring will be done annually on selected sites to evaluate if the conservation practices implemented are successful at addressing the threats at the site scale (Level II) for those projects selected for monitoring. Examples: Increased instream flows after conservation practice implemented or riparian score pre and post conservation practice implemented. At a landscape scale (Level III), habitat monitoring will roll up individual Level II monitoring to evaluate if overall conservation practices address threats at the landscape level. Example: Instream flows increased in landscape; Average riparian score pre- and post-restoration in the landscape.

\*\*Biological monitoring covers up to seven categories for westslope cutthroat trout in the Blackfoot River Conservation Focus Area. Catch per unit effort is site specific and is completed on most westslope cutthroat trout instream projects pre- and post-restoration by MT FWP. In many cases those CPUE measurements are then compared to reference reach data to gauge restoration success and the temporal response to WSCT from the restoration activities. Abundance in the Blackfoot River is completed by MT FWP bi-annually. Biological monitoring of these categories at the landscape scale (Level III) assess the threats identified and implemented as conservation measures at the site and landscape scale. Other biological monitoring may occur on connectivity projects that relate to removing barriers, assessing fish screens and larger scale telemetry to genetic assessments. Biological monitoring will be completed over the long term (greater than 20 years) as there could be some lag time between Habitat Outcomes and Biological Outcomes.

The appropriate scale (Order 1-4) at which biological monitoring will take place is species and landscape specific. That information will be included in the specific monitoring reports and not in this overarching monitoring plan.

Most habitat monitoring for WSCT will be housed with MT FWP Region 2 Office and occasionally with the MT PFW program. All biological monitoring for bull trout will mostly be housed with MT FWP and occasionally with the Service or the U.S. Forest Service.



# Attachment 1 MT PFW Level I Monitoring Form



## SITE VISIT REPORT

Landowner Agreement # \_\_\_\_\_

Prism FA Award # \_\_\_\_\_

### Final or Interim

Select One

### Scope of Work

(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

### Project Status

(To be used for an interim report ie...what's been done up to the 1 year mark)

(Example Language)-About 2 paragraphs

### Species Benefited

\_\_\_\_\_. (You can reference conservation plans as/if you deem necessary)

*Optional/ Literature Cited: (Example)*

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012–2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

### Payment Method

Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # \_\_\_\_ (project type ex. Wetland enhancement) has been completed (or for interim...is in the process of being completed) in accordance with all provisions of the agreement.

\_\_\_\_\_  
PFW Biologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Landowner / Cooperator

\_\_\_\_\_  
Date



# Attachment 2 MT PFW Level II/III



## Monitoring Form

PLA Name: \_\_\_\_\_ Focus Area: \_\_\_\_\_

PLA Number: \_\_\_\_\_

Agreement Date: \_\_\_\_\_ Date Work Completed: \_\_\_\_\_

Priority Species: \_\_\_\_\_

Level II or III Monitoring: \_\_\_\_\_

Date of Monitoring: \_\_\_\_\_

Threat to Species	Goal to address threat	Conservation Practice Implemented	Habitat Outcome	Biological Outcome

### Description of Monitoring Attachments:

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### Specific Location of Monitoring: (UTMs or Lat/Long and description with aerial map)

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**Level III Monitoring: (Description and justification of landscape scale selection including order 1st, 2nd, or 3rd)**

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**Monitoring Database: (Entity in charge of monitoring and location of permanent database)**

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**Summary of Findings:**

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**Other Comments:**

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## Attachment 3

**Montana Ongoing Monitoring Efforts Listed by Focus Area****Big Hole River Watershed Focus Area**

- A. Arctic Grayling Surveys
  - i. Annual river population surveys conducted by MTFWP
  - ii. Annual watershed genetic surveys conducted by MTFWP
- B. Greater Sage Grouse Lek Surveys
  - i. Annual lek surveys completed on all known leks
  - ii. Conducted by MTFWP, BLM, FS & FWS

**Blackfoot River Watershed Focus Area**

- A. Bull Trout Surveys
  - i. Annual redd surveys on all bull trout spawning streams conducted by MTFWP
  - ii. Blackfoot River population surveys conducted every two years by MTFWP
  - iii. Abundance surveys pre and post habitat restoration projects. Completed one year prior to restoration and for five years after restoration
- B. Westslope Cutthroat Trout Surveys
  - i. Blackfoot River population surveys conducted every two years by MTFWP
  - ii. Abundance surveys pre and post habitat restoration projects. Completed one year prior to restoration and for five years after restoration
- C. Trumpeter Swan Surveys
  - i. Annual population surveys conducted by the Service
  - ii. Surveys are completed on the ground and include territorial, nesting, hatching, fledging and overall population
- D. Grizzly Bear Surveys
  - i. Annual conflict monitoring conducted by MTFWP
  - ii. Annual mortality monitoring conducted by MTFWP

**Centennial Valley Focus Area**

- A. Arctic Grayling Surveys
  - i. Annual Red Rock Creek population surveys
  - ii. Conducted by the FWS each spring
- B. Greater Sage Grouse Lek Surveys
  - i. Annual lek surveys completed on all known leks
  - ii. Conducted by MTFWP, BLM, FS and Service
- C. Trumpeter Swan Surveys
  - i. Annual population surveys conducted by the Service
  - ii. Surveys completed by ground and air include territorial, nesting and fledging data. Surveys conducted since the 1930s
- D. Grizzly Bear Surveys
  - i. Annual conflict monitoring conducted by MTFWP
  - ii. Annual mortality monitoring conducted by MTFWP

**Glaciated Plains Focus Area**

- A. Four Square Mile Breeding Waterfowl Surveys
  - i. Annual surveys of the five most common breeding waterfowl species in MT
  - ii. Surveys are conducted on randomly selected wetlands within four square mile blocks of habitat and have been conducted for 8 years

- iii. Survey coordinated by the FWS Habitat and Population Evaluation Team (HAPET) and conducted by the Service

B. Greater Sage Grouse Lek Surveys

- i. Annual lek surveys completed on all known leks
- ii. Conducted by MTFWP, BLM, FS and Service

**Mission Valley Focus Area**

A. Grizzly Bear Surveys

- i. Annual conflict monitoring conducted by the Confederated Salish and Kootenai Tribes (CSKT)
- ii. Annual mortality monitoring conducted by CSKT

B. Trumpeter Swan Surveys

- i. Annual population surveys conducted by CSKT
- ii. Surveys are completed on the ground and include, territorial, nesting, hatching, fledging and overall population

C. Bull Trout Surveys

- i. Annual population surveys conducted by CSKT
- ii. Surveys are conducted each year on the Jock River system assessing population structure

**Musselshell Plains Focus Area**

A. Greater Sage Grouse Lek Surveys

- i. Annual lek surveys completed on all known leks
- ii. Conducted by MTFWP, BLM, FS and Service

**Northern Grasslands Focus Area**

A. Four Square Mile Breeding Waterfowl Surveys

- i. Annual surveys of the five most common breeding waterfowl species in MT
- ii. Surveys are conducted on randomly selected wetlands within four square mile blocks of habitat and have been conducted for 8 years
- iii. Survey coordinated by the Service Habitat and Population Evaluation Team (HAPET) and conducted by the Service

B. Greater Sage Grouse Lek Surveys

- i. Annual lek surveys completed on all known leks
- ii. Conducted by MTFWP, BLM, FS and Service

**Rocky Mountain Front Focus Area**

A. Four Square Mile Breeding Waterfowl Surveys

- i. Annual surveys of the five most common breeding waterfowl species in MT.
- ii. Surveys are conducted on randomly selected wetlands within four square mile blocks of habitat and have been conducted for 8 years
- iii. Survey coordinated by the Service Habitat and Population Evaluation Team (HAPET) and conducted by the Service

B. Grizzly Bear Surveys

- i. Annual conflict monitoring conducted by MTFWP
- ii. Annual mortality monitoring conducted by MTFWP

**Swan Valley Focus Area**

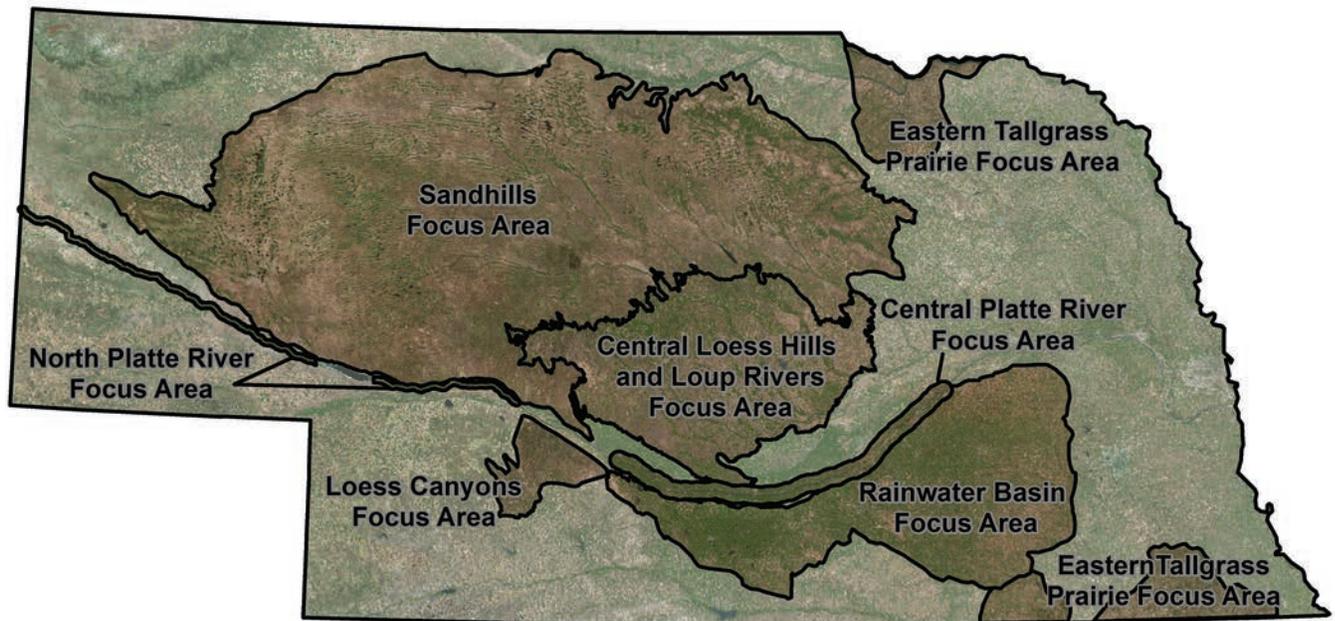
A. Bull Trout Surveys

- i. Annual redd surveys on all bull trout spawning streams conducted by MTFWP

B. Grizzly Bear Surveys

- i. Annual conflict monitoring conducted by MTFWP
- ii. Annual mortality monitoring conducted by MTFWP

# Nebraska



*Nebraska PFW program Focus Areas. USFWS map.*

## Introduction and Overview

Nebraska is the biological crossroads of the Great Plains, where northern species reach their southern limits, east meets the west, and southern species stop to rest and refuel prior to heading to their northern breeding grounds. The landscapes in Nebraska are equally diverse, dictated by hydrology, soils, and more importantly, the climatic gradient that spans from east to west, which promotes plant and wildlife species richness. From the Missouri River bluffs to the Sandhills to the Pine Ridge in the northwest Panhandle, Nebraska has more river miles than any other state, bisecting tallgrass prairie, mixed-grass prairie, and short-grass prairie.

Within these landscapes, over 48,000 farms and ranches work to provide food to a

growing population, while conserving Nebraska's overall biological diversity. Nebraska is approximately 97% privately owned, therefore the conservation of Nebraska's diverse flora and fauna is largely dependent upon private landowners and the conservation tools they use to manage Nebraska's vast resources.

The overall objective of the Nebraska PFW (NE PFW) program is to work cooperatively with landowners and other partners throughout the state to restore and maintain habitat for Federal Trust Species. The careful selection, design and implementation of restoration projects allows the NE PFW program to maintain Nebraska's biological diversity and keep habitats intact to counteract the impacts of climate change and other environmental stresses. NE

PFW provides both financial and technical assistance to landowners and our partners involved in the implementation of key conservation programs throughout Nebraska.

The NE PFW program set lofty habitat goals for the FY 2012–2016 Strategic Plan. Numerous private landowners (and conservation partners), who voluntarily entered into landowner agreements to restore, enhance, and manage habitat on their land for Federal Trust Species, have made the NE PFW program successful. Over 300 new habitat projects were completed throughout Nebraska's conservation focus areas over the 5-year strategic plan period of performance (2012–2016). Nebraska's private landowners continue to be our most important partner and none of the habitat projects could have been accomplished without their desire



*North Platte River private landowner with Nebraska PFW biologists at a PFW riverine habitat restoration project near Paxton, Nebraska. Photo by Joe Milmoie, USFWS.*

to conserve and restore habitat on their lands.

Our main emphasis for FY 2017–2021 will be to continue to develop successful and effective partnerships to restore wetland, grassland, riverine, and riparian habitat on private lands to help meet population objectives for focal species and prevent the further listing of species as federally endangered or threatened. The NE PFW program will focus its delivery in ecosystems and habitats where conservation actions will accomplish the greatest biological benefit per conservation dollar expended.

Restoring and maintaining the functionality of natural communities and ecological systems as a way to ameliorate potential effects of climate change remains a focus of NE PFW staff. Projects will be prioritized, planned, and designed to address current stressors (e.g., invasive species,

habitat fragmentation, lack of fire, changes in hydrologic regimes) that will be most exacerbated by climate change. The NE PFW program will continue to work with our partners to provide high quality migration habitat for migratory birds (e.g., waterbirds, waterfowl, shorebirds, wading birds, listed species, grassland birds) and high quality prairie grassland habitat for grassland nesting birds and the numerous other species of plants and animals that depend on these systems for their survival.

To continue NE PFW's strong history of program implementation throughout Nebraska, we have revisited our existing conservation focus areas and have made adjustments for the FY 2017–2021 strategic plan to expand on our successes and increase the effectiveness and consistency of our program. Changes to our conservation focus areas were made based on numerous criteria including habitat loss,

future threats, analysis of habitat functions and values along with benefits to Federal Trust Species. Proximity to Service lands and other protected areas, available funding, staff, and partner goals were also evaluated.

The PFW program and its partners are on the cutting edge of new data resources in large part due to a strong relationship with the Rainwater Basin Joint Venture GIS Team and other conservation planning partnerships, combining GIS land coverages and species/habitat models for all of our focus areas. These data resources are intricately aligned with the goals of numerous existing national, regional, state and local conservation plans. GIS data layers and habitat/species modeling efforts were utilized to refine focus areas and will be used to prioritize project delivery for target species/habitats during FY 2017–2021.

A high priority will continue to be given to projects located in four of our original focus areas that are recognized as being of international importance to wildlife. These include projects located within the Rainwater Basin area of south-central Nebraska, the Big Bend reach of the central Platte River, the Sandhills in north-central Nebraska, and the North Platte River valley. In addition, portions of the Eastern Tallgrass Prairie, Loess Canyons, and the Loess Hills/Loup River systems are NE PFW focus areas. NE PFW staff will continue to provide technical assistance to other partners in their efforts to deliver conservation programs within other important biological unique landscapes.

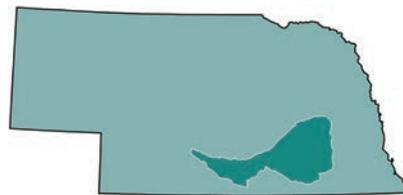
In 2005, the Service approved the Nebraska Natural Legacy Project (Legacy Plan), which is Nebraska's Comprehensive Wildlife Action Plan. The plan was developed with the collaboration of over 500 biologists/conservation practitioners, citizens and private landowners. A twenty-member partnership team that included representatives from major conservation, agricultural, and tribal organizations guided the planning efforts. The Legacy Plan represents Nebraska's comprehensive strategy to conserve at-risk and other wildlife species throughout Nebraska. The plan was revised in 2011 and a second edition (Schneider et. al 2011) of the plan was developed, which included some minor changes in the boundaries of existing biologically unique landscapes. The Legacy Plan identifies over 500 species of animals and plants that are considered at-risk. It lists key threats to at-risk species, conservation actions needed to overcome threats, and prioritizes research and survey needs. The plan identifies forty biologically unique landscapes that provide the best opportunities to conserve the majority of Nebraska's biological diversity. NE PFW conservation focus areas include all or portions of numerous biologically unique or important migratory bird landscapes identified in Nebraska's revised wildlife action plan.

### Partner Coordination

NE PFW continually seeks input on general PFW program direction, conservation focus areas, priority focal species, and future strategies/activities from key partners. The priorities for the NE PFW program and the strategic plan revision were developed in coordination with our diverse group of partners including the Nebraska Game and Parks Commission (NGPC), Rainwater Basin Joint Venture (RWBJV), Sandhills Task Force (STF), Platte River Whooping Crane Trust (Crane Trust), DU, NRCS, Northern Prairie Land Trust (NPLT), Bird Conservancy of the Rockies (BCoR), Platte River Basin Environments, Inc. (PRBE), Prairie Plains Resource Institute (PPRI), National Audubon Society's Nebraska State Office and Rowe Sanctuary (Audubon), Pheasants Forever (PF), private landowners, and numerous other groups and organizations located throughout the state.

The NE PFW program will continue to develop successful partnerships with private landowners and other agencies and organizations to improve habitat on private land throughout Nebraska. The NE PFW is committed to continue to work in close coordination with the National Wildlife Refuge System, Nebraska Ecological Services Field Office and the RWBJV Office to implement conservation actions that compliment Service lands and provide the greatest biological benefit for Federal Trust Species.

### Rainwater Basin Focus Area



The Rainwater Basin wetland complex is comprised of flat to gently rolling loess plains formed by wind-blown silt. The area is named for its high density of clay pan playa wetlands, which once

covered 204,000 acres across parts of 21 counties in south-central Nebraska. Historically, 11,000 playa wetlands occupied this 6,150 square mile landscape, providing foraging and roosting opportunities for millions of waterfowl, shorebirds, and the federally endangered whooping crane during their spring and fall migration.

Rainwater Basin wetlands lay at the bottom of closed watersheds, collecting precipitation from intense summer storms and runoff from winter snow melt, in turn ponding shallow water across hydric soils. Rainwater Basin wetlands receive additional water from its closed watershed, where runoff from saturated upland soils drains down waterways over time and contribute to a longer wetland hydroperiod. These watersheds historically fed approximately 1,000 semi-permanent and seasonal flooded wetlands, totaling 70,000 acres, and over 10,000 temporary wetlands, totaling 134,000 acres. Recent analysis of LiDAR data determined a wetland's watershed size can range from 26 acres for small wetlands to 27,700 acres for large wetlands.

As a result of the fertile soils and abundant groundwater resources in this region, the majority of Rainwater Basin wetlands were, and continue to be, filled, drained and farmed. Major efforts to drain wetlands occurred prior to the Swampbuster Act of 1985, resulting in the loss of 90% of all historic wetlands by 1982. Of the 10% that remained, semi-permanent wetlands, with deep clay pans and standing water almost year-round, were the most difficult to drain and comprised the majority of the remaining wetland acres (68%) and temporary and seasonal wetlands, with shallower clay pans and shorter hydroperiods, were easily drained. Only 32% of the remaining wetland acres are temporary and seasonal in nature. Today, playa wetlands in the Rainwater Basin make up less than 1% of the landscape, which is heavily dominated by row-crop agriculture. Filling and draining wetlands immediately alters wetland



*Restored wetlands provide habitat for a suite of high priority waterfowl species. USFWS photo.*

hydrology and hydroperiod. Watershed modifications, such as pits in uplands and the removal of grass buffers, further aggravate undesirable conditions. The lack of buffers in waterways and around wetlands allows sediment from erosion to slowly fill the remaining wetlands. Pits originally used to capture gravity irrigation, pond rainwater in uplands rather than allowing water to filter down through the watershed. As a result, wetlands are drier for longer periods of time, relying on on-site moisture. Wetlands with fill and sediment may not pond water, even after heavy rainfall events, because most of the water is trapped within the organic soils, rather than ponding on top of hydric soils. Saturated soil conditions and changes in hydrology and hydroperiod create microclimates favorable to invasive species such as reed canary grass, hybrid cattail, and undesirable

tree species. Invasive species out compete important moist soil food plants, creating a monoculture of undesirable plants with little to no nutritional value for focal species.

Despite losses in wetland habitat, an estimated 8.6 million migratory waterfowl, including approximately 90% of the mid-continent white-fronted goose population, 50% of the mid-continent population of mallards, and 30% of the continent's northern pintail population, rely on the remaining 10% of all Rainwater Basin wetlands to provide the foraging and roosting habitat they need to complete their northward migration to the breeding grounds. Success on the breeding grounds has been directly correlated to the bird's body condition upon departure from the Rainwater Basin region and arrival to the breeding grounds. Therefore, remaining wetlands must provide enough wetland seed

resources, approximately 4.4 billion kilocalories annually, in addition to waste grains, for birds to build the necessary fat reserves for the remainder of their migration and to initiate nesting.

The Rainwater Basins are recognized as an internationally important spring staging area for waterfowl. However, located in the narrowest part of the Central Flyway, the Rainwater Basins not only host migratory waterfowl, but also provide roosting and foraging habitat for 600,000 shorebirds and a significant number of federally endangered whooping cranes. More than 30 species of shorebirds use Rainwater Basin wetlands and uplands including Baird's sandpiper, stilt sandpiper, lesser and greater yellowlegs, and nearly the entire population of buff-breasted sandpiper. Numerous wading birds, neotropical migratory birds, hundreds of species of plants,

butterflies, reptiles, amphibians, and mammals also use Rainwater Basin wetlands and their associated upland habitats.

The Rainwater Basin Focus Area is identified as an important migratory bird landscape in Nebraska's revised Legacy Plan. The Rainwater Basin is also identified in the North American Waterfowl Management Plan (NAWMP) as a waterfowl habitat area of major concern in North America and is recognized as the focal point of the Central Flyway spring migration corridor. In 1991, the NAWMP Committee officially recognized the Rainwater Basin as the 8th area in the United States to receive official Joint Venture status. The overall goal of the RWBJV is to restore and maintain sufficient wetland habitat in the Rainwater Basin to assist in meeting population objectives identified in the NAWMP (Gersib et al. 1992). Primary partners in the Rainwater Basin Focus Area include the RWBJV, NGPC, DU, Natural Resource Districts, Nebraska Environmental Trust (NET), NRCS, County Roads Departments, and numerous private landowners located throughout the region.

#### Rainwater Basin Focus Area Focal Species

- Mallard
- Northern pintail
- Blue-winged teal
- Whooping crane (Endangered)
- Semipalmated sandpiper
- Least sandpiper
- Lesser yellowlegs
- Hudsonian godwit
- Grasshopper sparrow
- Sprague's pipit
- Monarch butterfly

#### Implementation Strategy For Habitat Objectives

The NE PFW program will continue to work cooperatively with private landowners and a diverse group of partners to restore, enhance, and manage wetland and upland habitat throughout the Rainwater Basin for the benefit of migratory waterbirds (waterfowl, wading birds, shorebirds) endangered species (e.g., whooping cranes), and grassland nesting birds. The Implementation Plan for the RWBJV (RWBJV 2013) identifies a need to restore and maintain sufficient wetland habitat in the Rainwater Basin area of Nebraska to assist in meeting population objectives in the NAWMP. The NE PFW program wetland, grassland, and watershed restoration and enhancement targets will assist in meeting the nutritional requirements of the millions of ducks and geese that use the Rainwater Basin each spring. Specific habitat actions include: (a) restoring wetland and watershed hydrology (silt removal, filling pits, plugging drains, installing low-level berms and water control structures); (b) removing and controlling invasive species (e.g., reed canary grass, undesirable

woody species, hybrid cattails); and (c) restoring and managing native grassland habitat (cropland conversion, reseeded, prescribed management).

#### Implementation Strategy For Partnership Objectives

NE PFW program will continue to focus its efforts on maintaining existing successful partnerships and develop new partnerships to restore wetland and upland habitat throughout the Rainwater Basin. New partners will primarily be landowners who have an interest in restoring and maintaining wetland and upland habitat. The PFW program will continue to provide a significant level of technical assistance to NRCS in the delivery of the ACEP –WRE and EQIP in this focus area. Staff will also work closely with employees from the RWBJV, NGPC, DU, and other groups and organization to assist in the delivery of habitat conservation programs. NE PFW program will continue to secure a high proportion of non-PFW program funding sources for Rainwater Basin wetland and upland habitat restoration projects.

#### Rainwater Basin Focus Area Habitat Targets

- Wetland Restoration/Enhancement: 1,750 acres
- Grassland Restoration/Enhancement: 250 acres
- Watershed Enhancement: 30 pit fills

#### Rainwater Basin Focus Area Partnership Targets

- Private Landowner Agreements: 40
- Partnerships: 240
- Technical Assistance: 600 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

#### Rainwater Basin Focus Area Related Plans

- Rainwater Basin Joint Venture Implementation Plan
- The Nebraska Natural Legacy Project
- North American Waterfowl Management Plan
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Partners in Flight – North American Landbird Conservation Plan
- Ducks Unlimited Nebraska Conservation Plan
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Platte/Kansas Rivers Ecosystem Plan
- Nebraska Wetlands Priority Plan



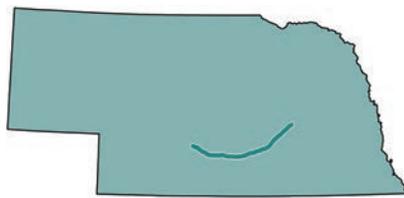
*Aerial view of a Rainwater Basin wetland restoration project located in Nuckolls County, Nebraska. Restored wetland located on private lands (left side) adjacent to Smartweed Marsh Wildlife Management Area. USFWS photo.*

### Species Models And Decision Support Tools

Numerous habitat/species models and GIS land coverage databases have been developed for use in the Rainwater Basin. Below is a list of models/GIS land coverage databases, and other decision support tools that were used to help identify habitat targets for the Rainwater Basin Focus Area. These models along with other decision support tools will be used to prioritize habitat restoration projects for the target species.

- Rainwater Basin Wetland Complex Waterfowl Habitat Use Model
- Rainwater Basin Pit Fill Prioritization Model
- Whooping Crane Habitat Suitability Index Model for the Rainwater Basin
- Rainwater Basin Bio-Energetics Model
- Wetland Reserve Program Model

### Central Platte River Focus Area



The Central Platte River Focus Area extends approximately 150 miles from Cozad to Clarks Nebraska. The combination of broad open river channels, its shallow braided character, adjacent wet meadows, and abundant food supplies attract millions of migratory birds each year. The central Platte River provides important habitat for fish and wildlife resources of national and international significance. The Central Platte River Focus Area has long been identified by conservation organizations and resource agencies as an area of significant biological importance and is identified as a biologically

unique landscape in Nebraska's Legacy Plan. A portion of this stretch of river is also the focus of the Platte River Recovery Implementation Program (PRRIP) which is a cooperative effort between the states of Nebraska, Colorado, Wyoming, and the Department of the Interior (DOI) to address water and habitat needs of four federally threatened and endangered species.

The Central Platte River is also considered to be one of the most endangered waterways in the United States. Open riverine channel and wet meadow grassland habitats for federally listed species (i.e., whooping cranes, interior least terns and piping plovers) shorebirds, waterfowl, and waterbirds have diminished over the decades. The Central Platte River provides both spring and fall migration habitat for the endangered whooping crane and a stretch of the river between Lexington and Shelton is identified



*Sandhill cranes along the central Platte River in Hall County, Nebraska. Photo by Joe Milmoie, USFWS.*

as critical habitat for whooping cranes. Its sandbars are breeding habitat for the threatened piping plover and endangered least tern. Millions of waterfowl utilize the shallow channels and associated wetlands for migration and wintering habitat. Over 300 bird species have been observed along the Platte River, and over 140 species are known to nest along the river. The Central Platte River also provides a variety of habitat types (e.g., backwaters, sloughs, side channels) for a diverse fish community. At least 37 species of fish are known to be found within the riverine habitats of the Central Platte River (e.g., western silvery minnow, plains topminnow, flathead chubs, and speckled chubs). The Central Platte River also provides habitat for numerous other wildlife species in decline or of significant importance including western prairie fringed orchids, monarch butterflies, regal fritillary butterflies, northern river otters, and numerous other wildlife species.

The Central Platte River hosts one of the greatest wildlife migration spectacles in the world. In late February through early April

approximately 500,000 sandhill cranes or 80% of the world's population converge on the Central Platte River for their annual spring staging event. Each bird spends approximately 2-3 weeks along the river resting, feeding and preparing for the long journey north to the breeding grounds. The Central Platte River is the spring staging area for sandhill cranes and is of ultimate importance to their ability to put on weight and successfully nest and reproduce young.

Grassland nesting birds, and other native fish and wildlife species have declined substantially throughout the central Platte River Basin during the last 100 years. The Platte River corridor once consisted of riverine and palustrine wetlands and associated grasslands located within the active floodplain adjacent to the channels of the river. The sparsely treed riparian areas along the river have gradually become forests dominated by cottonwoods, eastern redcedars, Russian olives and other unwanted woody species. An increase in scrub-shrub and forested areas has occurred at the expense of active open

riverine channel habitat, riverine wetland habitat (e.g., backwaters, sloughs, and side channels), and adjacent wet meadow/grassland habitat. A large percentage of open riverine/sandbar habitat (60-80%) and wet meadow habitat (55%) have been lost in the Central Platte River due to agricultural conversion, development, and hydrologic changes (Sidle et al. 1989). The remaining wet meadows and native grasslands are of diminished quality. Other threats to the habitats associated with the river include invasion of exotic species (e.g., phragmites, purple loosestrife, eastern redcedar, smooth brome, reed canary grass), gravel mining, and residential and commercial development. The NE PFW program and its Platte River partners have actively worked on over 200 projects throughout this focus area to restore and maintain riverine habitat for the target species. Primary partners in the Central Platte River Focus Area include the Crane Trust, Audubon's Rowe Sanctuary, NGPC, DU, TNC, NET, PPRI and numerous private landowners located along the central Platte River.

### **Implementation Strategy For Habitat Objectives**

The NE PFW program will continue to work with landowners along the Central Platte River and with key Platte River partners to restore, enhance, and manage the ecological functions and values of riverine/grassland habitat throughout this focus area. Specific habitat actions include: (1) restoring riverine backwater, wetland slough, and sandbar habitats; (2) clearing and controlling undesirable woody and other invasive vegetation from riverine and grassland habitats; (3) restoring and managing native wet meadow and grassland habitat by establishing diverse stands of native prairie plants; and (4) maintaining active riverine habitats by disking and mowing riverine channels, sandbars, and islands.

### **Implementation Strategy For Partnership Objectives**

The PFW program will focus its efforts on developing new partnerships to restore riverine habitat throughout the Central Platte River. New partners will

primarily be landowners who are interested in restoring and maintaining riverine habitats for Federal Trust Species. NE PFW staff will work closely with the Crane Trust, NGPC, DU, Audubon, TNC, PPRI, and other groups and organizations to assist in the restoration of riverine habitats in a strategic manner. PFW will also provide technical assistance in the delivery of USDA conservation programs throughout the Platte River corridor. The program will continue to work with its Platte River partners to secure a high proportion of non-PFW program funding sources for Central Platte River habitat restoration projects.

### **Habitat/Species Models And Decision Support Tools**

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species along the Central Platte River.

- Cooperative Whooping Crane Tracking Project GIS
- Whooping Crane Habitat Suitability Index Models
- Wet Meadow/Grassland GIS Land Coverage Databases
- Invasive Species GIS Land Coverage Database
- Central Platte River GIS Vegetative Mapping Database
- Sandhill Crane Surveys and Distribution Maps
- Least Tern and Piping Plover Surveys



*Riverine slough restoration project completed along the central Platte River in Merrick County, Nebraska. Photo by Kirk Schroeder, USFWS.*

### Central Platte River Focus Area Focal Species

- Northern pintail
- Sandhill crane
- Whooping crane (Endangered)
- Least tern (Endangered)
- Piping plover (Threatened)
- Lesser yellowlegs
- Upland sandpiper
- Henslow's sparrow
- Grasshopper sparrow
- Plains topminnow
- Cylindrical papershell mussel
- Monarch butterfly
- Regal fritillary butterfly

### Central Platte River Focus Area Habitat Targets

- Riverine Roosting Habitat Restoration/Enhancement: 5 miles
- Riverine Slough and Backwater Habitat Restoration: 5 miles
- Upland Grassland Restoration/Enhancement: 1,000 acres
- Wetland/Wet Meadow Restoration/Enhancement: 1,000 acres

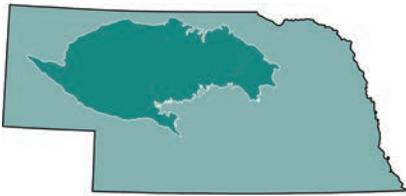
### Central Platte River Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 150
- Technical Assistance: 250 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

### Central Platte River Focus Area Related Plans

- The Nebraska Natural Legacy Project
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Partners in Flight – North American Landbird Conservation Plan
- Ducks Unlimited Nebraska Conservation Plan
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Habitat Management, Restoration, and Acquisition Plan for the Big Bend Reach of the Platte River in Central Nebraska
- Platte River Recovery Implementation Program
- Whooping Crane Recovery Plan
- Great Lakes and Northern Great Plains Piping Plover Recovery Plan
- Recovery Plan for the Interior Population of the Least Tern
- Western Prairie Fringed Orchid Recovery Plan
- Platte/Kansas Rivers Ecosystem Plan
- Nebraska Wetlands Priority Plan
- 2016 Monarch Conservation Implementation Plan

### Sandhills Focus Area



The Sandhills of Nebraska is a 19,600 square-mile sand dune formation covered by native grasses in north-central Nebraska. The Sandhills represents the largest contiguous tract of grassland remaining in the United States and the largest stabilized sand dune area in the Western Hemisphere. The hydrology associated with these sand dunes has created a vast groundwater reservoir and 1.3 million acres of wetlands. The Sandhills as a whole contain over 1.1 million acres of palustrine and riverine wetlands, 85,000 acres of lacustrine wetlands, and over 11.5 million acres of grasslands. This high

wetland to grassland ratio (1:10 acres) provides excellent habitat for resident and migratory wildlife and the abundance of wetlands and grasslands makes the area important to both wildlife and ranching. Ranching is the primary economic use, with approximately 94% of the land in private ownership.

The Sandhills landscape contains abundant lakes, wetlands, wet meadows, and spring fed streams that are surrounded by a sea of grassland. The Sandhills are identified in the North American Waterfowl Management Plan as a waterfowl habitat area of major concern in North American and are considered to be the best duck production area south of the Prairie Pothole Region. The majority of



Nebraska PFW stream habitat restoration project located in the Sandhills Focus Area. The Sandhills are made up of vast native grasslands that support viable agriculture and wildlife. USFWS Photo.



*Sandhills Task Force Board and support staff during a strategic planning meeting held in Theedford, Nebraska. Photo by Kyle Graham, USFWS.*

the High Plains flock of Trumpeter swans nest on larger lakes found in the Sandhills and the wet meadows and associated grasslands provide vital nesting habitat for an estimated 4 million grassland birds (RWB JV 2013), including large populations of sharp-tailed grouse and greater prairie-chickens. The Sandhills Focus Area encompasses numerous biologically unique landscapes (e.g., Cherry County Wetlands, Sandhills Alkaline Lakes, Dismal Headwaters, Elkhorn Headwaters, Upper Loup Rivers and Upper Niobrara River) identified in Nebraska's comprehensive wildlife action plan. In 1991, a sixteen member task force was formed known as the Sandhills Task Force (STF). This group is made up of local Sandhills ranchers and representatives from the Service, NGPC, NRCS, Nebraska Cattlemen, Nebraska Land Trust, and University of Nebraska Lincoln Extension. The goal of the STF is to work cooperatively with state and federal conservation agencies, non-government organizations, and Sandhills landowners to enhance the natural resources in the Sandhills by supporting wildlife and profitable ranching.

The Sandhills remain as one of the best examples of a functioning prairie landscape in the country. Approximately 700 native plant species have been documented,

including several at-risk species such as blowout penstemon, western prairie-fringed orchid, marsh marigold, and bog bean. The area provides habitat for 55 species of mammals, 75 species of fish, and 27 species of amphibians and reptiles. Over 300 species of resident and migratory birds have been documented, including large numbers of waterfowl, shorebirds, wading birds, and other wetland and grassland dependent species. The Sandhills are considered to be an important breeding site for many native nesting birds including: sharp-tailed grouse, greater prairie-chicken, long-billed curlew, upland sandpiper, vesper sparrow, lark bunting, grasshopper sparrow, western meadowlark, American avocet, trumpeter swan, black tern, ferruginous hawk, and numerous species of ducks. Some of the major threats to the Sandhills include wetland/wet meadow degradation, aquatic invasive species, and eastern redcedar encroachment. The wetland/wet meadow degradation is caused by small surface drains created decades ago (to facilitate additional haying acres) that have eroded to large ditches and have negatively affected hydrologic function. These larger, incised ditches ultimately lower the groundwater table, affecting the presence of wetland and grassland plants associated with a higher groundwater table. This lower

water table and lack of wet meadow habitat significantly impacts focal species such as the long-billed curlew, trumpeter swan, and whooping crane along with other wetland dependent species. Aquatic invasive species, like the common carp, also negatively impact wetland habitats. When large numbers of carp occur in wetlands and lakes, habitat and water quality are negatively affected resulting in a reduction in use by waterfowl, shorebirds, and other wetland dependent birds and native aquatic species.

The encroachment of eastern redcedar is a growing threat to the health of Sandhills grassland nesting birds and the ranching community. Naturally occurring grassland fires were a common ecological force that shaped and preserved Sandhills grasslands and limited the spread of invasive species like cedars. The spread of cedars has a spiraling effect. As cedar increases, more bare soil occurs, encouraging more tree germination. From a ranching standpoint, the encroachment of cedar leads to loss in profitability to the rancher due to the lack of available grasses leading to lower stocking rates and shorter grazing periods. If grazing pressure remains the same, it too reduces plant composition, bares more soil, and encourages more tree growth. Mechanically

removing cedar and integrating prescribed management will allow native grasslands to become re-established and continue to support profitable ranching.

The NE PFW program and its Sandhills partners have worked with approximately 200 landowners throughout this focus area to restore and enhance wetland, riparian, stream, and native grassland habitats. Major partners in this focus area include numerous Sandhill ranchers, STF, NGPC, NET, NRCS, National Fish and Wildlife Foundation (NFWF), local Natural Resource Districts, Nebraska Cattlemen, Weed Management Areas, Nebraska Land Trust, and TNC.

### **Implementation Strategy For Habitat Objectives**

The STF has been a key partner in the successful delivery of the PFW program throughout the focus area over the past 20 years. PFW program staff will continue to cooperatively work with the STF and its diverse group of partners to work with ranchers to restore and enhance wetland, lake, riparian, stream, and native grassland

habitat throughout this focus area. Specific habitat actions include developing and implementing grazing management plans and wetland, riparian, and stream restorations projects throughout high priority areas. These projects will be conducted to enhance the wetland-grassland ecosystem in a way that sustains wildlife and plant diversity.

### **Implementation Strategy For Partnership Objectives**

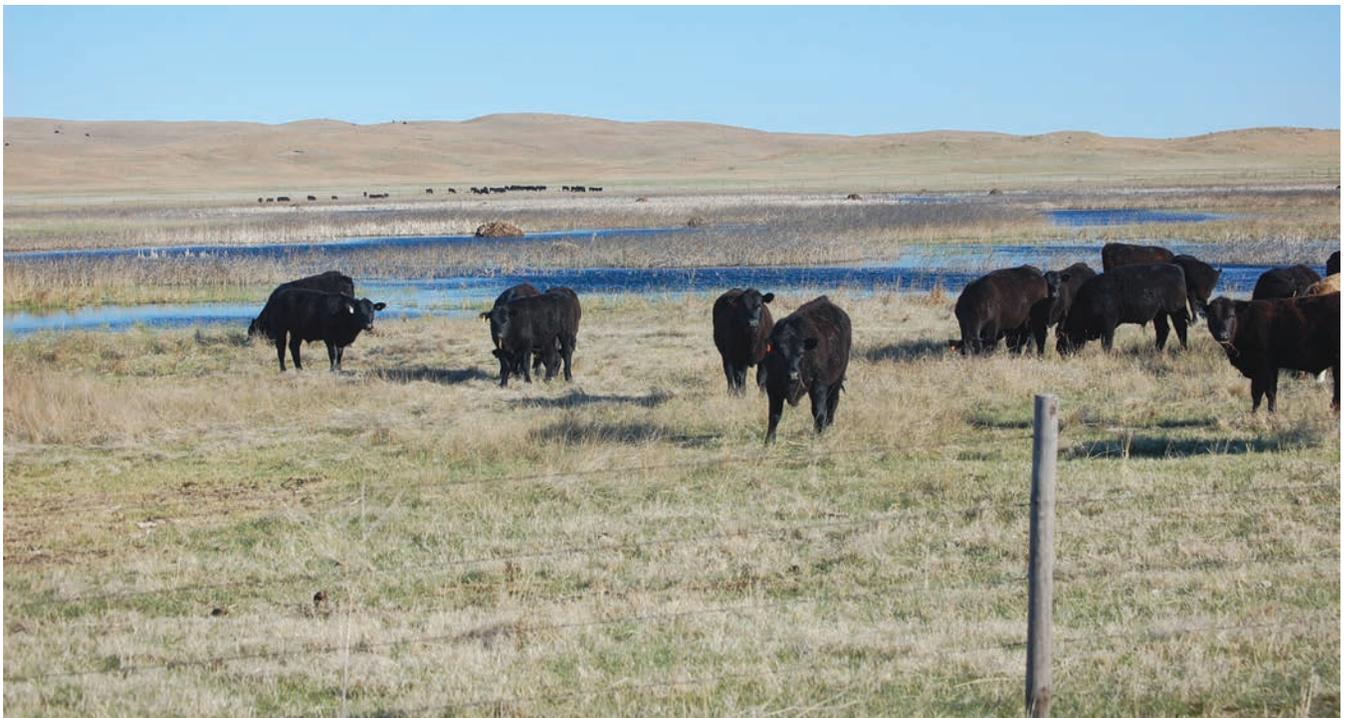
NE PFW will focus its efforts on maintaining existing partnerships and developing new partnerships to enhance and restore wetland and grassland habitat throughout the area. New partners will primarily be ranchers and other private landowners who are interested in enhancing this unique ecosystem for both Federal Trust Species and the local ranching community. Program staff will continue to work closely with the STF, NGPC, and other groups and organizations to assist in the restoration of wetland, upland, and stream habitats. In addition, the program will continue to provide technical assistance in the delivery of NRCS conservation programs. The staff will work

with partners to secure a high proportion of non-PFW program funding sources for habitat restoration and enhancement projects.

### **Habitat/Species Models And Decision Support Tools**

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Sandhills.

- Trumpeter Swan Landscape – Level Habitat Use Model for the Sandhills
- Prairie Grouse Habitat Use Models
- American Burying Beetle Habitat Use Model – Sandhills
- Long Billed Curlew Habitat Suitability Model
- Cooperative Whooping Crane Tracking Project GIS
- Sandhills Wetland Complex Model
- Wet Meadow/Grassland GIS Land Coverage Databases
- Eastern Redcedar GIS Land Coverage Database



*Sandhills wetland and grassland habitat project located in Cherry County, Nebraska. Photo by Kenny Dinan, USFWS.*

### Sandhills Focal Species

- Trumpeter swan
- Northern pintail
- Long-billed curlew
- Greater prairie-chicken
- American avocet
- Upland sandpiper
- Grasshopper sparrow
- Whooping crane (Endangered)
- American burying beetle (Endangered)
- Western prairie fringed orchid (Threatened)
- Blowout penstemon (Endangered)
- Regal fritillary butterfly

### Sandhills Focus Area Habitat Targets

- Stream/Riparian Habitat Restoration/Enhancement: 15 miles
- Grassland Habitat Restoration/Enhancement: 20,000 acres
- Wetland/Wet Meadow/Lake Restoration/Enhancement: 2,500 acres

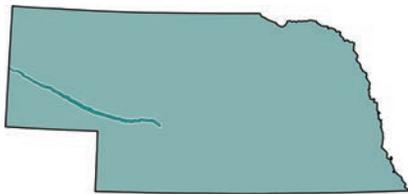
### Sandhills Focus Area Partnership Targets

- Private Landowner Agreements: 30 landowners
- Partnerships: 180
- Technical Assistance: 450 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

### Sandhills Focus Area Related Plans

- Sandhills Management Plan
- Nebraska Natural Legacy Project
- North American Waterfowl Management Plan
- Ducks Unlimited Nebraska Conservation Plan
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Platte/Kansas Rivers Ecosystem Plan
- Partners in Flight – North American Landbird Conservation Plan
- Nebraska Wetlands Priority Plan
- RWBJV Implementation Plan

### North Platte River Focus Area



The North Platte River is the lifeblood for a large portion of western Nebraska. Dozens of communities, thousands of farmers, ranchers, and recreationists, and millions of individual plants and animals depend on and utilize the river and its associated habitats. Historically, this river system was a shallow, wide, braided stream that was relatively devoid of trees. Floods, fires, and large ungulate grazing maintained the habitats associated with the river. These habitat types include wet meadows, freshwater and alkaline wetlands, river channels, backwater sloughs, oxbows, sandbars, riverine islands and other riparian habitats. These habitat communities host a diverse assemblage of wildlife and plant species. Over 225 migratory bird species including three federally listed species (whooping crane,

least tern, piping plover), an estimated 2 million ducks, 500,000 geese, and over 60,000 sandhill cranes use the North Platte River for breeding, wintering, and spring and fall migration stopover habitat. Hundreds of invertebrate and vertebrate species including everything from tiger beetles, dragonflies, and butterflies to the state listed northern river otter, deer, turkey, and quail also call these riverine habitats home.

The wetlands and uplands associated with the North Platte River have become increasingly degraded over time, making them of reduced quality and availability to wildlife species and private landowners alike. Degrading factors include drainage of wetlands and conversion to alternate land uses; depletion of flows due to upstream impoundments, drought, flow diversion, and groundwater decline; loss of periodic flooding events; and the establishment of invasive species. River channels and adjacent wetlands have narrowed and become heavily dominated by invasive and undesirable woody and herbaceous vegetation. Wet meadows, riparian grasslands,

river islands, and sandbars have also become heavily wooded or infested with invasive herbaceous species. The overabundance of woody vegetation and loss of native plant communities has limited the ability of private landowners to effectively graze livestock or hay grasslands, both of which are vitally important for land and habitat management.

Both private landowners and conservation partners are actively engaged in numerous conservation activities to restore these important habitats. Partners including (but not limited to) DU, NGPC, NET, PRBE and NRCS, in conjunction with the PFW program, are actively engaged with private landowners for restoration activities including invasive and undesirable woody species removal, backwater and riverine slough restoration, and native prairie establishment. Over 150 habitat projects have occurred within the focus area. The North Platte River falls into two biologically unique landscapes as identified in the Nebraska Legacy Plan (North Platte River Wetlands, Platte Confluence).



*Riverine slough restoration project completed along the North Platte River in Lincoln County, Nebraska.  
Photo by Emily Munter, USFWS.*

### **Implementation Strategy For Habitat Objectives**

The NE PFW program will work with landowners and its North Platte River conservation partners to restore and enhance riverine/grassland habitat. Specific habitat actions include: (1) clearing Russian olive, eastern redcedar, phragmites, and other undesirable and invasive woody and herbaceous vegetation from riverine habitats; (2) restoring backwater and riverine sloughs, and other wetlands through mechanical removal of silt, sediment, and invasive vegetation; and (3) restoring floodplain wet meadow/grasslands by clearing invasive vegetation, renovating wetlands, and developing haying and grazing management systems to re-establish and maintain diverse stands of native prairie plants.

### **Implementation Strategy For Partnership Objectives**

A primary emphasis of the program will be to ensure that existing successful partnerships

are maintained and that new partnerships to restore riverine wetland and upland habitat throughout this focus area are formed. New partners will primarily be North Platte River landowners who are interested in restoring and maintaining riverine habitats for Federal Trust Species. PFW program staff will continue to work closely with partners to assist in the delivery of habitat projects on private lands throughout the North Platte River valley. PFW program staff will continue to provide a significant level of technical assistance to NRCS in the delivery of ACEP – WRE and EQIP in this focus area. The program will continue to secure a high proportion of non-PFW funding sources for North Platte riverine wetland and upland habitat restoration projects.

### **Habitat/Species Models And Decision Support Tools**

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat

restoration projects for the target species throughout the North Platte River valley.

- Wet Meadow/Grassland GIS Land Coverage Databases
- North Platte River GIS Vegetative Mapping Database
- Trumpeter Swan Landscape – Level Habitat Use Model
- Prairie Grouse Habitat Use Models
- Eastern Redcedar GIS Land Coverage Database
- Playa Lakes Joint Venture HABS Database
- Species for Management Database
- Integrated Monitoring in Bird Conservation Region Program
- Cooperative Whooping Crane Tracking Project GIS
- Sandhill Crane and Waterfowl Surveys and Habitat Use Decision Support System
- Least Tern and Piping Plover Surveys

### North Platte River Focus Area Focal Species

- Mallard
- Northern pintail
- Trumpeter swan
- Sandhill crane
- Whooping crane (Endangered)
- Upland sandpiper
- Grasshopper sparrow
- Monarch butterfly
- Regal fritillary
- Plains topminnow

### North Platte River Focus Area Habitat Targets

- Riverine Slough and Backwater Habitat Restoration: 10 miles
- Riverine In-Channel Habitat Restoration/Enhancement: 10 miles
- Wetland/Wet Meadow Restoration/Enhancement: 1,500 acres
- Upland Restoration/Enhancement: 500 acres

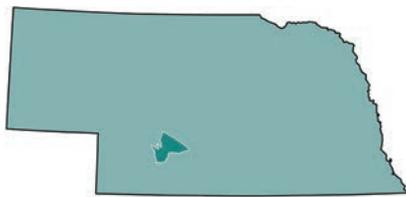
### North Platte River Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 150
- Technical Assistance: 375 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

### North Platte River Focus Area Related Plans

- Nebraska Natural Legacy Project
- Ducks Unlimited Nebraska Conservation Plan
- Ecoregion-Based Conservation in the Central Shortgrass Prairie
- Partners in Flight – North American Landbird Conservation Plan
- Platte/Kansas Rivers Ecosystem Plan
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Nebraska Wetlands Priority Plan
- Crane Status Survey and Conservation Action Plan
- Playa Lakes Joint Venture Area Implementation Plan (BCR 18)
- Landscape Conservation Cooperatives Network Strategic Plan

### Loess Canyons Focus Area



The Loess Canyons Focus Area of southwest Nebraska is an approximately 485,000-acre landscape comprised of rolling hills of mixed-grass prairie dissected by steep canyons. Lying along the south side of the Platte River Valley, the Loess Canyons are named after the loess soils found in the area, and the predominant land use is livestock grazing with interspersed small crop fields and hay meadows. The prairies of the Loess Canyons have been severely degraded by a growing infestation of invasive tree species, primarily eastern redcedar. In 2010, an estimated 36% of the landscape had been lost to cedar forest, and further estimations range from 3% to 8% of the grasslands of the landscape succumbing to cedar encroachment annually. An additional degrading factor is the presence of exotic cool-season

grasses, including Downy brome, Japanese brome, smooth brome, and Kentucky bluegrass. Despite the dramatic landscape changes, the Loess Canyons provide important habitat for hundreds of species of migratory and resident wildlife, including providing habitat for the largest known population of the federally listed American burying beetle. Other species include the western meadowlark, grasshopper sparrow, northern bobwhite, greater prairie-chicken, monarch butterfly, and Rocky Mountain elk.

Based on input received from our stakeholders from the Loess Canyons area we expanded the boundary of this focus area to the south and west. The landscape within the expansion area is topographically similar and includes rolling to steep hills and canyons predominated by loess mixed-grass prairie. The landscape is primarily rangeland with interspersed dryland and irrigated cropland. The habitat threats and stressors are consistent with the original focus area. Expanding efforts into this area at this time provide a unique opportunity to proactively approach redcedar

removal before densities (and associated treatment costs) increase. Benefiting species would be similar to the original focus area and include greater prairie-chicken, Swainson's hawk, Bell's vireo, grasshopper sparrow, western meadowlark, monarch butterfly, northern bobwhite, and numerous other grassland dependent Federal Trust Species.

Successful partnerships within the Loess Canyons have resulted in the PFW program working with over 80 landowners to restore native prairie for both sustainable ranching and Federal Trust Species. Habitat actions include mechanical removal of invasive trees, establishing firebreaks for prescribed burning activities, and developing grazing management plans to combat exotic cool-season grasses. A particularly important effort, prescribed burning for initial eastern redcedar removal and for subsequent grassland management, is being led by a unique group of landowners called the Loess Canyons Rangeland Alliance. This coalition of landowners successfully burns thousands of acres annually and has been recognized nationally for their accomplishments.



*The Loess Canyons Prairie landscape is being invaded by eastern redcedar. Picture of PFW Loess Canyon project before restoration, Lincoln, County, Nebraska. Photo by Joe Milmoie, USFWS.*

Additional partners within the focus area include the NGPC, PF, Quail Forever (QF), NRCS, Twin Platte NRD, NET, Rocky Mountain Elk Foundation (RMEF), National Wild Turkey Federation (NWTf), and the newly establishing Upper Medicine Creek Prescribed Burn Association. The Loess Canyons is also identified as a biologically unique landscape in the Nebraska Legacy Plan.

### **Implementation Strategy For Habitat Objectives**

The NE PFW program will continue to work with its Loess Canyons partners to control invasive species, improve native prairie vegetative and structural diversity, and promote improvement in overall biodiversity by restoring and enhancing important habitats throughout this area. Specific habitat actions include: (1) clearing eastern redcedar and other undesirable invasive vegetation from grassland habitats; (2) implementing planned grazing systems to reduce exotic cool-season grasses and improve

native plant diversity and vigor; and (3) maintaining restored areas through the use of prescribed management.

### **Implementation Strategy For Partnership Objectives**

NE PFW program staff will continue to work with its partners to develop and implement habitat restoration projects on private lands throughout this area. New partners will primarily be landowners who value grassland habitats. Along with financial assistance, the program will provide technical assistance to our conservation partners in their efforts to deliver habitat projects throughout this focus area. A primary emphasis will be placed on assisting private landowners with removing invasive species and restoring grassland habitats for Federal Trust Species. The PFW program will continue to provide technical assistance towards the implementation of EQIP and CSP within the focus area. The program will continue to seek a high proportion of non-PFW program

dollars for restoration projects.

### **Habitat/Species Models And Decision Support Tools**

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Loess Canyons.

- Loess Canyons GIS Vegetative Mapping Database
- Prairie Grouse Habitat Use Models
- Eastern Redcedar GIS Land Coverage Database
- Nebraska Bird Partnership HABS Model/Databases
- American Burying Beetle Habitat Use Model – Loess Canyons
- Integrated Monitoring in Bird Conservation Regions Program
- North American Breeding Bird Survey Database



*Mechanical removal of eastern redcedar on a ranch in the Loess Canyons Focus Area in Lincoln County, Nebraska. USFWS photo.*

### Loess Canyons Focal Species

- American burying beetle (Endangered)
- Greater prairie-chicken
- Swainson’s hawk
- Northern harrier
- Upland sandpiper
- Bell’s vireo
- Grasshopper sparrow
- Monarch butterfly
- Regal fritillary butterfly

### Loess Canyons Focus Area Habitat Targets

- Upland Restoration/Enhancement: 10,000 acres

### Loess Canyons Focus Area Partnership Targets

- Private Landowner Agreements: 25 landowners
- Partnerships: 75
- Technical Assistance: 250 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

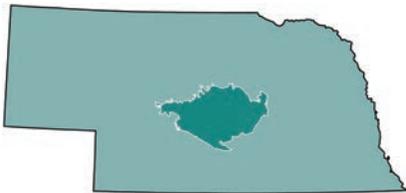
### Loess Canyons Focus Area Related Plans

- Nebraska Natural Legacy Project
- Conservation Plan for the Loess Canyons Biologically Unique Landscape
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Partners in Flight – North American Landbird Conservation Plan
- Terrestrial Natural Communities of Nebraska
- The Recovery Plan for the American Burying Beetle



*Central Loess Hill/Loup Rivers landscape with a Nebraska PFW program invasive species control project ongoing in the foreground. Photo by Kirk Schroeder, USFWS.*

### Central Loess Hills and Loup Rivers Focus Area



The Central Loess Hills and Loup Rivers Focus Area is located in the mixed-grass prairie ecoregion of Nebraska. This area extends from the Sandhills south to the Platte River valley. The Loess Hills and Lower Loup Rivers are identified as biologically unique landscapes identified in Nebraska's Legacy Plan and contain significant biological resources of federal and state concern.

The Central Loess Hills consist of rolling to steep loess hills dissected by the valleys of the Loup Rivers. Portions of the Central Loess Hills have been heavily invaded by eastern redcedar and

exotic cool-season grasses. The Central Loess Hills landscape provides important habitat for hundreds of species of plants, state and federally listed species, grassland nesting birds, migratory waterbirds, insects, reptiles, amphibians and mammals. Playa wetlands are scattered throughout the flat tablelands of the Central Loess Hills and are used by whooping cranes and numerous species of waterbirds during migration. The Central Table Playa wetland complex includes a series of shallow playa wetlands located in portions of Custer, Dawson, Lincoln, and Logan counties. The grasslands associated with this area are significant habitat for monarch and regal fritillary butterflies and contain one of the largest populations of greater prairie-chickens in the state of Nebraska.

The Loup Rivers Focus Area includes reaches of the Middle Loup, North Loup and South Loup rivers. The Loup rivers originate

from springs within the Sandhills and maintain a fairly constant year-round flow. The Loup Rivers contain important habitats for a diverse group of wildlife species. Wet meadows, palustrine/riverine wetlands, river channels, backwater sloughs, oxbows, and sandbars provide important habitats for migrating, wintering, and breeding waterbirds; grassland nesting birds; federal and state threatened and endangered species (e.g., whooping cranes, least terns, piping plovers, western prairie fringed orchids, white lady's slipper); and numerous other wetland/riverine-dependent species. Riverine wetlands located throughout the valleys also provide important habitat for numerous species of other plants, amphibians, reptiles, and mammals including the state listed northern river otter. The most extensive populations of small white lady's slippers in Nebraska are found within the wet meadows associated with the Loup River system.

The overall goal for this focus area is to work with private landowners to restore and enhance grassland and wetland habitats for Federal Trust Species found throughout the Loess Hills, Central Table Playas, and the Lower Loup rivers. Primary partners in the Central Loess Hills and Loup Rivers Focus Area include numerous private landowners, NGPC, PF, QF, DU, NRCS, NWTF, RWBJV and the NET.

### Implementation Strategy For Habitat Objectives

The NE PFW program will work with its partners to control invasive species, improve grassland conditions, and to promote biodiversity by restoring and enhancing important habitats throughout this area. Specific habitat actions include: (1) clearing eastern redcedar and other undesirable invasive vegetation from grassland habitats; (2) implementing planned grazing systems to reduce exotic cool-season grasses and improve native plant diversity and vigor; and (3) restoring hydrology to playa and riverine wetlands.

### Implementation Strategy For Partnership Objectives

NE PFW program staff will continue to work with its partners to develop and implement habitat restoration projects on private lands throughout this area. New partners will primarily be landowners who value grassland, wetland, and riparian habitats. Along with financial assistance, the PFW program will provide technical assistance to our other conservation partners in their efforts to deliver habitat projects throughout this focus area. A primary emphasis will be placed on assisting private landowners with removing invasive species and restoring grassland, wetland, and riverine habitats. A high proportion of non-PFW program funding sources will be secured for Central Loess Hills and Loup River Systems Focus Area habitat restoration projects

### Habitat/Species Models And Decision Support Tools

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Loess Hills and Loup Rivers Focus Area.

- Prairie Grouse Habitat Use Models
- Whooping Crane Habitat Use Models
- Cooperative Whooping Crane Tracking Project GIS
- Central Table Playas Wetland/Waterfowl Model
- Wet Meadow/Grassland GIS Land Coverage Databases
- Eastern Redcedar GIS Land Coverage Database
- Nebraska Bird Partnership HABS Model/Databases

### Central Loess Hills and Loup Rivers Focal Species

- American wigeon
- Northern pintail
- Greater prairie-chicken
- Whooping crane (Endangered)
- Least terns (Endangered)
- Western prairie fringed orchid (Threatened)
- Upland sandpiper
- Grasshopper sparrow
- Plains topminnow
- Monarch butterfly
- Regal fritillary butterfly

### Central Loess Hills and Loup Rivers Focus Area Five-year Targets

- Upland Grassland Restoration/Enhancement: 2,500 acres
- Wetland/Wet Meadow Restoration/Enhancement: 500 acres
- Riverine Habitat Restoration (sloughs and backwaters): 3 miles

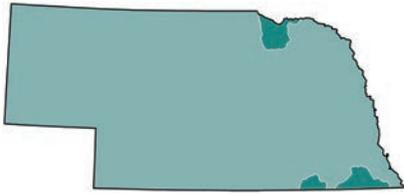
### Central Loess Hills and Loup Rivers Focus Area Partnership Targets

- Private Landowner Agreements: 15
- Partnerships: 90
- Technical Assistance: 150 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

### Central Loess Hills and Loup Rivers Focus Area Related Plans

- Nebraska Natural Legacy Project
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Partners in Flight – North American Landbird Conservation Plan
- Terrestrial Natural Communities of Nebraska
- Ducks Unlimited Nebraska Conservation Plan
- 2016 Monarch Conservation Implementation Plan

## Eastern Tallgrass Prairie Focus Area



The Tallgrass Prairie Ecoregion covers the eastern fourth of Nebraska; however, only approximately two percent of Nebraska's tall-grass prairies remain, with most remnant prairies being less than eighty acres in size. Threats of fragmentation, lack of fire, conversion to cropland, and invasive tree encroachment are major concerns for Nebraska's eastern tallgrass prairies. The remaining prairies are being severely degraded by a growing infestation of invasive tree species, primarily eastern redcedar. An additional degrading factor is the presence of exotic cool-season grasses, including smooth brome, and Kentucky bluegrass. Invasive tree removal, implementing planned grazing strategies, increasing the use of prescribed fire, and increasing monarch and other pollinator habitats are major conservation priorities for this area.

The NE PFW program's Eastern Tallgrass Prairie Focus Area includes three high priority biologically unique landscapes identified in Nebraska's Legacy Plan. This focus area includes the Sandstone Prairies, Southeast Prairies, and the Verdigre-Bazile Creek Watershed, all located in the Tallgrass Prairie Ecoregion of Nebraska. The Sandstone Prairies and Southeast Prairies include the bluffs and breaks along the Little Blue River and Rose Creek in Jefferson and Thayer counties and the rolling hills portions of Richardson, Pawnee, Johnson, and Gage counties. The Verdigre-Bazile Creek Watershed includes the watershed of the Verdigris and Bazile creeks in Cedar, Knox, Holt, and Antelope counties. The northern portion of this focus area also includes the Missouri River and its associated habitats. In



*View of a habitat restoration project within the Eastern Tallgrass Prairie Focus Area. Eastern redcedar and other invasive woody species were removed and a prescribed grazing and patch burning management plan were implemented. Photo by Kent Pfeiffer, Nebraska Game and Parks Commission/ Northern Prairies Land Trust.*

addition, this focus area includes the land that lies within the confluence of the Verdigre-Bazile, Lower Niobrara, and Missouri rivers and includes a portion of eastern Boyd County.

This focus area provides important habitat for hundreds of species of migratory and resident wildlife, including Henslow's sparrow, eastern meadowlark, grasshopper sparrow, northern bobwhite quail, greater prairie-chicken, and the monarch and regal fritillary butterfly. This focus area is also located within the Service monarch butterfly national conservation priority area. Primary partners in the Eastern Tallgrass Prairie Conservation Focus Area include the NGPC, NPLT, NET, NRCS, Audubon Nebraska, and numerous private landowners located throughout the Eastern Tallgrass Prairie Focus Area.

### Implementation Strategy For Habitat Objectives

The NE PFW program will continue to work with its partners to control invasive species, restore and improve native grassland conditions, and to promote biodiversity by restoring and enhancing important habitats throughout this focus area.

Specific habitat actions include: (1) removing invasive species (e.g., eastern redcedar, smooth brome, Kentucky bluegrass); (2) facilitating landscape scale increases in heterogeneity by implementing innovative management strategies made possible by the removal of trees; (3) improve habitat conditions on large tracts of intact grassland by reducing fragmentation; (4) demonstrating sustainable management of grasslands and associated native woodlands; and (5) restoring native plant communities by improving native plant diversity and vigor. Additional opportunities may arise to work with our partners to restore riverine backwater, wetland slough, and other riverine (e.g., river channels, sandbars, islands, riparian) and palustrine wetland habitats along the lower Niobrara and Missouri Rivers.

### Implementation Strategy For Partnership Objectives

NE PFW staff will work with its partners to develop and implement habitat restoration projects on private lands throughout this focus area. New partners will primarily be landowners located throughout this landscape who are interested in restoring and maintaining native grassland habitats for Federal

Trust Species. Along with financial assistance, PFW will also provide technical assistance for habitat projects. Emphasis will be placed on assisting private landowners with removing invasive species and restoring grassland and wetland habitats. A high proportion of non-PFW funding sources will be secured for habitat restoration projects throughout this focus area.

### Eastern Tallgrass Prairie Focus Area Focal Species

- Greater prairie-chicken
- Upland sandpiper
- Grasshopper sparrow
- Henslow’s sparrow
- Monarch butterfly
- Regal fritillary butterfly
- Western prairie fringed orchid (Threatened)

### Habitat/Species Models And Decision Support Tools

Following is a list of models/ GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Eastern Tallgrass Prairie Focus Area.

- Greater Prairie-Chicken Habitat Use Models
- Grassland/Wet Meadow GIS Land Coverage Databases
- Eastern Redcedar GIS Land Coverage Database
- Invasive Species GIS Land Coverage Database
- Massasauga Habitat Use Data
- Nebraska Bird Partnership HABS Model/Databases

### Eastern Tallgrass Prairie Focus Area Habitat Targets

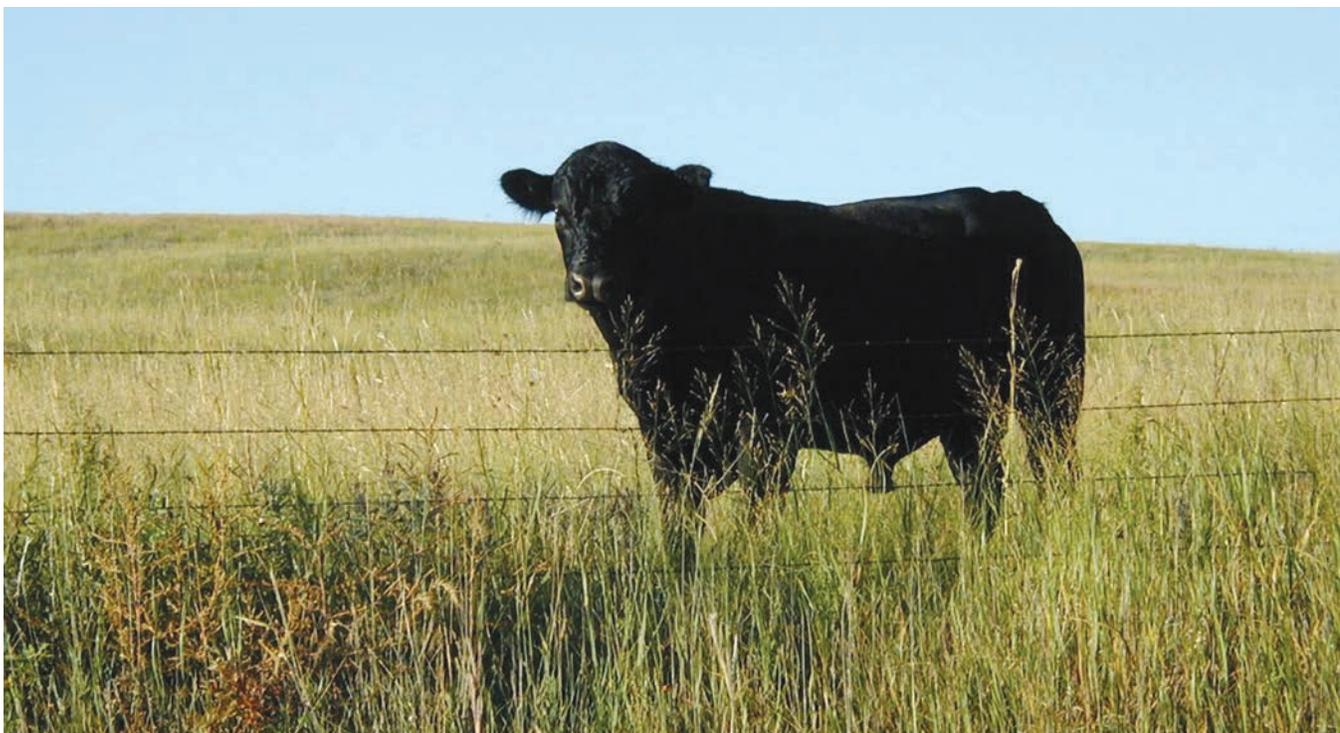
- Upland Grassland Restoration/Enhancement: 7,500 acres

### Eastern Tallgrass Prairie Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 75
- Technical Assistance: 125 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

### Eastern Tallgrass Prairie Focus Area Related Plans

- Nebraska Natural Legacy Project
- Partners in Flight – North American Landbird Conservation Plan
- Terrestrial Natural Communities of Nebraska
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Conservation in a Highly Fragmented Landscape: the Central Tallgrass Prairie Ecoregional Conservation Plan
- 2016 Monarch Conservation Implementation Plan



*Native prairie restoration projects provide a win-win for cattle producers and wildlife conservationists. USFWS Photo.*

# Nebraska Statewide Goals



## Improve Information Sharing and Communication

Effective internal and external communication and collaboration continues to be critical to the success of the NE PFW program. An overarching objective of the program is to maintain and enhance communication and collaboration with our diverse group of internal and external partners. Information sharing and communication is an essential part of conservation and NE PFW program staff will continue to make efforts to increase awareness of the PFW program and the Service's mission, while informing the public of the importance of conserving species and habitats on private lands.

### Five-year Targets

- Actively participate in 50 landowner/watershed meetings, site visits, conferences and/or workshops.
  - Make 25 presentations at local, state, and national meetings, conferences, and workshops.
  - Conduct 75 field tours and site visits to habitat restoration projects throughout the state to exchange information regarding restoration techniques and funding opportunities.
- Participate in five congressional staff meetings regarding the NE PFW program.
  - Actively participate in the USDA NRCS technical committee, USDA conservation program sub-committees, and ACEP-WRE Program Bio-Engineering Teams.
  - Continue to coordinate with the NGPC to deliver habitat restoration projects on private lands throughout our conservation focus areas and meet annual with NGPC Partners Section staff.
  - Collaborate and coordinate with the Nebraska Ecological Services Field Office, Refuge offices located throughout Nebraska and the RWBJV Office.
  - Continue to improve communications with our partners by maintaining a strong presence in a wide variety of work groups and committees and participate with numerous Nebraska stakeholders in the development of strategic landscape planning efforts throughout Nebraska.
  - Conduct 10 events that connect children with nature (i.e. community outreach events, presentations, outdoor classrooms, 4-H, Scouts, BioBlitz, MONA Crane Days, Range Camps, etc.).



*Private Lands Partners Day conference hosted by the PFW program, Sandhills Task Force, and Partners for Conservation in North Platte, Nebraska, during September 2015. Photo by Kirk Schroeder, USFWS.*



Nebraska PFW program biologist, Emily Munter connecting children with nature during 2016 BioBlitz event held at Enders Reservoir in Chase County, Nebraska.

### Enhance Our Workforce

The NE PFW program fully funds five full-time private lands biologist (including the State Coordinator). PFW program private lands biologists are extremely dedicated to working with private landowners and our partners to restore Federal Trust Species on private lands. In order to maintain a high level of professionalism and to better accomplish the Service's goal of conserving fish, wildlife, plants and their habitats, NE PFW program staff will continue to participate in numerous training opportunities (e.g., formal training, workshops, seminars, conferences), to improve program operations (habitat restoration techniques, GIS, partnership development), and to improve career opportunities (research, evaluation, communication, policy). In addition, program staff will have an opportunity to spend time working with other program biologist outside of their primary areas of responsibility to share ideas, methods, and build support and understanding regarding what is occurring in other parts of the state, region, and country. The success of our efforts to meet our five-year habitat targets throughout Nebraska's conservation focus area is highly dependent on our ability to maintain a highly effective workforce and to provide both financial (dirtwork funds) and technical support (staffing) to our partners throughout our conservation focus areas.

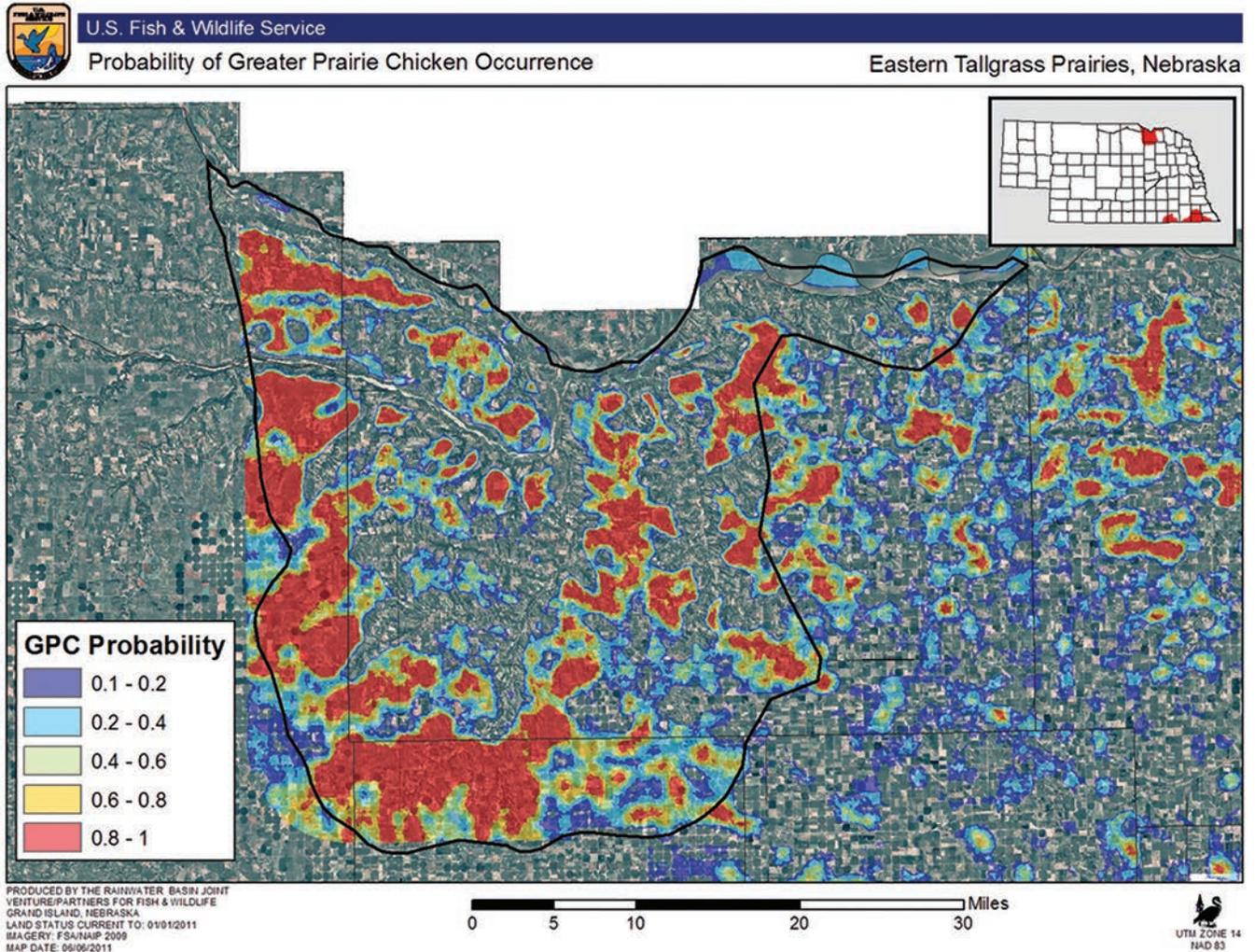
### Five-year Targets

- NE PFW program staff will attend a minimum of 40 hours of training annually. (e.g., formal training, workshops, seminars, conferences, work details, program meetings and conference calls, required training, etc.).

- NE PFW program staff will spend 40 hours/year in another PFW biologist's area (within or outside of Nebraska) to exchange techniques, ideas and address challenges.
- Maintain a highly-skilled and highly-motivated NE PFW program staff.
- Maintain close coordination, at least biweekly, among the NE PFW program state coordinator, assistant state coordinator and program staff.
- In accordance with the Service's Employee Performance Appraisal System, performance and special achievement awards will be used to recognize exceptional projects and achievements.



Nebraska PFW program conducted a field tour and wetland training session with PFW biologists, Pheasants Forever Farm Bill biologists, and NRCS staff along the central Platte River and Rainwater Basin Focus Areas. Photo by Kelsi Wehman, Pheasant Forever.



Maps and decision support tools such as this are being developed by the Rainwater Basin Joint Venture and others and provide valuable input when prioritizing landscapes within NE PFW focus areas. This map/model depicts the highest priority grasslands for greater prairie-chicken conservation in the Verdigre-Bazile Creek Watershed.

### Increase Accountability

The NE PFW program State Coordinator will continue to serve as project officer and fiduciary for all PFW program funds. These include Private Landowner Agreements, Cooperative Agreements, grants and other funding agreements. The State Coordinator will also continue to work closely with the Nebraska Ecological Services Field Office's Administrative Officer, Regional Office staff, and NE PFW program staff, to ensure that all appropriate procedures and guidelines are followed and necessary paperwork is completed for projects.

The NE PFW program will use many factors in prioritizing projects under this strategic plan. To ensure habitat restoration projects provide the greatest biological benefit for Federal Trust Species, NE PFW personnel will use habitat/species models, GIS land cover databases, and other decision support tools to help guide delivery of future conservation practices to benefit species of conservation concern throughout NE PFW focus areas.

### Five-year Targets

- PFW state coordinator will ensure that all project accomplishments are accurately entered into HabITS by established due date for each FY.
- NE PFW staff will continue to provide the state coordinator with accurate information regarding technical assistance efforts throughout their areas of responsibility for inclusion into HabITS.
- Implement NE PFW program Monitoring Plan using established Level I, II, and III monitoring protocols.
- Produce Nebraska section of Region 6 PFW program annual accomplish report.
- Provide summary updates to partners at annual coordination meetings/events.
- Work with RWBJV GIS office to identify needs regarding spatially explicit species and treatment prioritization decision support tools.



*Working closely with private landowners and key community-based partnerships will continue to be one of the most important ingredients to the success of the PFW program. Photo by Heather Johnson, USFWS.*

## External Factors

The ability of our staff to maintain strong and lucrative partnerships, throughout the state, in the face of difficult economic times is an external factor that may influence the NE PFW program's ability to meet our 5-year targets. In addition, the administrative burden and time associated with securing permits under Section 404 of the Clean Water Act to restore aquatic habitats for Federal Trust Species is an external factor which may influence the NE PFW program's ability to accomplish our 5-year targets for wetland, stream, and riverine habitats.

In addition, NE PFW program focus areas include both relatively intact landscapes with ranching as the primary land use, and highly modified landscapes that are primarily in row crop production. The economic and social pressures associated with a rapidly changing agricultural economy could have a significant impact on the program's ability to deliver effectively. Additional external factors that could influence program efforts include the accelerated rate of occurrence of invasive species and the placement and location of utility-scale wind turbines, oil pipelines, and associated infrastructure. Others include, potential changes to ecological processes associated with climate change and other environmental factors such as flooding and/or prolonged drought.

## Monitoring Plan

### Background

NE PFW has partnered with over 1,000 farmers, ranchers, and other private landowners to restore fish and wildlife habitat on their lands since the program began in Nebraska. The NE PFW program works with private landowners and its diverse group of partners to restore important habitats throughout high priority conservation focus areas for the benefit of Federal Trust Species (see map). Private Landowner Agreements (PLAs) are entered into with private landowners throughout high priority landscapes to restore wetland, upland, riparian, riverine, and stream habitats. Since 1989, the NE PFW program has worked with over 1,000 private landowners and our diverse group of partners to restore approximately 57,000 acres of wetland; 255,000 acres of upland grassland and native woodlands; 320 miles of riparian, stream, and riverine habitats; and over 150 miles of sloughs, backwaters, and side channel habitats for Federal Trust Species.

The Strategic Habitat Conservation (SHC) framework has been embraced by the NE PFW program and its partners to help guide planning and conservation delivery in Nebraska. The process has been applied more in some conservation focus areas where technical and financial resources have been secured through larger formalized partnerships (e.g., Joint

Ventures, Landscape Conservation Cooperatives, and Cooperative Recovery Initiatives). Commitment to this framework has allowed the conservation community to leverage funding and target conservation delivery to landscapes that have the greatest potential to provide desired habitat conditions for focal species. The SHC framework is being applied in Nebraska to guide conservation delivery to benefit Federal Trust Species, including migratory birds (e.g., waterfowl, shorebirds, wading birds), grassland nesting birds, and federally listed species. The four basic elements of the SHC framework include: (a) biological planning, (b) conservation design, (c) program delivery, and (d) monitoring and research. The program delivery element of the SHC framework has been and will continue to be the emphasis of the PFW program in Nebraska. Implementation of on-the-ground habitat restoration projects that restore and protect priority habitats to increase and maintain Federal Trust Species populations was the primary goal of the PFW program, outlined in the PFW Mountain-Prairie Region Strategic Plan 2012–2016. However, to increase accountability and to measure, assess, and report on effectiveness, efficiency, and fiscal integrity of our habitat conservation practices/projects/program, three different levels of monitoring have been identified/developed per National and Regional guidance. The purpose and goal of this monitoring plan is to contribute toward the successful delivery of habitat restoration projects throughout Nebraska and contribute towards meeting the goals, objectives, and targets for the NE PFW program as identified in the PFW Mountain-Prairie Region Strategic Plan 2017–2021.

### **Level I – Compliance Monitoring For On-The-Ground Practices**

To ensure that the on-the-ground habitat restoration practices identified within Private Landowner Agreements are completed and functioning a site visit will be conducted at the time of project completion (year 1). Photo points will be established before construction begins to document pre-project conditions and repeated during the Level I compliance monitoring site visit to document post-restoration conditions. Compliance monitoring will be conducted by the Service's private lands biologist in coordination with the landowner and other partners to the project. Site Visit Report form (Attachment 1) developed by the R6 PFW program will be filled out, recorded in HabITS, and filed in the official file. The initial Site Visit Report form will meet the requirements for Level I compliance monitoring as well as serve as the close-out report for the financial assistance award in PRISM. We will explore the potential of providing hand held electronic devices (e.g., tablets, I pads, etc.) to each PFW private lands biologist to use in the field, so that all compliance and biological monitoring forms can be filled out electronically and forwarded/downloaded to the State Coordinator or other assigned staff to upload into HabITS of other appropriate data bases.

### **Level II – Biological Monitoring At The Project Level**

To document the response of the flora and fauna to the practices that were implemented as a result of the implementation of the habitat project, Level II – project level biological monitoring will be completed during the initial compliance monitoring (year 1) and repeated at least once between years 3 and 6 and again between years 8 and 10. During the site visits the project will be evaluated to determine if the vegetative composition and fish and wildlife use of the project is meeting anticipated goals. Photos will be taken from established photo points to document changes in project conditions over time. If funding is available, time lapse camera systems will be installed on a minimum of two projects per Focus Area to monitor both vegetative changes and wildlife use of the project throughout the year and over multiple years. Cameras will be set to automatically take pictures at one hour intervals, every day, 365 days a year (frequency and duration could vary depending on project). A Level II – Biological Monitoring Report form will be filled out, recorded in HabITS and/or other appropriate data bases, to tie biological data to spatial and other project information data, and filed in the official file. Information to be entered in the fillable sections of the Level II Biological Monitoring Report form (Attachment 2) will address attributes from Table 1.

### **Level III – Biological Monitoring At The Landscape Level**

The NE PFW program staff will work with both internal and external partners to determine those species and landscapes that the PFW program, in coordination with its partners, can reach Level III biological monitoring at the landscape level. Level III biological monitoring will contribute towards evaluating the biological outcomes for target species from the acres/miles of habitat being restored throughout conservation focus areas, where the opportunity exists. Level III biological monitoring should take place at more of a landscape scale, but should be designed to incorporate projects implemented as part of the PFW program into the monitoring protocols. To effectively implement Level III biologically monitoring at the landscape level, involvement from other conservation partners (i.e., Rainwater Basin Joint Venture (RWBJV), Playa Lakes Joint Venture, Great Plains LCCs, Refuge I&M Team, Nebraska Game and Parks Commission (NGPC), and other partners) is needed to assist in identifying, prioritizing, implementing, and funding Level III biological monitoring efforts. Outcomes for Level III biological monitoring efforts will be used by the Service and its partners to help develop: (a) decision support tools, (b) habitat use models, and (c) other tools to help guide future conservation efforts throughout high priority focus areas. As a part of this process, each NE PFW program private lands biologist worked with its state counterparts and other conservation partners to identify and list ongoing monitoring efforts that are occurring throughout each of Nebraska's PFW conservation focus areas (Attachment 3).

Table 1. Core Biological and Habitat Monitoring Metrics		
NE PFW Conservation Practice	Key Habitat Attributes (Presence or Absence)	Federal Trust Species and Species of Concern (Presence or Absence Only)
Grassland Restoration and Enhancement	Native Grass Species (Y/N) Native Forb Species (Y/N) Grass/Forb Sp. Representative of Seed Mixture (Y/N) Milkweed (Y/N) Invasive Species (Y/N)	Grassland Songbirds (Y/N) Prairie Grouse (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N)
Wetland Restoration and Enhancement	Hydrology (Y/N) Native Hydrophytes (Y/N) Mudflats (Y/N) Invasive Species (Y/N) Suitable Buffer (Y/N)	Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Monarch Butterfly (Y/N) Grassland Birds (Y/N)
Riverine Restoration and Enhancement	Sandbar Habitat (Y/N) Sandbar Nesting Habitat (Y/N) Riverine Roosting Habitat (Y/N) Invasive Species (Y/N) Native Hydrophytes (Y/N) Fish Access (Y/N) Fish Barriers (Y/N) Suitable Buffer (Y/N)	Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Native Fishes (Y/N) River Otters (Y/N)
Stream Restoration and Enhancement	Roosting Habitat (Y/N) Invasive Species (Y/N) Native Hydrophytes (Y/N) Fish Access (Y/N) Fish Barriers (Y/N) Suitable Buffer (Y/N)	Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Monarch Butterfly (Y/N) Grassland Birds (Y/N) Native Fishes (Y/N) River Otters (Y/N)
Riparian Restoration and Enhancement	Native Grass Species (Y/N) Native Forb Species (Y/N) Native Woody Species (Y/N) Grass/Forb Sp. Representative of Seed Mixture (Y/N) Milkweed (Y/N) Roosting Habitat (Y/N) Invasive Species (Y/N) Native Hydrophytes (Y/N) Fish Access (Y/N) Hydrology (Y/N) Fish Barriers (Y/N) Suitable Buffer (Y/N)	Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Monarch Butterfly (Y/N) Grassland Birds (Y/N) Native Fishes (Y/N) River Otters (Y/N)



*Nebraska PFW private lands biologist conducting monitoring on a habitat project located in the Sandhills of Nebraska. USFWS photo.*

### Examples of Ongoing Level III Landscape Level Biological Monitoring

#### A. Rainwater Basin – Whooping Crane CRI Monitoring

##### Project Name

Wetlands, Watersheds, and Whooping Cranes: A Comprehensive Approach to Wetland Habitat Restoration in the Rainwater Basin of Nebraska.

##### Project Goal

The goal of this project is to contribute toward the recovery of whooping cranes by conserving stopover habitat and achieving objectives identified in the Whooping Crane Recovery Plan, PFW Mountain-Prairie Region Strategic Plan, RWBJV Implementation Plan, RWB Wetland Management District Comprehensive Conservation Plan, and NGPC State Wildlife Action Plan.

##### Monitoring

To monitor the effectiveness of restoration efforts, the following monitoring activities are ongoing in conjunction with this project: (a) collecting spring aerial photography to complete annual habitat survey; (b) installing piezometers/level loggers to record water level at a subset of wetlands that receive and do not receive watershed restorations; (c) conducting whooping crane surveys throughout the whooping crane spring and fall migration seasons; and (d) assessing abiotic wetland quality factors. Data collected from these efforts are being used to document and quantify the impacts of restoration activities on wetland hydroperiod and wetland contaminants, as well as allow for more robust statistical models to be developed to describe habitat selection by whooping cranes and help guide future

restoration efforts throughout the RWB. The following is a brief summary of these on-going monitoring efforts:

- A total of 18 wetlands were chosen for water depth monitoring, including nine wetlands targeted for restoration and nine control wetlands. Eighteen Solinst Levellogger pressure transducers (Model F15/M5, Solinst, Canada) were installed to record water depth every 6 hours in the 18 different sites. At three of the sites, a Solinst Barologger that records barometric pressure every 6 hours was installed. Site visitations are conducted weekly during summer months and monthly during winter months.
- Aerial whooping crane surveys are conducted every two days during spring and fall migrations. The current protocol requires at least 16 flights to be conducted each season, with more flights being added when needed in order to cover the entire migration. The flight route allowed the survey of 109 wetlands, including all 34 public wetlands and 75 additional privately-owned wetlands located in the study area. The surveys began at or shortly after sunrise, and averaged 106 minutes in duration.
- Soil samples are also collected from the 18 wetlands which contained pressure transducers as well as two additional wetlands in order to assess the abiotic factors affecting the wetlands. A total of five soil samples are collected across each wetland in the spring and fall. Spring samples are used to determine the amount of: (a) general soil constituents (e.g., pH, soluble salts, phosphorus, organic matter), (b) pesticides (e.g., atrazine, neonicotinoids), (c) metals (e.g., arsenic, mercury), and (d) lead shot. The fall soil samples are only used to assess the amount of general soil constituents.

This Cooperative Recovery Initiative project is a cross-programmatic effort that is being successfully coordinated with the Service's PFW program, RWB Wetland Management District, RWBJV, and the Nebraska Ecological Service's Field Office.

#### B. North Platte River – Great Plains Landscape Conservation Cooperative

##### Project Name

Sandhill Cranes and Waterfowl of the North Platte River Valley: Evaluation of Habitat Selection to Guide Conservation Delivery.

##### Project Goal

The goal of this project is to identify and address key uncertainties related to the ecological requirements of sandhill cranes and waterfowl on the North Platte River that can ultimately be implemented as a decision

support tool directing “on-the-ground” habitat delivery strategies. Anticipated outcomes will include surveys documenting population estimates and locations; vegetation and wetland mapping; and a compilation of additional ecological habitat covariates that will be implemented into habitat suitability models for sandhill cranes and waterfowl. Results will be applied by partners to refine local habitat initiatives and direct conservation delivery. The products include: (a) survey data documenting the distribution and abundance of sandhill cranes and waterfowl roosting in the North Platte River Valley, (b) high resolution vegetation map characterizing crane and waterfowl habitat, (c) species distribution models describing habitat and habitat selection, and (d) decision support tools to prioritize conservation actions for cranes and waterfowl.

### Monitoring

A combination of aerial and ground surveys will be incorporated to develop a statistically valid, spatially balanced sampling protocol to document distribution and abundance of sandhill cranes and waterfowl during spring migration. This data will be captured in a geospatial environment where location and estimated numbers of individuals will be documented as part of the survey protocol. Annually, a total of four aerial surveys for waterfowl will be conducted once weekly from February 15 through March 30 and six aerial surveys for cranes will be conducted once weekly from March 1 through April 30.

The results collected from these surveys will provide the conservation partners important information relating to sandhill crane and waterfowl use and habitat parameters along the North Platte River. These data will allow the conservation partners to evaluate spring-use of the North Platte River by sandhill cranes and waterfowl and the associated habitat conditions. Results of these surveys will also be analyzed by the conservation partners to develop more robust geospatial species distribution models. The statistical analysis will provide new insight into local and landscape factors that are influencing sandhill crane roost site selection and areas of high waterfowl use and habitat selection in the North Platte River. This surveying and modeling effort will significantly improve knowledge gaps related to habitat parameters and habitat selection for sandhill cranes and waterfowl within the North Platte River and its associated wetlands. The species occurrence and distribution models, land cover map, and decision support tools developed from this project will be used by the conservation partners to guide habitat delivery decisions and conservation planning for these species.

This multi-agency and organization projects is being conducted by the Service, DU, RWBJV, University of Nebraska – Lincoln, and NGPC. This project will contribute towards the goals and objectives of each of the agencies and organizations represented as well towards the mission of the Service and the conservation community as a whole.

## C. Sandhills - Monitoring Abiotic and Biotic Parameters within Nebraska Sandhill Lakes

### Project Name

Influence of Common Carp (*Cyprinus Carpio*) on Abiotic and Biotic Parameters within Nebraska’s Sandhill Lakes.

### Project Goal

Natural lakes of the Sandhill’s cover a large region of the state and are important and unique ecosystems. Monitoring changes in these natural lakes is vital to see the various effects that climatic change and biotic introductions have on these systems. Little research has been conducted on the Nebraska Sandhill’s lakes in recent years, leading to a large void in data. The last substantial study done on these lakes was done in 1977. In order to see the changes over the last 40 years, lakes in Brown County have been selected as the primary focus. The objective of this monitoring effort is to define the current abiotic and biotic parameters of three selected Sandhill chain lakes within Brown County, Nebraska. Two of the lakes contain established carp populations while the third lake was recently rotenoned, and thought to be carp-free.

### Monitoring

The primary lakes for this study occurred in the same drainage and included: Willow Lake, Diamond Lake, and Rossenbach Lake. Additional lakes will also be sampled. Fish compositions and densities were sampled using 2 trap nets per lake. Zooplankton were collected using an 80-µm mesh Wisconsin-style zooplankton net, which were identified and quantified to common taxa groups. Water quality parameters including Secchi depth and pH were also collected. Lakes/wetlands included as a part of this effort are slated to be restored through a partnership approach and will involve the landowner, Sandhills Task Force, NGPC, and the Service’s PFW program. Restoration projects are in different stages of the planning process.

The objectives for the abiotic component of this project are to: (a) to map the current lakes to compare the size and location to historical data and (b) to measure basic water quality parameters to compare to historical data and to elucidate the health of the system. The objectives for the biotic parameters are to (a) identify and quantify the zooplankton to the lowest possible taxa and (b) identify and quantify fish species to make comparisons between lakes.

This Sandhills lakes research and monitoring effort is being successfully coordinated by the University of Nebraska at Kearney Department of Biology, the NGPC, and the Service’s PFW program.



Attachment 1  
NE PFW Level I Monitoring Form



SITE VISIT REPORT

Landowner Agreement # \_\_\_\_\_

Prism FA Award # \_\_\_\_\_

**Final or Interim**  
Select One

**Scope of Work**

(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

**Project Status**

(To be used for an interim report ie...what's been done up to the 1 year mark)  
(Example Language)-About 2 paragraphs

**Species Benefited**

\_\_\_\_\_. (You can reference conservation plans as/if you deem necessary)

*Optional/ Literature Cited: (Example)*

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012–2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

**Payment Method**

Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # \_\_\_\_ (project type ex. Wetland enhancement) has been completed (or for interim...is in the process of being completed) in accordance with all provisions of the agreement.

\_\_\_\_\_  
PFW Biologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Landowner / Cooperator

\_\_\_\_\_  
Date



**Attachment 2**  
**NE PFW Level II**



**Biological Monitoring Report Form**

**To be completed prior to Monitoring Accomplishment**

Agreement Date: \_\_\_\_\_ Date Work Completed: \_\_\_\_\_

PLA Number: \_\_\_\_\_ County: \_\_\_\_\_

Accomplishment Type: (Acres/Miles):

Upland \_\_\_\_\_ Wetland \_\_\_\_\_ Riparian \_\_\_\_\_ Riverine \_\_\_\_\_ Stream \_\_\_\_\_ Sloughs \_\_\_\_\_

Primary Trust Resources: \_\_\_\_\_

Accomplishment Objectives:

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**Photo Point Coordinates (Decimal Degrees)**

Photo Point # \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_

**Observed Biological and Habitat Monitoring Metrics: (related to accomplishment objectives)**

(See Table 1 in NE PFW Level II Monitoring Guidelines)

**Factors that influence current condition: (i.e. climate, grazing, time since fire or other disturbances)**

**Cooperator Comments: (are cooperator's objectives being met?)**

**Are accomplishment objectives being met: Yes No**

**Observations:**

## Nebraska PFW Level II Monitoring Guidelines

- Timing of Monitoring:
  - Attempt to monitor same time of year (i.e. Fall, Spring)
  
  - Monitoring for specific wildlife species should adhere to established monitoring protocols if applicable/available
- Minimum of one photo point per accomplishment
- Standardized photo name (ie NE-64850-15, 2015-06-01-P1N)  
(PLA Number-Year-Month-Day-Photo Point # Direction)
- Monitoring Veg Response:
  - Estimate veg condition related to accomplishment
  
  - Objectives related to (height, density, species comp)
- Comments regarding whether accomplishment objectives are being met could include:  
Concerns, Observations, Recommendations, Future Project Needs
- Level II Biological Monitoring Report form will address attributes from Table 1

## Attachment 3

## Nebraska Ongoing Monitoring Efforts Listed by Focus Area

### Central Platte River Focus Area

- A. Whooping Crane Monitoring/Surveys
  - i. Ongoing aerial monitoring of whooping cranes within the central Platte River Valley.
  - ii. Monitoring efforts occur between March 15th and May 10th, and October 10th thru November 15th.
  - iii. Conducted by Platte River Recovery Program.
- B. Sandhill Crane Surveys/Monitoring
  - i. Ongoing weekly spring aerial surveys/monitoring of sandhill crane roost sites and distribution within the central Platte River.
  - ii. Conducted by Crane Trust.
- C. Annual Sandhill Crane Survey
  - i. Long term aerial survey conducted during the 3rd week of March to survey number of sandhill cranes. Transect survey across suitable habitats.
  - ii. Conducted by Service.
- D. Plains Topminnow Surveys/Reintroduction
  - i. Surveys of plains topminnows across Nebraska.
  - ii. Looking at numbers of individuals, locations and habitat affiliations.
  - iii. Propagation and reintroduction of individuals into restored and existing native habitats.
  - iv. Conducted by University of Nebraska-Kearney and NGPC.
- E. Northern River Otter Telemetry Study
  - i. To determine numbers and distributions of river otters.
  - ii. Telemetry project to look at movement, natal den site selection and nocturnal foraging habits.
  - iii. Conducted by NGPC.
- F. Least Tern and Piping Plover Surveys/Monitoring
  - i. Annual weekly spring and summer airboat and ground surveys.
  - ii. Monitoring of nests, nest success and habitat associations.
  - iii. Conducted by Platte River Recovery Program, USGS, Service and NGPC.
- G. Least Tern and Piping Plover Movement Study
  - i. Marked band survey with listening monitoring stations located along the river.
  - ii. Recorders capture bird movement as they fly up and down the river.
  - iii. Conducted by USGS.
- H. Least Tern and Piping Plover Banding Study
  - i. Capture and banding of least tern and piping plovers.
  - ii. Long term study to look at seasonal and yearly movements of birds.
  - iii. Conducted by USGS.
- I. Sandhill Cranes/Wet Meadow Use Study
  - i. Time-lapse cameras set up in wet meadows to record daily movements and activities of sandhill cranes in wet meadow along the river.
  - ii. Conducted by Crane Trust.
- J. Whooping Crane Telemetry Study
  - i. Telemetry study of whooping cranes up and down the flyway.
  - ii. Tracking whooping cranes movements and habitat selections.
  - iii. Conducted by Crane Trust and Service.
- K. Whooping Crane Habitat Selection Study
  - i. Study looking at habitat associations affiliated with roost site selections of whooping cranes across Nebraska.
  - ii. Conducted by University of Nebraska-Lincoln.

- L. Least Tern and Piping Plover Habitat Availability Study/Model
  - i. Spatial evaluation of potential available nesting habitat for least terns and piping plovers.
  - ii. May lead to predictive flow/sediment transport model linked to habitat availability.
  - iii. Conducted by Platte River Recovery Program and RWBJV.
- M. Bat Survey and Habitat Use Study
  - i. Survey of bats along the central Platte River. Study of species and use along selected sections of the river.
  - ii. Microphones and recorders placed along the river to records sounds all day and night long.
  - iii. Computer program identifies and records sounds of bats by species.
  - iv. Conducted by University of Nebraska-Lincoln.
- N. Mid-Winter Waterfowl Survey
  - i. Aerial survey to look at numbers and distribution of waterfowl.
  - ii. Conducted by Service and NGPC.
- O. Nebraska Breeding Bird Survey
  - i. Conducted by collection of organizations and individuals.
- P. Other Related Models and Decision Support Tools
  - i. Whooping Crane Habitat Suitability Index Model
  - ii. Wet Meadow/Grassland GIS Land Coverage Database
  - iii. Invasive Species GIS Land Coverage Database
  - iv. Central Platte River GIS Vegetative Mapping Database
  - v. Sandhill Crane Model and Distribution Map

#### **North Platte River Focus Area**

- A. Sandhill Crane Surveys
  - i. Single day flight to determine distribution and abundance.
  - ii. Service flies North Platte to Hershey.
  - iii. NGPC flies areas outside Service zone (Hershey westward).
  - iv. Ground surveys occur in select areas if conditions and manpower allow.
- B. Mid-winter Waterfowl Survey
  - i. Flight and ground survey to determine distribution and abundance of ducks, geese and swans.
  - ii. Usually conducted first week of January annually.
  - iii. Conducted by Service and NGPC.
- C. Waterfowl and Crane Habitat Use (LCC project)
  - i. Flight surveys to determine distribution, abundance, habitat use of ducks, geese, swans, and cranes.
  - ii. 4 flights for waterfowl between February 15 and March 30.
  - iii. 4 to 6 flights for cranes between March 1 and April 30.
  - iv. Funded for 2014 and 2015.
  - v. Collaborative effort between Service, DU, RWBJV, NGPC, and UNL-Extension.
- D. Canid Project
  - i. Determine distribution and abundance of canids with emphasis on swift fox.
  - ii. Survey station locations currently being determined across west and southwest NE.
  - iii. Post-doc research through Coop Unit and NGPC.
  - iv. Will occur in 2014-2019.
- E. Bald and Gold Eagle Nesting Surveys
  - i. Establish use and success of current and new nests.
  - ii. Conducted by NGPC, Service, and others.
- F. River Otter
  - i. Proposed project to determine distribution and abundance of river otters statewide.
  - ii. Under consideration by NGPC and partners but not finalized.

## Rainwater Basin Focus Area

- A. Whooping Crane Aerial and Ground Surveys
  - i. Aerial surveys are being conducted weekly during the whooping crane migration window (March 23 – May 10 and September 16 – November 16).
  - ii. A predefined route allows the weekly surveys to document presence and absence at a majority of the wetlands (including those with watershed restorations) in the western RWB.
  - iii. Additional sightings will allow the current HSI model to be refined, while a consistent survey protocol and additional observations will allow for more robust statistical models to be developed to describe habitat selection by whooping cranes.
  - iv. Collaborative effort funded in part through Cooperative Recovery Initiative.
  - v. Funding secured for surveys for Spring and Fall 2013-2016.
  - vi. Partners include NE PFW, RWBJV, NEFO, RWB-WMD, NGPC, and Crane Trust.
- B. Water Depth/Hydrology Monitoring
  - i. Piezometers/level loggers and staff gauges installed to record water level at a subset of wetlands that receive and do not receive watershed restorations.
  - ii. Data collected from these efforts will provide a mechanism to document and quantify the impacts of restoration activities on wetland hydroperiod.
  - iii. Collaborative effort funded in part through Cooperative Recovery Initiative.
  - iv. Funding secured for surveys for Spring and Fall 2013-2016.
  - v. Partners include NE PFW, RWBJV, NEFO, and RWB-WMD.
- C. Spring Aerial Photography and Aerial Habitat Surveys
  - i. Collaborative effort funded in part through Cooperative Recovery Initiative.
  - ii. Funding secured for aerial surveys and Spring photography for 2013-2017.
  - iii. Partners include NE PFW, RWBJV, NEFO, RWB-WMD, NGPC, and Crane Trust.
- D. Wetland Water Quality Monitoring
  - i. Evaluate the effect of increased runoff to the wetlands by collecting water and sediment samples at 18 wetland sites.
  - ii. Water and sediment sampling will occur from April to September and July to September, respectively, between 2014 and 2016.
  - iii. Water column and sediment samples will be analyzed for ammonia, total nitrogen, nitrate, ortho-phosphorus, total phosphorus, electrical conductivity, chloride, sodium, potassium, and pH, as appropriate.
  - iv. Collaborative effort funded in part through Cooperative Recovery Initiative.
  - v. Funding secured for 2014-2016.
  - vi. Partners include NE PFW, RWBJV, NEFO, and RWB-WMD.
- E. Reed Canary Grass Adaptive Management Project
  - i. Goal is to transition reed canary grass dominated wetlands to wet meadow vegetation dominated wetlands by implementing actions that are well-informed and are improved upon over time.
  - ii. Conducted by Service, RWBJV, and UNL.
- F. Food Use by Anatidae
  - i. Determine and describe the diet of northern pintail, American wigeon, northern shoveler, green-winged teal, mallard, and gadwall.
  - ii. Conducted by RWB-WMD.
- G. Prairie-Chicken Leks Surveys
  - i. Monitoring efforts to looking at the distribution and abundance of greater prairie-chicken lek sites and habitat selection.
  - ii. Development of Greater Prairie Chicken Habitat Suitability Model.
  - iii. Conducted by NGPC and RWBJV.
  - iv. Surveys being conducted in the western basins.
- H. Native Pollinator Communities Study
  - i. Study looking at the influence of wetland restorations on native pollinators.
  - ii. Study being conducted by UNL.

- I. Habitat Suitability of Ephemeral Playas for Migratory Waterbirds
  - i. Three year study looking at shorebird and waterfowl food availability.
  - ii. Land use change and its influence on shorebirds.
  - iii. Funding provided through a Great Plains LCC grant, NGPC, and RWBJV.
  - iv. Being conducted by UNL in coordination with NGPC, RWBJV and partners.
- J. Amphibian Monitoring
  - i. Amphibian distribution and habitat use on public wetlands, restored wetlands, cropped wetlands, and non-cropped wetlands.
  - ii. Being conducted by UNL in coordination with NGPC.
- K. Soil Erosion and Sediment Deposition in Playa Wetlands
  - i. Ongoing two-year (2013 and 2014) study.
  - ii. Funding provided through a Great Plains LCC grant and RWBJV.
  - iii. Being conducted by UNL in coordination with RWBJV and partners.
- L. Land use Influences on Greenhouse Gas Fluxes in Playa Wetlands and Watersheds
  - i. Ongoing study conducted by Dr. Lorán Smith with Oklahoma State.
  - ii. Funded in part with a grant from EPA.
  - iii. Scheduled to be completed in 2014.

### **Sandhills Focus Area**

- A. GIS/Technology
  - i. Recent completion of a one million acre LIDAR project focused on Sandhills drainages with high potential for restoration.
  - ii. LIDAR data combined with GIS analysis tools will allow implementers to assess the function of wetlands and streams in selected drainages.
  - iii. In addition, LIDAR data can measure invasive tree densities in Sandhill grasslands.
- B. Valentine NWR Monitoring Efforts
  - i. The refuge has a longstanding vegetation monitoring program geared towards species diversity, abundance and structure.
  - ii. The refuge annually surveys for new and existing populations of western prairie fringed orchid and endangered blowout penstemon occurring on the refuge.
  - iii. The refuge also conducts an inventory of American Burying Beetles on an every 5-year basis.
  - iv. Each Spring, refuge employees conduct lek counts for both sharp tailed grouse and greater prairie-chicken.
- C. Long bill Curlew Surveys
  - i. Surveys are conducted by NGPC employees in western Sandhills starting in April of 2014.
  - ii. This work is a continuation of a Masters project completed in 2011 by Cory Gregory.
- D. Bird Communities and Grazing Systems
  - i. Study to looking at the variability of bird communities as a function of grazing systems and the underlying topographic variations found in Sandhills.
  - ii. Study to be conducted on McKelvie National Forest and adjacent private lands starting the Spring of 2014.
- E. Trumpeter Swan Movement Monitoring Study
  - i. A proposed study by NGPC (Mark Virtiska) and partners which will involve tracking (GPS) approximately 20 trumpeter swans.
  - ii. This project will focus on private lands throughout the western Sandhills.
- F. Sandhills Lake Renovations Monitoring Study
  - i. Proposed study by UNK and NGPC to fully understand the impact of lake renovation projects (rotenone) on lower trophic level communities found in Sandhills lakes.
  - ii. Study will begin prior to lake renovation and researchers will continue to monitor effects after renovation is complete.
  - iii. This study will build support for the Service, STF, and NGPC efforts to remove carp from selected lakes and wetlands.

- G. Wind Turbines and Demographics and Behavior of Prairie-Chickens Project
  - i. Project aims to provide information and analyses regarding the siting of towers and facilities and to aid preparation of mitigation.
  - ii. The research will be collecting data that assesses avoidance structures, and the influence of turbine noise on prairie-chicken behavior.
- H. Year round ecology of Greater Prairie-Chicken in Native Habitat – The Sandhills of Nebraska
  - i. Research and monitoring effort to develop baseline data on survival and reproductive parameters to compare with populations elsewhere that may be in decline or in jeopardy.
- I. Prairie Grouse Lek Surveys
  - i. Determine presence and distribution of grouse leks by species.
  - ii. Conducted by NGPC and Service.
  - iii. Monitor distribution and abundance of prairie grouse lek sites and habitat selection.
  - iv. Development of greater prairie-chicken Habitat Suitability Model.
  - v. Conducted in April.
- J. Wetland Assessment Project
  - i. UNL led project geared at assessing the condition of wetlands in Nebraska.
  - ii. Wetlands will be evaluated for vegetation, algae, amphibians, water quality, soils and hydrology.
  - iii. Outcomes will be used to help understand the condition of Nebraska's wetlands that can be used to target wetland conservation efforts.
  - iv. EPA sponsored project.
- K. American Burying Beetle Model and Distribution Map
  - i. Surveying, trapping and marking of American burying beetles.
  - ii. Distribution and abundance study.
  - iii. Model development for habitat suitability and distribution.
  - iv. Conducted by UFWFS, NGPC, and University of Nebraska-Kearney.
- L. Cedar Tree Invasion Model
  - i. Land cover data base development.
  - ii. Model development looking at the invasion of eastern redcedars in grasslands overtime.
  - iii. Conducted by RWBJV, Service and NGPC.
- M. Nebraska Breeding Bird Survey (Collection of organizations and individuals)
  - i. Ongoing yearly survey for breeding birds.
- N. Other Related Models and Decision Support Tools
  - i. Trumpeter Swan Landscape – Level Habitat Use Model for the Sandhills
  - ii. Prairie Grouse Habitat Use Models
  - iii. American Burying Beetle Habitat Use Model – Sandhills
  - iv. Long-Billed Curlew Habitat Suitability Model
  - v. Eastern Redcedar GIS Land Coverage Database
  - vi. Wet Meadow/Grassland GIS Land Coverage Database

### **Central Loess Canyons Focus Area**

- A. Breeding Bird Routes
  - i. Determine presence and distribution of breeding birds.
  - ii. 9 routes, 453 stops, 3 minute point count/stop.
  - iii. Conducted by NGPC.
  - iv. Between May 27 and July 7 annually (began in 2009).
  - v. Concurs with USGS protocol.
- B. Prairie Grouse
  - i. Determine presence and distribution of grouse leks by species.
  - ii. Currently 8 routes with 25 to 30 stops/route.
    - a. May adjust to 12 routes with 20 stops to meet GIS Lab protocol.
  - iii. Conducted by NGPC, and PF/QF.
  - iv. Conducted in April (began in 2006).

- C. American Burying Beetle
  - i. Determine distribution and abundance of ABB and other carrion beetles.
  - ii. 28 traps, approx. 5 miles apart, 5 trap nights/trap.
  - iii. Conducted by NGPC, PF/QF, Service, UNK and others.
  - iv. Between August 10 and August 25th annually (began in 2007).
  - v. Concurs with UNK/Service protocol.
- D. Winter Bird Count
  - i. Determine presence of species.
  - ii. Conducted by NGPC and others.
  - iii. Between December 4 and January 5 annually (began in 2013).
  - iv. Follows Christmas Bird Count protocol.
- E. Canid Project
  - i. Determine distribution and abundance of canids with emphasis on swift fox.
  - ii. Survey station locations currently being determined across west and southwest NE.
  - iii. Post-doc research through Coop Unit and NGPC.
  - iv. Will occur in 2014-2019.
- F. Vegetation Monitoring
  - i. Determine species richness; take photos from photo points on small subset of restoration projects annually.
  - ii. Conducted by PF/QF CWB and Service.
- G. Cedar Tree Invasion Model
  - i. Land cover data base development.
  - ii. Model development looking at the invasion of eastern redcedars in grasslands overtime.
  - iii. Conducted by RWBJV, Service and NGPC.

#### **Loess Hills/Loup Rivers/Central Table Playas Focus Area**

- A. Greater Prairie-Chicken Lek Survey
  - i. Long term study looking at the distribution and abundance of greater prairie-chicken lek sites and habitat selection.
  - ii. Development of greater prairie-chicken habitat suitability model.
  - iii. Conducted by NGPC and RWBJV.
- B. Whooping Crane Model for Central Table Playas
  - i. Model development based on habitat affiliations and habitat selection data for whooping cranes.
  - ii. Conducted by RWBJV, Service and NGPC.
- C. Waterfowl Model for Central Table Playas
  - i. Model development based on habitat affiliations and habitat selection data for waterfowl.
  - ii. Conducted by RWBJV, Service and NGPC.
- D. Cedar Tree Invasion Model
  - i. Land cover data base development.
  - ii. Model development looking at the invasion of eastern redcedars in grasslands overtime.
  - iii. Conducted by RWBJV, Service and NGPC.
- E. Prairie Dog and Black-footed Ferret Habitat Suitability Index and Model
  - i. Identification of existing prairie dog towns and development of habitat suitability model.
- F. Tern and Plover Survey and Nest Monitoring
  - i. Survey of Loup Rivers and monitoring of least tern and piping plover nests.
  - ii. Conducted by NGPC and Service.
- G. American Burying Beetle Model and Distribution Map
  - i. Survey and trapping and making of American burying beetles.
  - ii. Distribution and abundance study.
  - iii. Model development for habitat suitability and distribution.
  - iv. Conducted by RWBJV, UWFWS, NGPC, and University of Nebraska-Kearney.

- H. Mid-Winter Waterfowl Survey
  - i. Aerial survey to look at numbers and distribution of waterfowl.
  - ii. Conducted by Service and NGPC.
- I. Whooping Crane Telemetry Study
  - i. Telemetry study of whooping cranes up and down the flyway.
  - ii. Tracking whooping cranes movements and habitat selections.
  - iii. Conducted by Crane Trust and Service.
- J. Plains Topminnow Surveys/Reintroduction
  - i. Surveys of plains topminnows across Nebraska.
  - ii. Looking at numbers of individuals, locations and habitat affiliations.
  - iii. Propagation and reintroduction of individuals into restored and existing native habitats.
  - iv. Conducted by University of Nebraska-Kearney and NGPC.
- K. Nebraska Breeding Bird Survey (Collection of organizations and individuals)
  - i. Ongoing yearly survey for breeding birds.
- L. Nebraska Bird Partnership HABS Model Database
- M. River Otter Survey
  - i. Proposed project to determine distribution and abundance of river otters statewide.
  - ii. To be conducted by NGPC.

### **Eastern Tallgrass Prairie Focus Area**

- A. Ongoing Monitoring of Eastern Tallgrass Prairie Restoration Projects
  - i. Permanent photo points have been established on most of tree clearing project sites completed in the Southeast Prairie and Sandstone Prairie landscapes.
  - ii. Panoramas are taken prior to project initiation and on an annual to semi-annual basis.
  - iii. Timelapse camera systems have been set up on 3 project sites and automatically take pictures at one hour intervals.
  - iv. Permanent vegetation monitoring plots have been established on 20 project sites and sites are re-sampled every 5 years.
  - v. Monitoring efforts are being conducted by NGPC and Northern Prairie Land Trust.
- B. Prairie-Chicken Lek Monitoring
  - i. Permanent driving routes were established to monitor greater prairie lek use in the Sandstone and Southeast Prairies Biological Unique Landscapes.
  - ii. Routes are run several times annually.
- C. Stream Fish Survey
  - i. Fish communities are being sampled in several small streams within project sites in both Sandstone and Southeast Prairies landscapes.
- D. Insect Studies
  - i. A series of research projects focusing on determining how insects respond to landscape and other variables (prairie size, prairie fragmentation, plant composition, etc.) are in the planning process.
  - ii. Insect groups studied so far include ground beetles, ants, bees, parasitic wasps, and pollinators in general.
- E. Patch Burn Study
  - i. Studied vegetation and livestock responses to the “patch burn” grazing management technique.
- F. Grassland Breed Birdy Study
  - i. Studied the initial response of breeding birds to tree clearing on grasslands in the Southeast Prairies BUL.

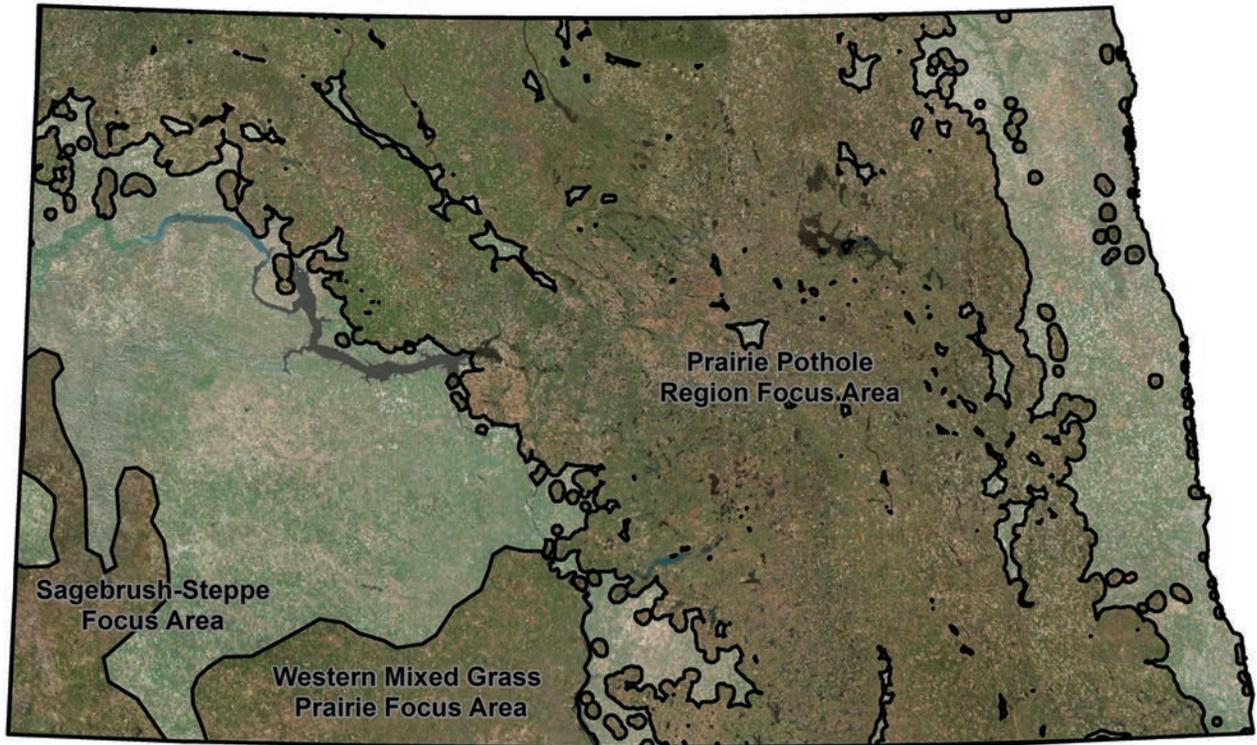
- G. Greater Prairie-Chicken Lek Monitoring
  - i. Standard routes have been run since 1978 by NGPC in Keya Paha County.
  - ii. Additional route was set up and run in Knox County (Verdigris/Bazile) as part of greater prairie-chicken modeling effort done with RWBJV's GIS shop.
  - iii. Opportunistic surveys for lek locations are run annually in Willow Creek Prairies, Elkhorn Confluence, Verdigris/Bazile, Ponca Bluffs, Missouri River, Keya Paha, Middle Niobrara, and Lower Niobrara BUL's.
- H. Western Prairie Fringed Orchid Surveys
  - i. NGPC surveys known populations about every 5 years. They look at individual sites annually.
  - ii. Currently beginning the second year of a hawkmoth pollinator study in Willow Creek BUL's.
- I. Small White Lady Slipper Orchid Surveys
  - i. Surveys conducted in Keya Paha BUL in 2014.
  - ii. Annual surveys run in conjunction with NDOR along Hwy 13.
- J. Shorebird Surveys
  - i. Shorebird use of small playa wetlands was conducted in Verdigris Bazile BUL in 2009.
- K. Nebraska Breeding Bird Survey (Collection of organizations and individuals)
  - i. Ongoing yearly survey for breeding birds.
- L. Small Mammal and Burying Beetle Surveys
  - i. Monitoring efforts were conducted in 2006 in Verdigris Bazile/Lower Niobrara River BUL to determine distribution and abundance of small mammals and burying beetles.

***Partners for Fish and Wildlife has been successful collaborating people, communities and cultures with landscapes, wildlife and environment for the betterment of nature for future generations.***

**Landowner Mike Kelly, Nebraska**



# North Dakota



North Dakota PFW program Focus Areas. USFWS map.

## Introduction and Overview

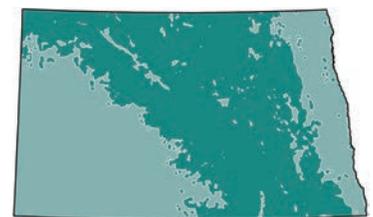
North Dakota is rich in diverse wildlife habitat. From sagebrush of the very southwestern part of the state to mixed-grass prairies of the rest of western North Dakota to the Prairie Pothole Region that lies north and east of the Missouri River. These habitats provide valuable nesting and migration habitat to many grassland and wetland birds and other wildlife. North Dakota PFW (ND PFW) program is designed to conserve, enhance and where needed restore these grassland, wetland and sagebrush habitats. Since the inception of the PFW program in 1987, ND PFW has completed more than 4,100 projects with private landowners across the entire state. In order to meet population objectives of migratory birds in a state where over 90% of the land is in private ownership,

it is important to identify areas of mutual interest between the Service and private landowners. For example, the most effective way to conserve grassland habitat on privately owned land is to support individual livestock production operations. We have a number of different conservation practices that are designed to be mutually beneficial to the livestock producer and grassland and wetland dependent wildlife.

As the name of our program suggests, partnerships are vital to the success of the ND PFW. Our most valuable partners are the private landowners that we work with. It is their vision and commitment to the conservation of wildlife and their habitats that provides the framework for much of our program. In addition to the private landowners, we have strong partnerships with other

federal, state, and local government entities as well as many diverse non-governmental organizations. The relationships that we have with these partners help us to more efficiently and effectively restore, enhance and establish wildlife habitat.

## Prairie Pothole Region Focus Area



The area that makes up the Prairie Pothole Region Focus Area is 25,201,556 acres, or 56% of the total North Dakota land area. The Prairie Pothole Region is well known for its continental importance to waterfowl and other



*Mallard hen and ducklings fulfilling the mission of the Service! Photo by Steve Fairbairn, USFWS.*

migratory birds. This Focus Area is the “best of the best” in terms of wetland density in the United States (up to 150 wetland basins per square mile). These wetland prairie complexes can support greater than 100 duck pairs per square mile. This focus area is comprised of those portions of the Prairie Pothole Region that are capable of supporting greater than 25 breeding pairs of five key waterfowl species (mallard, northern pintail, blue-winged teal, northern shoveler, and gadwall) as identified by the Predicted Duck Pair Accessibility Maps (Thunderstorm Maps) that were developed by the HAPET. The Prairie Pothole Region is currently the priority area for Service Realty acquisitions, as well as for DU, a major NGO partner. Portions of the Prairie Pothole Region, such as the Missouri Coteau, Devils Lake Basin, Glacial Lake Deltas and Turtle Mountains are also highlighted as focus areas in the North Dakota Game and Fish

Department’s North Dakota State Wildlife Action Plan.

Once a vast region of mixed-grass prairie and small, shallow wetlands, the Prairie Pothole Region is now dominated by cropland. Changes in land use have, for the most part, been detrimental to the migratory birds that use the Prairie Pothole Region. Particularly in the eastern portion of the Prairie Pothole Region, many wetlands have been drained or degraded, and the loss of native prairie has been extensive. Despite these losses, millions of wetlands and large tracts of native prairie still remain. The Prairie Pothole Region is one of the most important migratory bird habitats in the Western Hemisphere. It is the backbone of North America’s “duck factory” and supplies critical habitat for many wetland and grassland dependent migratory birds.

**Prairie Pothole Region Focus Area Focal Species**

- Mallard
- Northern pintail
- Gadwall
- Blue-winged teal
- Canvasback
- Redhead
- Lesser scaup
- Piping plover (Threatened)
- Upland sandpiper
- Marbled godwit
- Wilson’s phalarope
- Black tern
- Baird’s sparrow
- Grasshopper sparrow
- Sprague’s pipit
- Chestnut-collared longspur
- Short-eared owl
- Nelson’s sparrow
- Lark bunting
- Western meadowlark
- Monarch butterfly
- Dakota skipper (Threatened)

Focal species	Applicable Plans	Conservation Actions
Mallard	NAWMP, PPJV, NGPJV	Wetland Restoration and Establishment, Grassland Restoration and Enhancement
Northern Pintail	ND2, NAWMP, PPJV, NGPJV	Wetland Restoration and Establishment, Grassland Restoration and Enhancement
Gadwall	PPJV	Wetland Restoration and Establishment, Grassland Restoration and Enhancement
Blue-winged Teal	PPJV	Wetland Restoration and Establishment, Grassland Restoration and Enhancement
Canvasback	ND2, NAWMP, PPJV	Wetland Restoration and Establishment
Redhead	NAWMP, PPJV	Wetland Restoration and Establishment
Lesser Scaup	ND2, NAWMP, PPJV	Wetland Restoration and Establishment
Piping Plover	T, ND2	Wetland Restoration and Establishment
Upland Sandpiper	ND2, PPJV, NGPJV	Grassland Restoration and Enhancement
Marbled Godwit	ND1, NAWMP, PPJV, NGPJV, USSCP	Wetland Restoration and Establishment, Grassland Restoration and Enhancement
Wilson’s Phalarope	ND1, PPJV, NGPJV	Wetland Restoration and Establishment, Grassland Restoration and Enhancement
Black Tern	ND1, NAWMP, PPJV, NAWCP	Wetland Restoration and Establishment
Baird’s Sparrow	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Grasshopper Sparrow	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Sprague’s Pipit	C, ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Chestnut-collared longspur	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Short-eared Owl	ND2, NAWMP, PIF	Grassland Restoration and Enhancement
Nelson’s Sparrow	ND1, NAWMP, PPJV, PIF	Wetland Restoration and Establishment, Grassland Restoration and Enhancement
Lark Bunting	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Western Meadowlark	ND2	Grassland Restoration and Enhancement
Monarch Butterfly		Grassland Restoration and Enhancement
Dakota Skipper	T	Grassland Restoration and Enhancement

NAWMP – North American Waterfowl Management Plan  
 PPJV – Prairie Pothole Joint Venture  
 NGPJV – Northern Great Plains Joint Venture  
 ND1 and ND2 – North Dakota Game and Fish Department Tier 1 and 2 Species of Conservation Priority

USSCP – United States Shorebird Conservation Plan  
 NAWCP – North American Waterbird Conservation Plan  
 PIF – Partners in Flight Landbird Conservation Plan  
 T – Federally listed as Threatened  
 C – Federally identified as a Candidate for listing as Threatened or Endangered

**Prairie Pothole Region Focus Area Habitat Targets**

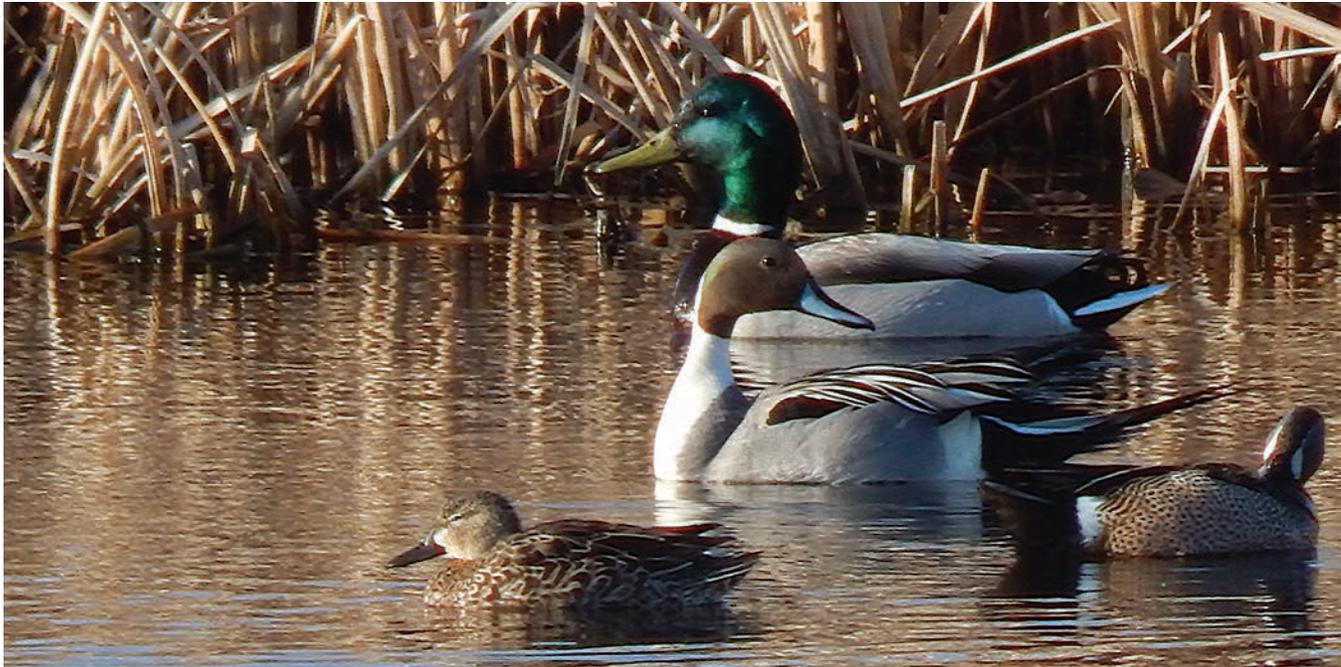
- Wetland Restoration: 625 acres
- Wetland Establishment: 60 acres
- Grassland Restoration: 6,250 acres
- Grassland Enhancement: 40,000 acres

**Prairie Pothole Region Focus Area Partnership Targets**

- Private Landowner Agreements: 360
- Partnerships: 900
- Percent of Leveraging
  - o 25% Service Funds
  - o 25% NAWCA Grant Funds
  - o 30% Landowner Cash and In-kind
  - o 20% Other Partner (NGO, NDGF)

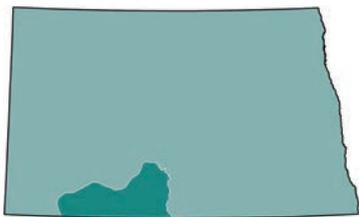


*Ranch family installing a water tank to implement a rotational grazing system. Photo by Dan Duchscherer, USFWS.*



Waterfowl diversity in the North Dakota Prairie Pothole Focus Area. Photo by Dan Duchscherer, USFWS.

### Western Mixed Grass Prairie Focus Area



The area that makes up the Western Mixed Grass Focus Area is 2,681,826 acres, or about 6%, of the total North Dakota land area. This focus area contains some of the largest tracts of grassland remaining in North Dakota and much of it is at risk of being converted to cropland. These grasslands are the most valuable habitat within this focus area and therefore our program philosophy here is to help landowners maintain and enhance their grassland based agriculture. Assisting in the implementation of rotational grazing systems, wetland establishments and grass restorations are the primary project types employed in this focus area.

The boundaries of this focus area were selected to include the majority of the large tracts of grassland remaining in western North Dakota. HAPET used blocks

of grassland that were at least 640 acres to identify Grassland Bird Conservation Areas (GBCA). The locations of these large grassland areas were used to delineate the boundaries of this focus area.



Native vegetation typical of the Western Mixed Grass Prairie Focus Area. USFWS photo.

### Western Mixed Grass Prairie Focus Area Focal Species

- American wigeon
- Mallard
- Northern pintail
- Upland sandpiper
- Marbled godwit
- Wilson’s phalarope
- Baird’s sparrow
- Grasshopper sparrow
- Sprague’s pipit
- Chestnut-collared longspur
- Loggerhead shrike
- Ferruginous hawk
- Short-eared owl
- Burrowing owl
- Lark bunting
- Western meadowlark

### Western Mixed Grass Prairie Focus Area Habitat Targets

- Wetland Establishment: 150 acres
- Grassland Establishment: 150 acres
- Grassland Enhancement: 4,000 acres

### Western Mixed Grass Prairie Focus Area Partnership Targets

- Private Landowner Agreements: 35
- Partnerships: 90
- Percent of Leveraging
  - o 25% Service Funds
  - o 30% NAWCA Grant Funds
  - o 25% Landowner Cash and In-kind
  - o 20% Other Partner (NGO, NDGF)



*PFW wetland establishment and grassland enhancement projects in the Western Mixed Grass Prairie Focus Area. USFWS photo.*

Focal species	Applicable Plans	Conservation Actions
American Wigeon	NAWMP	Grassland Restoration and Enhancement, Wetland Establishment
Mallard	NAWMP, PPJV, NGPJV	Grassland Restoration and Enhancement, Wetland Establishment
Northern Pintail	ND2, NAWMP, PPJV, NGPJV	Grassland Restoration and Enhancement, Wetland Establishment
Upland Sandpiper	ND2, PPJV, NGPJV	Grassland Restoration and Enhancement
Marbled Godwit	ND1, NAWMP, PPJV, NGPJV, USSCP	Grassland Restoration and Enhancement, Wetland Establishment
Wilson’s Phalarope	ND1, PPJV, NGPJV	Grassland Restoration and Enhancement, Wetland Establishment
Baird’s Sparrow	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Grasshopper Sparrow	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Sprague’s Pipit	C, ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Chestnut-collared longspur	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Loggerhead Shrike	ND2, NGPJV	Grassland Restoration and Enhancement
Ferruginous Hawk	ND1, NGPJV	Grassland Restoration and Enhancement
Short-eared Owl	ND2, NAWMP, PIF	Grassland Restoration and Enhancement
Burrowing Owl	ND2, NGPJV	Grassland Restoration and Enhancement
Lark Bunting	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Western Meadowlark	ND2	Grassland Restoration and Enhancement

NAWMP – North American Waterfowl Management Plan

PPJV – Prairie Pothole Joint Venture

NGPJV – Northern Great Plains Joint Venture

ND1 and ND2 – North Dakota Game and Fish Department Tier 1 and 2 Species of Conservation Priority

USSCP – United States Shorebird Conservation Plan

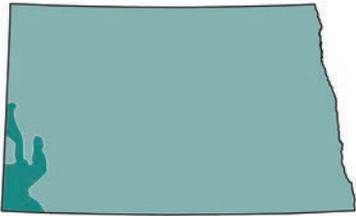
NAWCP – North American Waterbird Conservation Plan

PIF – Partners in Flight Landbird Conservation Plan

T – Federally listed as Threatened

C – Federally identified as a Candidate for listing as Threatened or Endangered

## Sagebrush-Steppe Focus Area



The area that makes up the Sagebrush-Steppe Focus Area is 1,824,380 acres, or 4% of the total North Dakota land area. This focus area was delineated based on several criteria. Primarily, this area is characterized by the range of greater sage-grouse and the extent of sagebrush in the extreme southwest corner of the state. This focus area was also drawn to include large blocks of remaining grassland habitat (>640 acres). These tracts of grassland were identified in the same way as those that were used to create the Western Mixed Grass Prairie Focus Area. A ND PFW program priority is to improve rangeland conditions by assisting in the implementation of rotational grazing systems. Grassland and sagebrush restoration projects are also important in this landscape.

## Sagebrush-Steppe Focus Area Focal Species

- Baird's sparrow
- Grasshopper sparrow
- Brewer's sparrow
- Sprague's pipit
- Chestnut-collared longspur
- McCown's longspur
- Loggerhead shrike
- Ferruginous hawk
- Short-eared owl
- Burrowing owl
- Greater sage-grouse
- Long-billed curlew
- Lark bunting
- Western meadowlark

## Sagebrush-Steppe Focus Area Habitat Targets

- Upland restoration: 200 acres
- Upland enhancement: 2,000 acres

## Sagebrush-Steppe Focus Area Partnership Targets

- Private Landowner Agreements: 11
- Partnerships: 25
- Percent of Leveraging
  - o 60% Service Funds
  - o 30% Landowner Cash and In-kind
  - o 10% Other Partner (NGO, NDGF)



*Greater sage-grouse in typical North Dakota sagebrush habitat. Photo by Steve Fairbairn, USFWS.*

Focal species	Applicable Plans	Conservation Actions
Baird’s Sparrow	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Grasshopper Sparrow	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Brewer’s Sparrow	NGPJV	Grassland and Sage Restoration and Enhancement
Sprague’s Pipit	C, ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Chestnut-collared Longspur	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
McCown’s Longspur	PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Loggerhead Shrike	ND2, NGPJV	Grassland Restoration and Enhancement
Ferruginous Hawk	ND1, NGPJV	Grassland Restoration and Enhancement
Short-eared Owl	ND2, NAWMP, PIF	Grassland Restoration and Enhancement
Burrowing Owl	ND2, NGPJV	Grassland Restoration and Enhancement
Greater Sage-Grouse	ND1, NGPJV, PIF	Grassland and Sage Restoration and Enhancement
Long-billed Curlew	ND1, NAWMP, NGPJV, USSCP	Grassland Restoration and Enhancement
Lark Bunting	ND1, PPJV, NGPJV, PIF	Grassland Restoration and Enhancement
Western Meadowlark	ND2	Grassland Restoration and Enhancement

NAWMP – North American Waterfowl Management Plan

PPJV – Prairie Pothole Joint Venture

NGPJV – Northern Great Plains Joint Venture

ND1 and ND2 – North Dakota Game and Fish Department Tier 1 and 2 Species of Conservation Priority

USSCP – United States Shorebird Conservation Plan  
NAWCP – North American Waterbird Conservation Plan

PIF – Partners in Flight Landbird Conservation Plan  
T – Federally listed as Threatened

C – Federally identified as a Candidate for listing as Threatened or Endangered



Greater sage-grouse. Photo by Tom Koerner, USFWS.

# North Dakota Statewide Goals



## Broaden and Strengthen Partnerships

Partnerships are the cornerstone of the ND PFW program. We could not accomplish anything without the trust and support of the private landowners throughout the state. In addition to the thousands of private landowner partners that we have worked with, there are also many local, state and federal agencies and NGO's that are valuable partners and important to the overall success of the ND PFW program. Many of these partners are integral in leveraging funds through the North American Waterfowl Conservation Act. They provide all of the non-federal match as well as substantial input into the planning process. We continually strive to foster existing partnerships as well as to develop new relationships with a wide variety of conservation and agricultural interests.

### Five-year Statewide Targets

- 400 Technical Assistance Staff Days
- Percent of Leveraging
  - o 25% Service Funds
  - o 25% NAWCA Grant Funds
  - o 30% Landowner Cash and In-kind
  - o 20% Other Partner (NGO, NDGF)



*PFW staff reviewing a project with a cooperating landowner. USFWS photo.*

## Improve Information Sharing and Communication

Communication and outreach are integral to the success of the ND PFW program. The vast majority of our partnering landowners are farmers and ranchers. Therefore, the most effective way to improve information sharing and communication in

North Dakota is to attend and participate in local agriculturally based conservation meetings, field tours and workshops. Additionally, ND PFW staff members are regular participants in larger conservation efforts such as the ND chapter of The Wildlife Society, the ND Action Group, the Prairie Pothole Joint Venture, the Northern Great Plains Joint Venture, USDA State Technical Committee and the North Dakota Grazing Lands Coalition among others.

### Five-year Targets

- Conduct 10 Congressional outreach activities.
- Participate in 10 youth activities.
- Participate in 15 field tours.
- Regularly attend local Soil Conservation District meetings and events.



*Landowners installing a cross fence to be used to implement a rotational grazing system. Photo by Dan Duchscherer, USFWS.*

## Enhance Our Workforce

PFW program staff are some of the most dedicated and highly-motivated personnel in the Service. Their positions require that they have a general knowledge of many aspects of wildlife management, agriculture, contract negotiation and administration, as well as excellent skills in working with people, particularly landowners. Providing adequate training opportunities and maintaining high morale are integral to retaining a highly-skilled, highly-motivated PFW program workforce.



*PFW program native grass restoration project in progress. Photo by Mike Graue, USFWS.*

**Five-year Targets**

- Annually provide all ND PFW staff 40 hours of professional development and training.
- Annually recognize one ND PFW biologist for annual or career accomplishments.
- Maintain weekly call-in staff meetings.
- Continue at least one annual staff meeting to provide training and updates to staff.

- Enter spatial data into our PLGIS system for every PFW project.
- Enter information for all projects into HabITS database.

**Increase Accountability**

In conjunction with this Strategic Plan, we have also developed a Monitoring Plan that is specifically designed to improve and increase our accountability. This plan incorporates three levels of monitoring with respect to completed PFW projects across the state. In addition, the ND PFW program will utilize other tools, such as GIS, HabITS and an annual narrative to illustrate the ND PFW program’s strategic prioritization and delivery of wetland and grassland conservation.

**Five-year Targets**

- Each year an annual accomplishment report will be completed.
- 100% of projects will have completed implementation and compliance monitoring.



*Blue-winged teal ducklings adjacent to a PFW program grassland enhancement project in North Dakota. Photo by Scott McLeod, USFWS.*

## Monitoring Plan

### Background

Since 1987 the North Dakota PFW program (ND PFW) has completed over 3,300 projects that have restored, enhanced or created more than 287,000 acres of habitat for Federal Trust Species throughout the state. The foundation of the ND PFW program is engrained in the broader strategies and goals of the North American Waterfowl Management Plan (NAWMP 2012), Prairie Pothole Joint Venture Implementation Plan (PPJV 2005), National Partners in Flight Plan (Rich et al. 2004, Pashley et al. 2000), Northern Plains/Pothole portion of the U.S. Shorebird Conservation Plan (Skagen and Thompson 2001), Northern Great Plains Joint Venture Concept Plan (NGPJV 2001), Northern Great Plains Joint Venture Implementation Plan (Pool and Austin 2006) and the North American Waterbird Conservation Plan (Beyersbergen et al. 2004). Central to the successful implementation of all major bird conservation plans in the Northern Great Plains is strategically targeted landscape-scale conservation of wetland and grassland habitats. Therefore, the ND PFW program has prioritized wetland and grassland conservation on private lands since 1987 when the program was first established. For example, of the 2,327 ND PFW program projects initiated during the period 1999-2015, 95.8% were specifically implemented for grassland or wetland conservation. Furthermore, 100% of the ND PFW program wetland and grassland conservation effort was implemented via the reoccurring use of four primary conservation practices (grassland restorations, grassland enhancements, wetland restorations and wetland establishments). The ND PFW program’s strategic prioritization and delivery of wetland and grassland conservation was reaffirmed in both the 2007 and 2012 Region 6 PFW Strategic Plans (Service 2007, Service 2012) and the ND PFW program has identified three Focus Areas and associated priority bird species in the 2012 Region 6 PFW Strategic Plan.

Over the past six decades, many researchers have documented the benefits of wetland/grassland conservation to many grassland and wetland dependent bird species in the Northern Great Plains. Specific to PFW projects, the ND PFW program works closely with the Service Region 6 Habitat and

Population Evaluation Team (HAPET) to quantify biological outcomes for five key upland nesting duck species (mallard, blue-winged teal, gadwall, northern pintail and northern shoveler) in the ND PFW program Prairie Pothole Region Focus Area. In addition, the ND PFW program has worked closely with HAPET in recent years to evaluate specific ND PFW program conservation practices in the Western Mixed Grass Focus Area and the Sage Steppe Focus Area. The primary goal of the ND PFW program monitoring plan is to augment past and future monitoring efforts of ND PFW program habitat projects with a standardized strategy that incorporates a larger sample size.

### Level I – Status Review

The ND PFW program will conduct Level I Status Reviews at two temporal scales. Field visits by ND PFW program field biologists will be conducted directly following completion of all new projects. Additionally, a mid-term status review will be conducted on a sub-set of older projects. These status reviews will be completed remotely via a combination of Region 6 PLGIS data and imagery from the National Agricultural Imagery Program (NAIP). Beginning in FY2016, ND PFW program staff will complete a standardized Region 6 PFW Site Visit Report (SVR) form for each newly finished PFW project. ND PFW program staff will physically review each newly completed project to ensure that prescribed conservation practices were installed in accordance with provisions of the Private Landowner Agreement (PLA). The site visit and SVR form will be completed before the payment process is initiated and the SVR form will be submitted to the Bismarck PFW office as part of the payment initiation request. Completed SVR forms will be incorporated into the official PLA file in the Bismarck PFW office and copies will also be retained in the PLA file in the local field office. It is estimated that over 75 ND PFW program projects will undergo status reviews each field season. In addition, beginning in FY2017, during January and February of each year, ND PFW program staff will utilize a combination of Region 6 PLGIS data and NAIP imagery to remotely conduct mid-term status reviews of a sub-set of older Wildlife Extension Agreements (WEAs) and newer PLAs. The combination of PLGIS polygons and the most current NAIP imagery will provide a means to remotely review the basic status of the four most common ND PFW program

Table 1: Schedule of Work for Remote Level 1 Status Reviews

Year Status Review to be Completed	Year of PFW Agreements	Sample Size	Year of NAIP Imagery
2017	2012	95	2016
2018	2013	72	2016
2019	2014	67	2018
2020	2015	88	2018
2021	2016	100	2020

Table 2. Core Biological and Habitat Monitoring Metrics			
ND PFW program Conservation Practice	Key Habitat Attributes (Presence or Absence)	Trust Species* (Presence or Absence Only)	Trust Species** (Survey-Count)
Grassland Enhancement	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N) Milkweed (Y/N)	Grassland Songbirds (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N)	N/A
Grassland Restoration	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N) Grass/Forb Sp. Representative of Seed Mixture (Y/N) Milkweed (Y/N)	Grassland Songbirds (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N)	N/A
Wetland Establishment	Hydrology (Y/N) Hydrophytes (Y/N) Mudflats (Y/N)	N/A	Number of Breeding Waterfowl Pairs Utilizing the Project  Number of Shorebirds, T&E Species and Waterbirds Utilizing the Project
Wetland Restoration	Hydrology (Y/N) – if Y, then % wet Hydrophytes (Y/N) Mudflats (Y/N)	N/A	Number Breeding Waterfowl Pairs Utilizing the Project  Number of Shorebirds, T&E Species & Waterbirds Utilizing the Project

\*One centrally located fixed width belt transect (200 meters x 100 meters) will be surveyed in each grassland tract for the presence/absence of grassland passerines. Standardized field techniques and survey parameters will be used (Salo 2003, Baker and Higgins 2009). Additionally, the presence/absence of shorebirds, T&E species and Monarch butterflies will also be recorded during the same survey.

\*\*Standard HAPET 4-Square Mile survey techniques and data cards will be used to assess breeding waterfowl pairs. In addition, all shorebirds, waterbirds and T&E species observed on the sampled wetlands will also be recorded during the same survey.

conservation practices (grassland enhancements, grassland restorations, wetland establishments and wetland restorations). The following framework and schedule (Table 1) will serve as a guide to strategically implement the remote status review protocol for approximately 422 projects.

**Level II – Site Specific Biological Monitoring**  
 ND PFW program staff will complete a combination of presence/absence surveys and counts of key Federal Trust Species and associated habitat attributes on a stratified random sample of 10% of ND PFW program projects. The random sample will be stratified by the four primary ND PFW program

### Level III Landscape Scale Biological Monitoring Flowchart

**Step 1:** Coordinate closely with HAPET to develop biological outcome estimates for the primary conservation practices completed in the ND PFW program Prairie Pothole Region Focus Area (FY 2017-2021).

**Estimated Waterfowl Breeding Pair and Recruitment Benefits for USFWS Partners for Fish and Wildlife Wetland and Grassland Projects in North Dakota focus areas for 2017-2021. (May 2016)**

State	Focus Area	Project Type	Class	Target Acres	Term (Yrs)	Annual Pairs <sup>1</sup>	Cumulative Pairs <sup>2</sup>	Annual Productivity <sup>3</sup>	Cumulative Productivity <sup>4</sup>
North Dakota									
	> 25 Breeding Duck Pairs East River								
		Wetland Restoration							
			Temporary	31	10	36	363	57	566
			Temporary	94	99	109	10,809	170	16,832
			Seasonal	47	10	58	582	84	840
			Seasonal	141	99	175	17,331	252	24,995
			Semipermanent	78	10	58	581	59	593
			Semipermanent	235	99	175	17,286	178	17,651
			<b>Totals</b>	<b>625</b>		<b>611</b>	<b>46,952</b>	<b>801</b>	<b>61,476</b>
		Wetland Creation	Semipermanent	60	30	45	1,340	155	4,650
			<b>Totals</b>	<b>60</b>		<b>45</b>	<b>1,340</b>	<b>155</b>	<b>4,650</b>
		Grassland Restoration <sup>5</sup>	New	3,750	10			813	8,130
				2,500	99			542	53,658
			<b>Totals</b>	<b>6,250</b>				<b>1,355</b>	<b>61,788</b>
		Grassland Enhancement <sup>6</sup>	Maintenance	40,000	10			8,672	86,720
			<b>Totals</b>	<b>40,000</b>				<b>8,672</b>	<b>86,720</b>
		<b>Grand Totals</b>							
					1st 10 Years	6,562		109,826	
					10-30 Years	894		3,100	
					Remaining Years	40,838		101,708	
					<b>Cumulative</b>		<b>48,293</b>		<b>214,634</b>

<sup>1</sup> Duck breeding pair values per acre of wetland were estimated for each focus area by summing the number of total pairs for the focus area by wetland class, and dividing by the total acres of wetland for the respective class.

<sup>2</sup> The estimated cumulative value of wetland related private lands projects for breeding pairs is PAIRS = ((Acres of Wetland) \* (Pair Value) \* (Agreement Duration)).

<sup>3</sup> Recruits related to the acres of wetland restored or created by private lands projects are calculated using the estimated number of pairs benefiting from wetland projects and subsequent recruitment derived from Four Square Mile Breeding Waterfowl data. Recruits related to the acres of grassland restored or protected from loss by implementing grazing systems (i.e., enhanced) were derived from scenarios of grassland change using the mallard model for areas in central North and South Dakota and subsequent changes in duck recruitment.

<sup>4</sup> The estimated cumulative recruitment value of wetland and grassland related private lands projects for ducks is WETLAND PROJECT BASED RECRUITS = ((Number of Breeding Duck pairs) \* (Recruitment Value) \* (Agreement Duration) - (# of PAIRS because there are no 1st year benefits)); GRASSLAND PROJECT BASED RECRUITS = ((Acres of Grassland) \* (Recruitment Value) \* (Agreement Duration)).

<sup>5</sup> Recruits associated with grassland restoration are considered new recruits to the population.

<sup>6</sup> Recruits associated with grassland enhancement (i.e., grazing systems) are considered existing recruits protected for the duration of the agreement.

**Step 2:** Annually summarize HabITS derived accomplishment data for ND PFW program projects completed in the Prairie Pothole Region Focus Area. Accomplishments are then prorated according to HAPET estimates of projected pairs and recruits to generate biological outcome estimates. Projected sample size during the period 2017-2021 is 360 new ND PFW program projects representing approximately 46,935 grassland and wetland acres.

**Step 3:** Annually summarize biological outcomes from the ND PFW program Prairie Pothole Region Focus area and compare actual biological outcomes to projected outcomes.

Year	Actual Cumulative # of Breeding Pairs Benefited	Projected Goal for Cumulative # of Breeding Pairs Benefited	Actual Cumulative # of Recruits Benefitted	Projected Goal for Cumulative # of Recruits Benefitted
2017		9,658		42,927
2018		9,658		42,927
2019		9,658		42,927
2020		9,658		42,927
2021		9,658		42,927

conservation practices (grassland restorations, grassland enhancements, wetland restorations and wetland establishments). The annual sample universe will consist of ND PFW program projects found in HabITS and completed two years prior to the current fiscal year. The two-year interval will provide a suitable amount of time for the vegetation and hydrology components of most projects to become fully established. For example, in FY2017 the stratified random sample would consist of 10% of the ND PFW program projects completed in FY 2015. Habitat and focal species data will both be collected during the same site visit. A standardized grassland status review form will be developed by the ND PFW program and will be used to collect data on each grassland site in the sample. The ND PFW program staff will use standard HAPET 4-square mile data cards to collect data on sample wetland sites. Completed ND PFW program grassland status review forms and HAPET 4-square mile data cards will be incorporated into the official PLA file at the Bismarck PFW office and copies will also be retained in the PLA file at the field level. During the period 2017–2021, the ND PFW program sampling universe for Level II biological monitoring is estimated to be 450 sites, with a corresponding sample size of 45. The following core biological and habitat metrics (Table 2) will be assessed for the four most common ND PFW program conservation practices.

**Level III – Landscape Scale Biological Monitoring**

The ND PFW program will continue to work closely with the Region 6 HAPET office to quantify biological outcomes for five key upland nesting duck species (mallard, blue-winged teal, gadwall, northern pintail and northern shoveler) in the ND PFW program Prairie Pothole Region Focus Area. Specifically, ND PFW program will continue to

collaborate with HAPET to assess breeding pair and recruitment benefits associated with new PLAs in the Prairie Pothole Region Focus Area. Specific ND PFW program conservation practices to be evaluated include wetland restorations, wetland establishments, grassland restorations and grassland enhancements. Close coordination with HAPET on Level III monitoring will help assure that the habitat work of the ND PFW program is fully integrated at the landscape-scale with the PPJV Implementation Plan and that our activities are fully supported by current peer-reviewed literature. For example, a growing body of evidence indicates that nest success and breeding survival are the primary demographic factors influencing populations of mid-continent mallards. Thus, the most effective conservation action for mallards (and all other upland nesting ducks) is to conserve those landscape features that enhance nest success and breeding survival. The ND PFW program strives to do this by restoring and enhancing grassland/wetland complexes in high wetland density landscapes to improve recruitment rates for priority waterfowl species. These actions also have a high likelihood of benefitting additional Federal Trust Species, most notably neotropical and temperate migrant songbirds. Conserving large, intact tracts of upland nesting habitat provides benefits to priority upland nesting ducks as well as many grassland songbirds and shorebirds and working closely with landowners is widely recognized as one of the most effective tools for protecting and enhancing the largest remaining grassland/wetland complexes (Higgins et al. 2002). The Level III Landscape Scale Biological Monitoring protocol will involve three distinct steps (Flowchart):

1. Coordinate with HAPET to generate projected biological outcome estimates;
2. Annually pro-rate biological outcomes by actual ND PFW program accomplishments;
3. Annually summarize actual ND PFW program biological outcomes and compare to projected outcomes.



# Attachment 1 ND PFW Level I Monitoring Form



## SITE VISIT REPORT

Landowner Agreement # \_\_\_\_\_

Prism FA Award # \_\_\_\_\_

### Final or Interim

Select One

### Scope of Work

(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

### Project Status

(To be used for an interim report ie...what's been done up to the 1 year mark)  
(Example Language)-About 2 paragraphs

### Species Benefited

\_\_\_\_\_. (You can reference conservation plans as/if you deem necessary)

*Optional/ Literature Cited: (Example)*

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012–2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

### Payment Method

Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # \_\_\_\_ (project type ex. Wetland enhancement) has been completed (or for interim...is in the process of being completed) in accordance with all provisions of the agreement.

\_\_\_\_\_  
PFW Biologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Landowner / Cooperator

\_\_\_\_\_  
Date



**Attachment 2**

**ND PFW Grassland Transect Survey Form**



Transects are 200m long by 100m (50m each side of center) wide and located in a representative portion of the tract

Observer \_\_\_\_\_ Date \_\_\_\_\_ County \_\_\_\_\_

LA# \_\_\_\_\_ Conservation Practice (grazing system or seeding) \_\_\_\_\_

Wind Speed \_\_\_\_\_ Temperature \_\_\_\_\_ Start Time \_\_\_\_\_ End Time \_\_\_\_\_

Primary Habitat Attributes

	YES	NO
Perennial Nesting Cover Present		
Native Grass Species Present		
Native Forb Species Present		
Milkweed Present		

Primary Trust Species

	YES	NO
Grassland Passerines Present		
Shorebirds Present		
Threatened & Endangered Species Present		
Monarch Butterflies Present		
Waterfowl Present		

Trust Species Positively Identified in the Transect

List All Species:



## Attachment 4

# North Dakota Ongoing Monitoring Efforts Listed by Focus Area

### Prairie Pothole Region

- A. Four Square Mile Breeding Waterfowl Survey
  - i. Annual survey of the five most common breeding waterfowl species in North Dakota.
  - ii. Surveys are conducted on randomly selected wetlands within four square mile blocks of habitat and have been conducted for the past 25 years.
  - iii. Survey coordinated by the Service Habitat and Population Evaluation Team (HAPET) and conducted by the Service.
- B. North American Breeding Waterfowl Survey
  - i. Annual breeding waterfowl survey of over 80,000 miles of waterfowl habitat and is conducted from the air and ground.
  - ii. Survey has been conducted for the past 50 years and is believed to be the most extensive, comprehensive, long-term annual wildlife survey in the world.
  - iii. Survey conducted by the Service.
- C. Breeding Shorebird Survey
  - i. Annual survey of six breeding shorebird species.
  - ii. Surveys are conducted on 25 mile routes with survey points every half mile.
  - iii. Surveys are conducted twice a year with the first period being the last week of April through the first 10 days of May and the second period being from the last week of May to the first week of June.
  - iv. Survey coordinated by the HAPET and conducted by the Service.

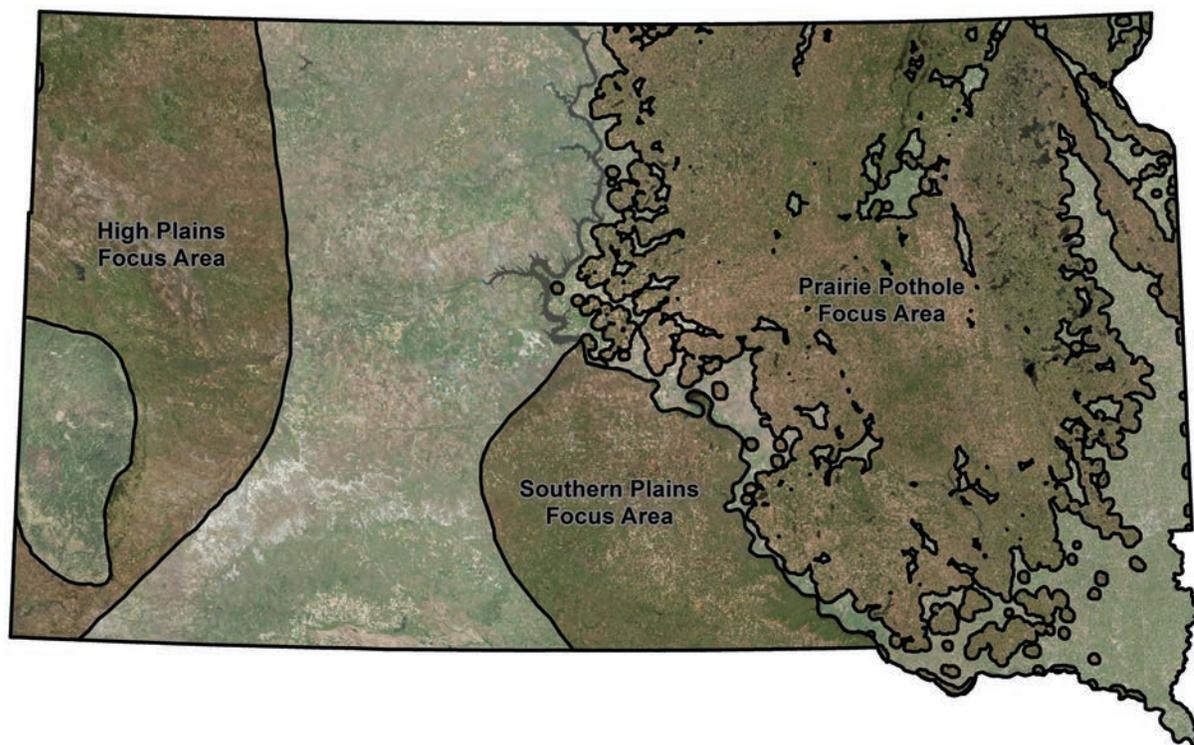
### Sagebrush-Steppe

- A. Greater Sage-Grouse Monitoring
  - i. Annual lek counts that have been ongoing since 1951.
  - ii. The number of males on all known active leks is counted.
  - iii. Survey is conducted by the North Dakota Game and Fish Department (NDGF) and the Bureau of Land Management (BLM).
- B. Breeding Bird Survey
  - i. Nationwide survey that has been done since 1966.
  - ii. Survey conducted on 24.5 mile routes with survey points every half mile.
  - iii. Survey is coordinated by U.S. Geological Survey (USGS).
- C. Demography study of Baird's and Grasshopper sparrows
  - i. Study to determine nest success and adult and juvenile survival rates.
  - ii. Study conducted by Rocky Mountain Bird Observatory (RMBO)

### Western Mixed-Grass Prairie

- A. Integrated Monitoring for Bird Conservation Regions (IMBCR)
  - i. Annual survey of that was started in 2008.
  - ii. Approximately 200 transects (1500 point counts) are surveyed each year.
  - iii. Survey is conducted by the RMBO.
- B. Pheasant Brood Survey
  - i. Annual pheasant brood survey conducted on 106 brood routes.
  - ii. Surveys are conducted during July and August each year.
  - iii. Survey is conducted by the NDGF.
- C. Prairie Grouse Survey
  - i. Annual spring lek counts.
  - ii. Survey has been conducted since the 1940s.
  - iii. Survey is conducted by the NDGF.

# South Dakota



*South Dakota PFW program Focus Areas. USFWS map.*

## Focus Area Selection

South Dakota's 2017–2021 PFW focus areas were primarily developed by utilizing updated biological and spatial data to refine and improve our ongoing focus on high priority wetland and grassland landscapes. For example, updated data on breeding waterfowl distribution from the Service Region 6 Habitat and Population Evaluation Team (HAPET) were used as the central basis for refining the Prairie Pothole Focus Area. In addition, Breeding Bird Survey data was used to confirm the strategic importance of the Prairie Pothole Focus Area to other high focal species such as the chestnut-collared longspur, LeConte's sparrow, black tern and marbled godwit. Modifications to the Southern Plains Focus Area were primarily based on the new Service Monarch Butterfly

National Conservation Priority GIS layer. In addition, Breeding Bird Survey data was also used to document the importance of the Southern Plains Focus Area to other high priority focal species including the lark bunting and long-billed curlew. The South Dakota Greater Sage-Grouse Management Plan (SDGFP 2014a) was used as the basis to develop the biological core of the High Plains Focus Area and the Service-derived estimate for the historical range of the greater sage-grouse was used to define the boundaries of the focus area. In addition, Breeding Bird Survey data and Grassland Bird Conservation Area models (Johnson et al. 2010) were used to confirm the importance of the High Plains Focus Area to other high priority focal species including Baird's sparrow, Sprague's pipit and grasshopper sparrow. In the broadest terms, the 2017–2021

PFW focus area updates are the next step in a 25+ year emphasis on strategic grassland and wetland conservation in support of several key initiatives including the Prairie Pothole Joint Venture (Ringelman 2005), Northern Great Plains Joint Venture (Pool and Austin 2006) and the South Dakota All Bird Conservation Plan (Bakker 2005). In addition, the focus area refinements also strategically support the resource priorities outlined for Region 6 of the Service (Service 2015b) and the Refuge System in Region 6 (Service 2015c).

## Partner Coordination

Since the late 1980s the South Dakota PFW (SD PFW) program has implemented over 6,800 individual Wildlife Extension Agreements (WEAs) and Private Landowner Agreements (PLAs) with landowners throughout the



*Mallard drakes. Photo by Kurt Forman, USFWS.*

state. Ongoing coordination with our landowner partners is the central theme in all of our partner outreach and coordination efforts. As in previous strategic planning exercises, we relied heavily on the input and advice of individual landowners and their associated organizations to guide many of our changes in the 2017–2021 SD PFW Strategic Plan. Most notably, the SD PFW program has a long history of collaborating with the South Dakota Association of Conservation Districts (SDACD) and their 68 county-level affiliates. SDACD’s unique combination of local landowner knowledge and statewide leadership plays a vital role in a wide variety of South Dakota’s natural resource issues. To gather input for the 2017–2021 South Dakota PFW Strategic Plan we coordinated closely with SDACD at a variety of levels. During the first quarter

of 2016 SD PFW staff personally met with 24 individual county-level Conservation Districts representing over 110 landowners and Conservation District members. Additional input for the Strategic Plan update was provided by other key partners including the South Dakota Department of Game Fish and Parks (SDGFP), Pheasants Forever, the NRCS, South Dakota Grassland Coalition (SDGC) and the South Dakota Conservation Commission. As in previous strategic plans, the PFW program also continues to integrate all of its work with other Service programs in the state. For instance, we work on a regular basis with the Ecological Services office and the Wetland Management Districts (WMD) of South Dakota.

#### Prairie Pothole Focus Area



The South Dakota Prairie Pothole Focus Area is based on the highest priority wetland and grassland habitats remaining in the PPJV portion of the state. More specifically, the focus area only includes landscapes with the documented potential to host at least 25 breeding duck pairs per square mile. This determination is based on 29 years of HAPET survey data of five key waterfowl species (mallards, northern pintails, blue-winged teal, northern shovelers, gadwalls). The focus area contains a variety of unique



*Much of the South Dakota PFW program Prairie Pothole Focus Area is characterized by large grassland tracts with high wetland densities. USFWS Photo.*

glaciated landforms. The Prairie Coteau hills in the northeastern portion of the focus area has very high wetland densities and also hosts some of the largest remaining tracts of northern tallgrass prairie in the Nation (Service 2000). The western portion of the focus area is dominated by the Missouri Coteau which has been documented to host some of the highest breeding duck densities in North America. Maintaining the Prairie Pothole Focus Area as a viable “recruitment source” for all suites of prairie nesting ducks has been identified as a high priority of the Service, Delta Waterfowl and DU. Annual survey and banding data continue to reaffirm the critical role the eastern Dakotas play in supporting continental duck populations. For example, published banding data documents the Eastern Dakotas Breeding Reference area (which encompasses

the SD PFW Pothole Focus Area and the PPJV portion of North Dakota) and is vitally important to supporting blue-winged teal populations for the entire western hemisphere. Specifically, an extensive analysis of banding data recently documented that despite the Eastern Dakotas Breeding Reference area only being one of 12 such banding regions for blue-winged teal, it accounted for 42.6% of the entire blue-winged teal harvest from 1994–2003 (Szymanski and Dubovsky 2013).

While many of the habitat actions in this focus area are primarily designed to conserve breeding waterfowl habitat, this type of landscape-scale grassland and wetland conservation also yields direct benefits to a wide spectrum of other trust species. For example, these types of landscape-scale conservation actions are especially

vital to grassland nesting passerines which are widely considered to be one of the most imperiled bird guilds in North America (Peterjohn and Sauer 1999). In addition, maintaining the remaining native prairie landscapes of the Dakotas is emerging as an important strategy for conserving pollinators such as the Dakota skipper (Service 2014d), monarch butterflies, and a variety of wild bee species (Koh et al. 2015).

While the South Dakota Prairie Pothole Focus Area is high priority habitat for a wide variety of trust species, this region has also garnered much attention related to the topic of native prairie loss. The conversion of native prairie grasslands to other uses has drawn a wide degree of interest from academia (Conner et al. 2001), ecologists (Ogg 2006), policy analysts (GAO 2003, GAO



*Black-crowned night heron on a PFW wetland restoration in the Prairie Pothole Focus Area. Photo by Kurt Forman, USFWS.*

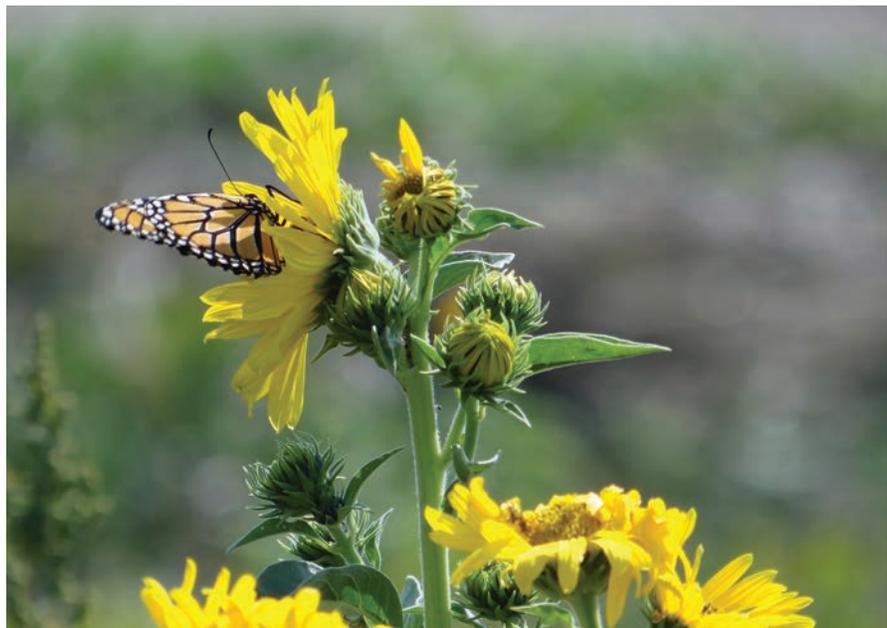
2007, CRS 2007) and wildlife conservationists (Rashford et al. 2010). Most recently, Wright and Wimberly (2013) documented a disproportionately high degree of grassland loss in the eastern Dakotas and concluded that, “Grassland conversion between 2006 and 2011 was mostly concentrated in North Dakota and South Dakota, east of the Missouri River”. The same researchers also documented a significant spatial nexus between grassland loss and wetlands. Within South Dakota, it was documented that, “nearly 100,000 ha of grassland conversion occurred within a 100-meter buffer surrounding wetlands.”

One of the most viable techniques noted for conserving the unique habitats of this region is to forge new and accelerated partnerships with the local ranching community (Higgins et al. 2002). Most recently, partnering with local grassland ranchers was a central theme noted by the Service in the approval of the Dakota Grasslands Conservation Area (DGCA). A specific goal cited for the DGCA is to “conserve working landscapes based on ranching and livestock operations that support a viable livestock industry” (Service 2011).

In an effort to support this goal, the SD PFW program has joined a diverse cadre of partners to foster a sustainable grassland economy based on family livestock

ranching. The SD PFW program has developed an integrated system of voluntary habitat conservation programs designed to simultaneously benefit grazing lands important to ranchers and the vital landscape attributes needed by a wide variety of trust species. Specific PFW habitat actions include restoring grasslands and wetlands, implementing beneficial grazing systems and creating wetlands. The efforts of the SD PFW program in this focus area are largely based upon the broad strategies and goals of the North

American Waterfowl Management Plan (Service 2012), the National Partners in Flight Plan (Rich et al. 2004, Pashley et al. 2000), the northern plains/pothole portion of the U.S. Shorebird Conservation Plan (Skagen and Thompson 2001), the North American Waterbird Conservation Plan (Beyersbergen et al. 2004, Kushlan et al. 2002), and the South Dakota Wildlife Action Plan (SDGFP 2014b). In addition, the PFW actions conducted in the Prairie Pothole Focus Area support the goals specified by the Service in Region 6 (Service 2015b) and the Service Refuge System in Region 6 (Service 2015c). For example, the Service Region 6 priorities include the following as a priority goal – “Protect enough grassland and wetlands in the Prairie Pothole Region to ensure stable populations of waterfowl, and wetland and grassland migratory birds.”



*Monarch butterfly utilizing a native prairie restoration project completed by the South Dakota PFW program in the Prairie Pothole Focus Area. Photo by Jen Briggs, USFWS.*

**Prairie Pothole Focus Area Focal Species**

- Mallard
- Black tern
- LeConte’s sparrow
- Chestnut-collared longspur
- Marbled godwit
- Sandhill crane
- Topeka shiner (Endangered)
- Dakota skipper (Threatened)
- Monarch butterfly

**Prairie Pothole Focus Area Habitat Targets**

- Grassland Restoration: 4,000 acres
- Grassland Enhancement: 95,000 acres
- Wetland Restoration : 900 acres
- Wetland Establishment: 200 acres

**Prairie Pothole Focus Area Partnership Targets**

- Private Landowner Agreements: 600
- Partnerships: 1,080
- Technical Assistance: 325 staff/days
- Percent Leveraging: 70% or more of non 1121 sources

*Implementation strategy for habitat objectives:* As in previous years, upland objectives will primarily be met by expanding the number of projects completed with livestock producers, primarily cattle ranchers. Most notably, SD PFW staff will coordinate closely with local landowners to design and implement managed grazing systems and grassland restorations that simultaneously support grassland-based ranching and trust species conservation. Specific conservation practices to be completed for upland conservation include, grass seedings, forb seedings, cross-fence, boundary fence and a wide variety of livestock water developments.

Wetland objectives will primarily be addressed by restoring wetlands in grassland tracts, and creating multiple purpose wetlands that simultaneously benefit trust species and provide ranchers with additional options for livestock water and grazing management.

*Implementation strategy for partnership objectives:* As in previous versions of the SD PFW Strategic Plan, new partners will primarily be landowners participating in new PLAs. Along with financial assistance, the SD PFW program also provides a significant degree of technical assistance for habitat projects. A primary emphasis will be placed on

assisting ranchers with developing grazing management plans. The SD PFW program will continue to secure a high proportion of “non-1121” funding sources for habitat projects. This will be accomplished through a combination of grant writing, non-federal partner funds and landowner contributions. Other partners playing a key role in the Prairie Pothole Focus Area include SDACD, SDGFP, Pheasants Forever, SDGC and DU.



Wetland restoration completed by PFW in the Prairie Pothole Focus Area. Photo by Chuck Pyle, USFWS.



Wetland restoration jointly completed by PFW and Refuge staff on private land in the Prairie Pothole Focus Area, South Dakota. USFWS Photo.



*Native prairie restoration completed by the South Dakota PFW program in the Prairie Pothole Focus Area. Photo by Jim Madsen, South Dakota landowner.*



*A wetland and grassland complex in the Prairie Coteau portion of the Prairie Pothole Focus Area. Photo by Kurt Forman, USFWS.*

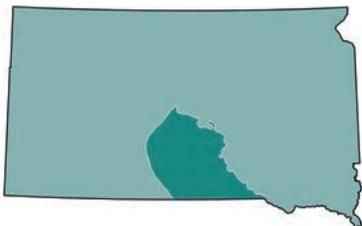


*Trumpeter swan on a South Dakota PFW program wetland establishment in the Prairie Pothole Focus Area. Photo by Steve Bunkers, South Dakota landowner.*



Wetland restoration completed by the South Dakota PFW program in the Prairie Pothole Focus Area. Photo by Steve Spawn, USFWS.

### Southern Plains Focus Area



Large contiguous tracts of mixed-grass prairie and high densities of un-glaciated wetland basins (Rieger 2006) are the defining landscape features of the Southern Plains Focus Area. While the core landscape attributes of the focus area have not changed from previous strategic plan versions, the focus area boundaries have changed significantly in the 2017–2021 Strategic Plan. The focus area boundary was adjusted significantly from previous years based on the new Service Monarch

Butterfly National Conservation Priority GIS layer. In addition, Breeding Bird Survey data was also used to document the importance of the Southern Plains focus area to other high focal species including the lark bunting and long-billed curlew. The focus area boundary refinement and the change in focal species both strategically support the Service Region 6 priorities (Service 2015b) which include the following as priority goals, (1) “Reverse the declining trend for monarchs and other endemic pollinators” and (2) “Reverse the declining trend of grassland nesting migratory birds.”

At the largest scale, the SD PFW efforts within this focus area are largely based upon the conservation goals of the North American Waterfowl Management Plan (Service 2012), the National Partners in Flight

Plan (Rich et al. 2004, Pashley et al. 2000), the Northern Great Plains Joint Venture Concept Plan (NGPJV 2001) and the Northern Great Plains Joint Venture Implementation plan (Pool and Austin 2006). All of these plans note landscape-scale habitat work as an effective vehicle for conservation, particularly for migratory birds.

As in other portions of South Dakota, working with ranchers to maintain and restore grasslands is widely noted as the most effective way to conserve trust species habitat in the Southern Plains Focus Area. For example, the initial concept plan for the Northern Great Plains Joint Venture (NGPJV 2001) notes that, “Preservation of a ranching lifestyle is considered critical to maintaining prairie ecosystems because of the dependence on



*A combined wetland establishment and grazing system completed by the South Dakota PFW program in the Southern Plains Focus Area. Photo by Jesse Lisburg, USFWS.*

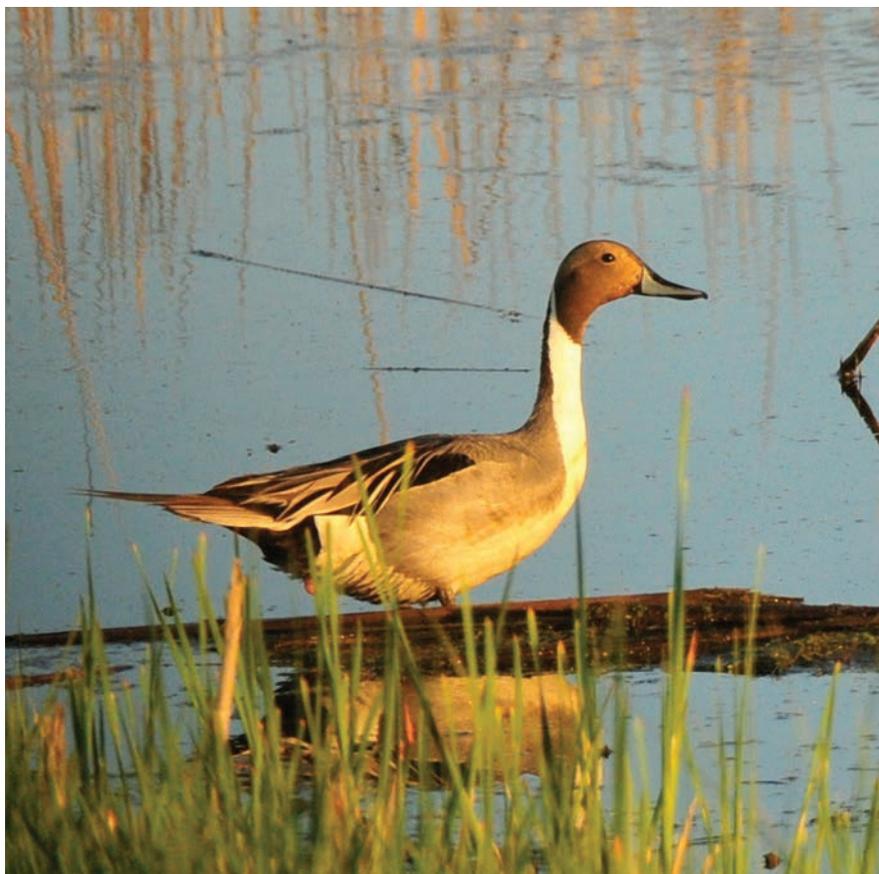
grass and other natural features.” Likewise, the Partners in Flight Conservation Plan (Pashley et al. 2000) for this portion of South Dakota notes, “Maintenance of a ranching economy here is compatible with the needs of grassland birds and should be the highest conservation priority.” For over 20 years, the SD PFW program has forwarded community-based conservation programs in the Southern Plains Focus Area by providing a wide variety of options to ranchers to assist in meeting their grassland stewardship goals. More specifically, SD PFW staff coordinate closely with local landowners to design and implement managed grazing systems and grassland restorations that simultaneously support grassland-based ranching and trust species conservation. Specific upland conservation practices include, grass seedings, forb seedings, cross-fence, boundary fence and livestock water

developments. Likewise, multiple purpose wetland establishments are configured to simultaneously

provide benefits to migratory birds, and at the same time provide ranchers with additional



*Much of the South Dakota PFW program Southern Plains Focus Area is characterized by large contiguous tracts of native mixed-grass prairie used for livestock grazing. Photo by Kurt Forman, USFWS.*



Northern pintail drake. Photo by Tom Koerner, USFWS.

options for livestock water and grazing management. Ground nesting songbirds, shorebirds and waterfowl receive particularly high benefits from PFW grassland and wetland conservation efforts in the Southern Plains Focus Area. In addition, spatial data recently developed by the Service illustrates this portion of South Dakota contains high priority monarch butterfly habitat. Managed grasslands have the ability to retain carbon (Conant 2010) and provide the most favorable watershed conditions for maintaining wetland hydrology (Voldseth et al. 2009).

*Implementation strategy for habitat objectives:* As in previous versions of the SD PFW strategic plan, grassland habitat targets will primarily be met by expanding the number of grazing management projects completed with livestock producers. Wetland objectives will primarily be addressed by creating multiple purpose wetlands that simultaneously provide trust species benefits and also provide ranchers with additional options for livestock water and grazing management.

*Implementation strategy for partnership objectives:* As in previous years, a diverse group of partners have joined the SD PFW program in conserving this unique landscape. Primary partners in this effort include SDGFP, SDGC, Pheasants Forever, SDACD and landowner partners. Collectively, this group of partners strives to implement conservation goals of mutual interest that meet both the needs of the landscape and landowners of the Southern Plains Focus Area. New partners will primarily be landowners who value grassland habitats for livestock grazing. Along with financial assistance, the SD PFW program also provides a significant degree of technical assistance for habitat projects. A primary emphasis will be placed on assisting ranchers with developing grazing management plans. The SD PFW program will continue to secure a high proportion of “non-1121” funding sources for our habitat projects. As in the past, this will be accomplished through a combination of grant writing, non-federal partner contributions and landowner input.

**Southern Plains Focus Area Focal Species**

- Monarch butterfly
- Chestnut-collared longspur
- Northern pintail
- Mallard
- Lark bunting
- Wilson’s phalarope
- Long-billed curlew

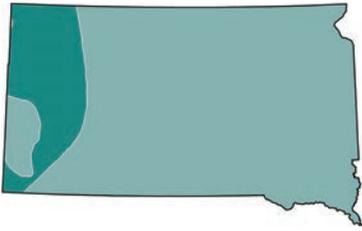
**Southern Plains Focus Area Habitat Targets**

- Grassland Restoration: 800 acres
- Grassland Enhancement: 20,000 acres
- Wetland Establishment: 200 acres

**Southern Plains Focus Area Partnership Targets**

- Private Landowner Agreements: 80
- Partnerships: 176
- Technical Assistance: 110 staff/days
- Percent Leveraging: 70% or more of non -121 sources

## High Plains Focus Area



The South Dakota High Plains Focus Area is characterized by large tracts of shortgrass prairie interspersed with a wide variety of riparian features (Rieger 2006). Greater sage-grouse core areas (SDGFP 2014) continue to be the biological core of the High Plains Focus Area, however the focus area boundary was adjusted significantly from previous years based on the Service-derived estimate of the historic range of the greater sage-grouse. In addition, GBCA spatial data was utilized to confirm the new focus area boundary included a high proportion of the largest contiguous GBCAs remaining in

western South Dakota. Breeding Bird Survey data was also used to confirm the importance of the revised focus area to high focal species including Baird's sparrow, Sprague's pipit and grasshopper sparrows.

As in other portions of South Dakota, PFW efforts within the High Plains Focus Area are closely aligned with the conservation goals of the North American Waterfowl Management Plan (Service 2012a), the National Partners in Flight Plan (Rich et al. 2004, Pashely et al. 2000) and the Northern Great Plains Joint Venture Implementation Plan (Pool and Austin 2006). All of these bird conservation efforts note landscape-scale habitat work as an effective vehicle for bird conservation. Additionally, the focus area boundary refinement and the change in focal species strategically support the Service Region 6 priorities (Service 2015-A) which include the following

as priority goal: (1) "Reverse the declining trend of grassland nesting migratory birds" and (2) "Ensure self-sustaining populations of sage-dependent birds and other sagebrush associated species".



*A grazing management project completed by the South Dakota PFW program in the High Plains Focus Area. Photo by Steve Fairbairn, USFWS.*

### High Plains Focus Area Focal Species

- Greater sage-grouse
- Northern pintail
- Lark bunting
- Sprague's pipit
- Baird's sparrow
- Grasshopper sparrow
- Chestnut-collared longspur
- Wilson's phalarope
- Long-billed curlew

*Implementation strategy for habitat objectives:* Upland habitat objectives will primarily be met by partnering with local landowners to implement grazing management plans that are tailored to the more arid landscapes of the High Plains Focus Area. More specifically, the PFW program will continue to work closely with local Conservation Districts and NRCS staff to identify and implement grazing management projects that benefit ranchers and trust species, particularly greater sage-grouse. The PFW program will continue to integrate closely with SGI, NRCS and BLM staff to ensure the PFW program most strategically contributes to the conservation of sage brush habitats and associated wildlife species in the High Plains Focus Area.

*Implementation strategy for partnership objectives:* Primary partners assisting the SD PFW program in the High Plains Focus Area include the National Fish and Wildlife Foundation, Pheasants Forever, SDACD, SDGDP and SDGC. Most importantly however, new landowner partners will be critical to successfully implementing shared conservation goals in the High Plains Focus Area. New landowner partners will primarily be ranchers who are interested in enhancing grassland and riparian habitats. Along with financial assistance, the SD PFW program also provides a significant degree of technical assistance for habitat projects. A primary emphasis will be placed on assisting ranchers with developing grazing management and riparian grazing deferment plans for their operations. The SD PFW program will continue to secure a high

### High Plains Focus Area Habitat Targets

- Grassland Restoration: 300 acres
- Grassland Enhancement: 25,000 acres
- Wetland Establishment: 90 acres

### High Plains Focus Area Partnership Targets

- Private Landowner Agreements: 120
- Partnerships: 264
- Technical Assistance: 75 staff/days
- Percent Leveraging: 70% or more of non-1121 sources

proportion of “non-1121” funding sources for our habitat projects. This will be accomplished through a combination of grant writing, non-federal partner contributions and requiring some degree of landowner input for most projects. Special emphasis will be placed

on securing additional funding opportunities in support of greater sage-grouse conservation.



*The South Dakota PFW program High Plains Focus Area includes 100% of the greater sage-grouse core areas identified in the South Dakota Game, Fish, and Parks 2014–2018 South Dakota Greater Sage-Grouse Plan. Photo by Joe Nichols, USFWS.*



*The South Dakota PFW program High Plains Focus Area is primarily defined by large tracts of shortgrass prairie. Photo by Joe Nichols, USFWS.*

# South Dakota Statewide Goals



## Improve Information Sharing and Communication

### Objectives

- Participate in, or contribute to 15 youth activities throughout South Dakota.
- Participate in, or contribute to 10 Congressional outreach activities.
- Participate in 20 NRCS state technical committee meetings or associated sub-committee meetings throughout South Dakota.
- Participate in 15 meetings of the PPJV and NGPJV.

### Implementation Strategy

As in previous versions of the SD PFW Strategic Plan, the primary vehicle for improved communication with landowners will be the ongoing relationship between the SD PFW program and SDACD. SD PFW staff will continue to regularly participate in county-level Conservation District meetings and state-level SDACD functions. In recent years the SD PFW program has also greatly expanded our landowner-based partnership with the SDGC. SD PFW staff regularly attend SDGC functions. In

addition, the SD PFW program and SDGC recently developed a coordinated system for introducing PFW landowner partners to the technical assistance programs available through SDGC. The SD PFW program will continue to remain very active in the NRCS state technical committee and program-specific sub-committees. Likewise, the SD PFW program will continue to improve communications at the regional and national levels by maintaining a strong presence in a wide variety of work groups and committees. Specifically, PFW staff are standing members of the Northern Great Plains Working Group and the technical committees of both the PPJV and NGPJV.

## Enhance Our Workforce

### Objectives

- Annually provide each PFW biologist 40 hours of training on a wide variety of topics including, but not limited to, habitat conservation, GIS techniques, career development and natural resource conservation policy.



*South Dakota PFW program biologist assists the South Dakota Grassland Coalition with their annual "Grazing School." Photo by Chuck Pyle, USFWS.*



*South Dakota PFW program staff participate in wide variety of partner events including the South Dakota Association of Conservation Districts (SDACD) annual convention pictured here. USFWS Photo.*

- Annually complete Individual Development Plans (IDPs) for the entire South Dakota PFW staff.
- Strategically place new PFW biologists in initial positions where they can be effectively mentored by senior PFW staff.
- Annually enter 150-190 new PFW projects into HABITS and integrate the same data into the HAPET-PLGIS to assess biological outcomes.

### **Implementation Strategy**

Most PFW training needs during 2017–2021 will be met through the annual SD PFW staff meeting. Annual PFW training provides a mix of policy updates, technical training and guest presentations. As a standing practice, the annual SD PFW training session often includes key conservation partners from throughout South Dakota. The annual meetings of the South Dakota chapter of The Wildlife Society also provide a valuable opportunity for additional training and coordination with conservation partners from throughout the state. In addition, all SD PFW staff complete IDPs each year and are encouraged to pursue other training sessions and career development opportunities.

### **Implementation Strategy**

The SD PFW program's recently implemented monitoring plan will serve as our primary guide for increasing accountability and evaluating program effectiveness. As in previous years, we will continue

## **Increase Accountability**

### **Objectives**

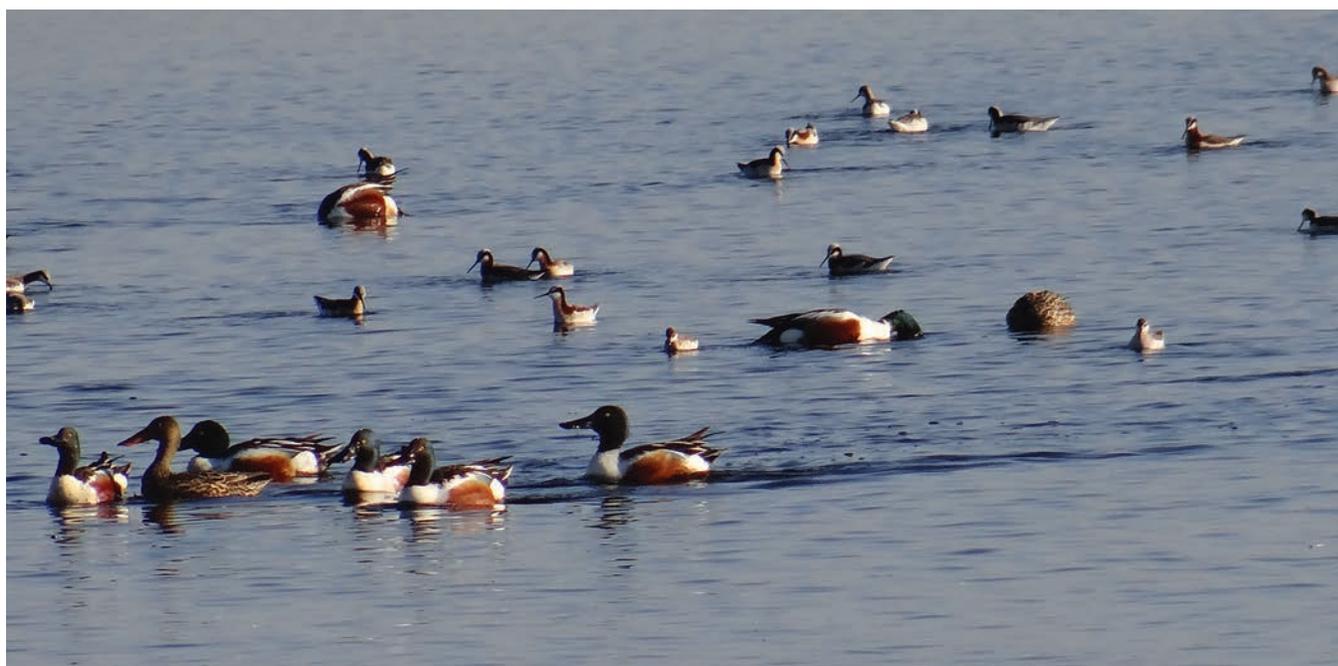
- Complete 850 Level 1 “On-Site” status reviews of individual PFW projects as outlined in the SD PFW Monitoring Plan. This represents 100% of the PLAs estimated to be completed during 2017–2021 throughout all of South Dakota.
- Complete 1,195 Level 1 “Off-Site” mid-term status reviews of individual PFW projects as outlined in the SD PFW Monitoring Plan.
- Complete Level-II biological monitoring on 85 individual PFW projects as outlined in the SD PFW Monitoring Plan.
- Complete 5 annual narratives documenting PFW activities throughout South Dakota.



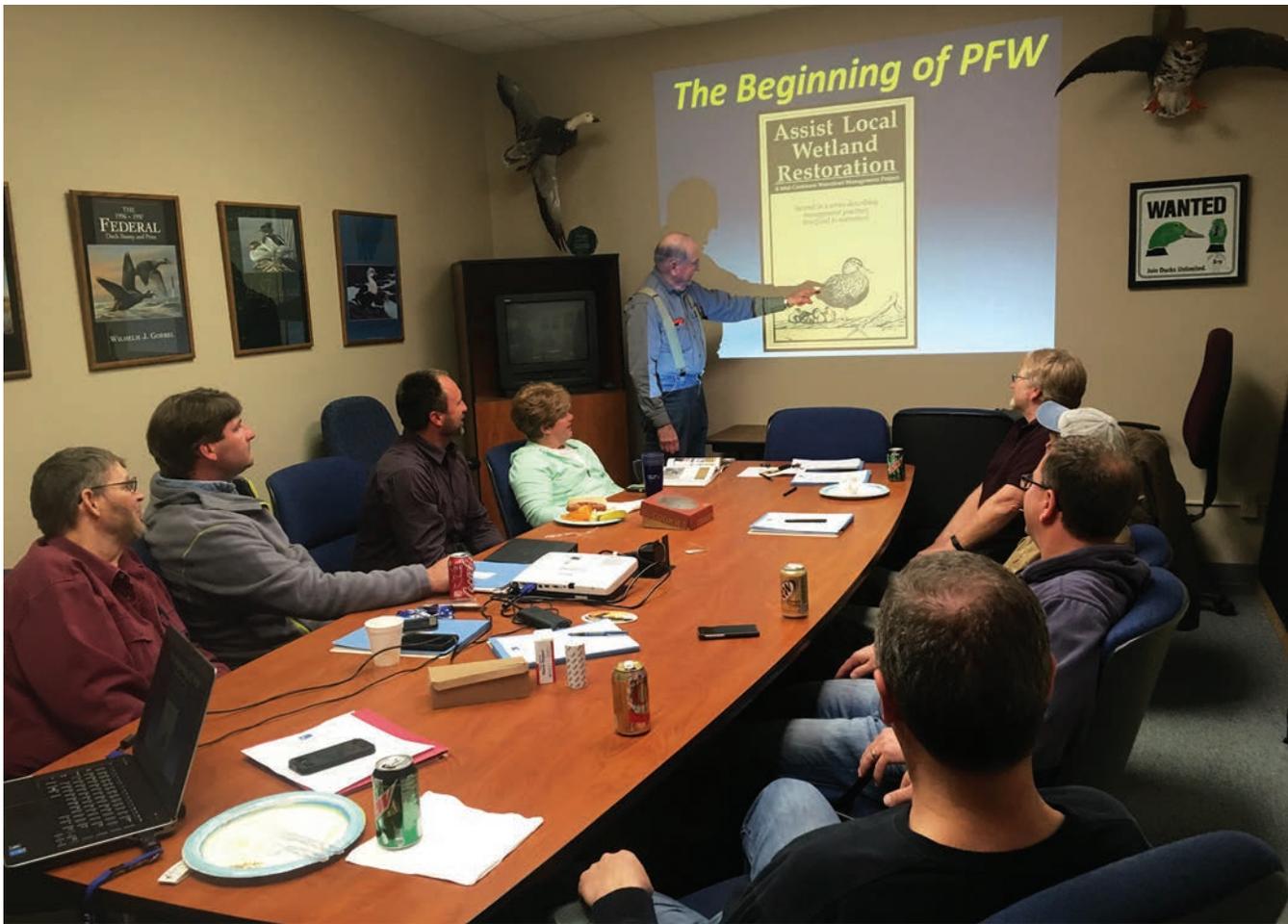
*South Dakota PFW staff partner with South Dakota Association of Conservation Districts to host the annual South Dakota Association of Conservation Districts convention for over 200 landowners and other conservation partners. USFWS Photo.*



*The South Dakota PFW program partnered with the city of Brookings, SD to complete a 2.3 acre pollinator seeding with 44 native forb species as part of the National Wildlife Federation's Mayor's Monarch Challenge. Additional partners included the Brookings Wildlife Federation, Pheasants Forever, Milborn seeds and the Brookings School District. Photo by Boyd Schulz, USFWS.*



*Wilson's phalaropes and northern shovellers on a HAPET shorebird route annually surveyed by the South Dakota PFW program. Photo by Kurt Forman, USFWS.*



*Carl Madsen, one of the original pioneers of the PFW program, discusses conservation philosophy at the 2016 South Dakota PFW annual staff meeting. USFWS Photo.*

to actively develop and maintain a full GIS coverage and associated database of all historic PFW projects in South Dakota. Likewise, all new PFW projects will be entered into a HAPET managed GIS system. This information will then be the basis for quantifying trust species benefits of PFW projects. The SD PFW program will work closely with the Region 6 HAPET office to model species-specific benefits. Initial benefits will be quantified for PFW wetland and grassland projects and their use by mallards, gadwall, blue-winged teal, northern shovelers and northern pintails in the Prairie Pothole Focus Area. In addition, the SD PFW program has a long history of coordinating with researchers at South Dakota State University. We will continue to look for opportunities to partner on wetland and grassland research projects with a direct nexus to applied conservation. In addition, we will seek to support additional research opportunities in the arena of “human dimensions” with an emphasis on the social and economic factors that influence land-use decisions.

### Biological Outcomes (Prairie Pothole Focus Area)

The SD PFW program continues to work closely with wildlife researchers to quantify biological outcomes. Most notably, PFW staff have collaborated with the Service’s Region 6 HAPET office to assess duck recruitment and breeding pair outcomes in the PFW Prairie Pothole Focus Area of South Dakota. Specifically, published data and peer reviewed HAPET models were used to model recruitment and habitat protection benefits for five key upland nesting duck species (mallard, gadwall, blue-winged teal, northern shoveler, northern pintail). For additional details, see the Level III Section of the South Dakota Monitoring Plan.

### Monitoring Plan

#### Background

Since the program’s inception, the SD PFW program has completed approximately 6,800 individual projects totaling over 805,000 acres throughout the state. The strategic foundation of the SD PFW program is largely based upon the broad strategies and goals of the North American Waterfowl Management Plan (NAWMP 2012), Prairie Pothole Joint Venture Implementation



*Conducting vegetation surveys as part of a Rangeland Monitoring Workshop. USFWS photo.*

Plan (Ringelman 2005), National Partners in Flight Plan (Rich et al. 2004, Pashley et al. 2000), Northern Plains/Pothole portion of the U.S. Shorebird Conservation Plan (Skagen and Thompson 2001), Northern Great Plains Joint Venture Implementation Plan (Pool and Austin 2006), and the North American Waterbird Conservation Plan (Beyersbergen et al. 2004). A primary theme among all the major bird conservation plans in the Northern Great Plains is strategically targeted landscape-scale conservation, especially of wetland and grassland resources. Accordingly, the SD PFW program has consistently focused on wetland and grassland conservation. For example, of the 4,957 SD PFW projects completed during the period 1998-2015, 97.1% were specifically implemented for grassland or wetland conservation. Furthermore, 100% of the SD PFW wetland and grassland conservation effort was implemented via the reoccurring use of four primary conservation practices (grassland restorations, grassland enhancements, wetland restorations and wetland establishments). SD PFW's strategic emphasis on wetland and grassland conservation was reaffirmed in the 2007, 2012 and 2017 Region 6 PFW Strategic Plans (Service 2007, Service 2012).

The benefits of wetland and grassland conservation are well documented. Over the last six decades hundreds

of research projects and related publications have been completed throughout the Northern Plains assessing grassland/wetland habitats and associated wildlife. In addition, a wide variety of ongoing monitoring projects are active in the state (Attachment 1). Specific to PFW projects, the SD PFW program has worked closely with the Service's Region 6 HAPET to quantify biological outcomes for five key upland nesting duck species (mallards, blue-winged teal, gadwall, northern pintail and northern shoveler) in the SD PFW Prairie Pothole Focus Area. In addition, the SD PFW program has worked closely with South Dakota State University to evaluate specific SD PFW conservation practices (Larson 1997, Roush 1998, Juni 2001, May 2001). The goal of the subject SD PFW monitoring plan is to augment previous monitoring efforts with a formalized strategy based on a larger sample size.

#### **Level I - Status Reviews**

The SD PFW program will conduct Level I status reviews at two temporal scales. On-site field visits will be conducted for all new projects. In addition, off-site mid-term status reviews for older projects will be conducted remotely via a combination of Region 6 PLGIS data and imagery from the National Agricultural Imagery Program (NAIP).

**Level I On-Site Methods**

SD PFW staff will complete a standardized Region 6 PFW Status Review Form for each newly finished PFW project (Attachment 2). SD PFW staff will physically review each newly completed project to ensure that prescribed conservation practices were installed in accordance with provisions of the Private Landowner Agreement (PLA). The site visit and Status Review Form will be completed before the payment process is initiated and the Status Review Form will be submitted to the Brookings PFW office as part of the payment initiation request. Completed Status Review Forms will be incorporated into the official PLA file at the field level and also attached to

the PLA copies retained in the Brookings PFW office. It is estimated that approximately 170 new SD PFW projects will undergo level 1 on-site field reviews each field season.

**Level I Off-Site Methods**

SD PFW staff will utilize a combination of Region 6 PLGIS data and NAIP imagery to remotely conduct mid-term status reviews of a sub-set of older Wildlife Extension Agreements (WEAs) and PLAs. The combination of PLGIS polygons and the most current NAIP imagery will provide a means to remotely review the basic status of the four most common SD PFW conservation practices (grassland enhancements,

**Table 1: Schedule of Work for Off-Site Level 1 Status Reviews**

Year Status Review to be Completed	Year of PFW Agreements	Sample Size	Year of NAIP Imagery
2016	2011	208	2014
2017	2012	309	2016
2018	2013	266	2016
2019	2014	246	2018
2020	2015	166	2018

**Table 2. Core Biological and Habitat Monitoring Metrics**

SD PFW Conservation Practice	Key Habitat Attributes (Presence or Absence)	Trust Species* (Presence or Absence Only)	Trust Species** (Survey-Count)
Grassland Enhancement	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N) Milkweed (Y/N)	Grassland Songbirds (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N)	N/A
Grassland Restoration	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N) Milkweed (Y/N)	Grassland Songbirds (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N)	N/A
Wetland Establishment	Hydrology (Y/N) Hydrophytes (Y/N) Mudflats (Y/N)	N/A	Number of Breeding Waterfowl Pairs Utilizing the Project  Number of Shorebirds, T&E Species and Waterbirds Utilizing the Project
Wetland Restoration	Hydrology (Y/N) Hydrophytes (Y/N) Mudflats (Y/N)	N/A	Number Breeding Waterfowl Pairs Utilizing the Project  Number of Shorebirds, T&E Species & Waterbirds Utilizing the Project

\*One centrally located fixed width belt transect (200 meters x 100 meters) will be surveyed in each grassland tract for the presence/absence of grassland passerines. Standardized field techniques and survey parameters will be used (Salo 2003, Bakker and Higgins 2009). Additionally, the presence/absence of shorebirds, T&E species and monarch butterflies will also be recorded during the same survey on a standardized data card.

\*\*Standard HAPET 4-square mile survey techniques and data cards will be used to assess breeding waterfowl pairs. In addition, all shorebirds, waterbirds and T&E species observed on the sampled wetlands will also be recorded during the same survey.

grassland restorations, wetland establishments and wetland restorations). The following framework and schedule (Table 1) will serve as a guide to strategically implement the remote status review protocol for approximately 1,195 projects.

### **Level II - Site Specific Biological Monitoring**

SD PFW staff will complete a combination of presence/absence surveys and counts of key Federal Trust Species and associated habitat attributes on a stratified random sample of 10% of SD PFW projects. The random sample will be stratified by the four primary SD PFW conservation practices (grassland restorations, grassland enhancements, wetland restorations and wetland establishments). The annual sample universe will consist of SD PFW projects in HabITS completed two years prior to the current fiscal year. The two-year interval will provide a suitable amount of time for the vegetation and hydrology components of most projects to become fully established. For example, in FY 2016 the stratified random sample would consist of 10% of the SD PFW projects completed in FY 2014. Habitat attribute data and focal species data will be collected on the same site visit. A one-page standardized SD PFW grassland status review form (Attachment 3) will be used to collect data on each grassland site in the sample. Standard HAPET 4-square mile data cards will be used on sampled wetland sites (Attachment 4). Completed SD PFW grassland status review forms and HAPET data cards will be incorporated into the official PLA file at the field level and also attached to the PLA copies retained in the Brookings PFW office. During the period 2017–2021, the SD PFW sampling universe for Level II biological monitoring is estimated to be 850 total sites, with a corresponding sample size of 85. The following core biological and habitat metrics (Table 2) will be assessed for the four most common SD PFW conservation practices.

### **Level III - Landscape-Scale Biological Monitoring**

The South Dakota PFW program will continue to work closely with the Region 6 HAPET office to quantify biological outcomes for five key upland nesting duck species (mallards, blue-winged teal, gadwall, northern pintail and northern shoveler) in the SD PFW Prairie Pothole Focus Area. Specifically, PFW will continue to collaborate with HAPET to assess breeding pair and recruitment benefits associated with new PLAs in the Prairie Pothole Focus Area. Specific SD PFW conservation practices to be evaluated include wetland restorations, wetland establishments (i.e. wetland creations), grassland restorations and grassland enhancements. Closely coordinating with HAPET on Level III monitoring will help assure that the work of the SD PFW program is fully integrated at the landscape-scale with the PPJV Implementation Plan and is also well supported by current peer-reviewed literature. For example, a growing body of data documents that the primary demographic factors influencing population growth of mid-continent mallards are nest success and breeding survival. Thus, the most effective conservation action for mallards (and by inference all upland nesting ducks) is to conserve those landscape features that enhance nest success and breeding survival. The SD PFW program strives to do this by conserving high priority landscapes as recruitment sources for ducks. These actions also have a high likelihood of benefitting additional trust species, most notably neotropical and temperate migrant songbirds. Conserving the largest possible tracts of upland nesting habitat is of mutual benefit to prairie nesting ducks, grassland songbirds and shorebirds. Working closely with landowners is recognized as an effective tool to protect and enhance the largest remaining grassland/wetland complexes in the Northern Great Plains (Higgins et al. 2002). The Level III landscape-scale biological monitoring protocol will involve three distinct steps (Flowchart)– 1: Coordinate with HAPET to generate projected biological outcome estimates, 2: Annually pro-rate biological outcomes by actual PFW accomplishments and, 3: Annually summarize actual PFW biological outcomes and compare to projected outcomes.

### Level III Landscape Scale Biological Monitoring Flowchart

**Step 1:** Coordinate closely with HAPET to develop biological outcome estimates for the primary conservation practices completed in the South Dakota PFW Prairie Pothole Focus Area (2017-2021)

State	Focus Area	Project Type	Class	Target Acres	Term (Yrs)	Annual Pairs <sup>1</sup>	Cumulative Pairs <sup>2</sup>	Annual Productivity <sup>3</sup>	Cumulative Productivity <sup>4</sup>
South Dakota									
> 25 Breeding Duck Pairs East River									
Wetland Restoration									
			Temporary	72	10	74	737	131	1,305
			Temporary	108	99	110	10,938	196	19,380
			Seasonal	108	10	109	1,086	194	1,938
			Seasonal	162	99	163	16,134	291	28,779
			Semipermanent	180	10	113	1,134	137	1,369
			Semipermanent	270	99	170	16,840	204	20,323
			<b>Totals</b>	<b>900</b>		<b>739</b>	<b>46,869</b>	<b>1,153</b>	<b>73,093</b>
			Wetland Creation						
			Semipermanent	200	10	126	1,260	342	3,420
			<b>Totals</b>	<b>200</b>		<b>126</b>	<b>1,260</b>	<b>342</b>	<b>3,420</b>
			Grassland Restoration <sup>5</sup>						
			New	1,200	10			260	2,602
				2,800	99			607	60,097
			<b>Totals</b>	<b>4,000</b>				<b>867</b>	<b>62,699</b>
			Grassland Enhancement <sup>6</sup>						
			Maintenance	95,000	10			20,596	205,960
			<b>Totals</b>	<b>95,000</b>				<b>20,596</b>	<b>205,960</b>
			<b>Grand Totals</b>						
					<b>1st 10 Years</b>	<b>8,653</b>		<b>229,581</b>	
					<b>Remaining Years</b>	<b>39,476</b>		<b>115,591</b>	
					<b>Cumulative</b>		<b>48,129</b>		<b>345,172</b>

**Note:** South Dakota and North Dakota used identical definitions, assumptions and expansion factors as the basis for generating biological outcome estimates. See page 202 for details.

**Step 2:** Annually summarize HabITS derived accomplishment data for PFW projects completed in the South Dakota Prairie Pothole Focus Area. Accomplishments are then pro-rated according to HAPET estimates of projected pairs and recruits to generate annual biological outcome estimates.

**Step 3:** Annually summarize biological outcomes from the SD PFW Prairie Pothole Focus area and compare actual biological outcomes to projected biological outcomes.

Year	Actual Cumulative # of Breeding Pairs Benefitted	Projected Goal for Cumulative # of Breeding Pairs Benefitted	Actual Cumulative # of Recruits Benefitted	Projected Goal for Cumulative # of Recruits Benefitted
2017	To be determined	9,625	To be determined	69,034
2018	To be determined	9,625	To be determined	69,034
2019	To be determined	9,625	To be determined	69,034
2020	To be determined	9,625	To be determined	69,034
2021	To be determined	9,629	To be determined	69,036

## Attachment 1

## South Dakota Ongoing Monitoring Efforts Listed by Focus Area

### Prairie Pothole Focus Area

- A. Four Square Mile Breeding Waterfowl Survey
  - i. Annual survey of the five most common breeding waterfowl species in South Dakota.
  - ii. Surveys are conducted on randomly selected wetlands within four square mile blocks of habitat and have been conducted for the past 29 years.
  - iii. Survey coordinated by the Service Habitat and Population Evaluation Team (HAPET) and conducted by the Service.
- B. North American Breeding Waterfowl Survey
  - i. Annual breeding waterfowl survey of over 80,000 miles of waterfowl habitat. Surveys are conducted from the air and ground.
  - ii. Survey has been conducted for the past 50 years and is believed to be the most extensive, comprehensive, long-term annual wildlife survey in the world.
  - iii. Survey conducted by the Service.
- C. Breeding Shorebird Survey
  - i. Annual survey of six breeding shorebird species.
  - ii. Surveys are conducted on 25 mile routes with survey points every half mile.
  - iii. Surveys are conducted twice a year with the first period being the last week of April through the first 10 days of May and the second period being from the last week of May to the first week of June.
  - iv. Survey coordinated by the HAPET and conducted by the Service.

### High Plains Focus Area

- A. Greater Sage-Grouse Monitoring
  - i. Annual lek counts that have been ongoing since 1971.
  - ii. The number of males on 22 priority leks are counted.
  - iii. Survey is conducted by the South Dakota Department of Game, Fish and Parks (GFP).
- B. Pheasant Brood Survey
  - i. Annual pheasant brood survey conducted on 109 brood routes that are 30 miles long each.
  - ii. Surveys are conducted from July 25 to August 15 each year.
  - iii. Survey is conducted by SD GFP.
- C. SD Colonial Water Bird Project
  - i. Thirty-three species of colonial and semi-colonial waterbirds that breed in SD are annually surveyed.
  - ii. Survey is conducted by the Rocky Mountain Bird Observatory (RMBO).

### Southern Plains Focus Area

- A. Grassland Bird Survey
  - i. Point count survey in wet meadow and grassland area consisting of over 200 points on LaCreek National Wildlife Refuge.
  - ii. Survey is conducted by Service and RMBO.
- B. Trumpeter Swan Survey
  - i. Aerial survey of western SD for trumpeter swans.
  - ii. Survey has been conducted for the past 30 years.
  - iii. Survey is conducted by the Service.
- C. Prairie Grouse Survey
  - i. Annual spring lek count using both “traditional” and “listening station” methods. Survey has been conducted since the 1940s.
  - ii. Survey is conducted by the GFP.



**Attachment 2**  
**SD PFW Level I Monitoring Form**



**SITE VISIT REPORT**

Landowner Agreement # \_\_\_\_\_

Prism FA Award # \_\_\_\_\_

**Final or Interim**

Select One

**Scope of Work**

(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

**Project Status**

(To be used for an interim report ie...what's been done up to the 1 year mark)

(Example Language)-About 2 paragraphs

**Species Benefited**

\_\_\_\_\_. (You can reference conservation plans as/if you deem necessary)

*Optional/ Literature Cited: (Example)*

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012–2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

**Payment Method**

Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # \_\_\_\_ (project type ex. Wetland enhancement) has been completed (or for interim...is in the process of being completed) in accordance with all provisions of the agreement.

\_\_\_\_\_  
PFW Biologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Landowner / Cooperator

\_\_\_\_\_  
Date



Attachment 3

**SD PFW Grassland Transect Survey Form**



Transects are 200m long by 100m (50m each side of center) wide and located in a representative portion of the tract

Observer \_\_\_\_\_ Date \_\_\_\_\_ County \_\_\_\_\_

LA# \_\_\_\_\_ Conservation Practice (grazing system or seeding) \_\_\_\_\_

Wind Speed \_\_\_\_\_ Temperature \_\_\_\_\_ Start Time \_\_\_\_\_ End Time \_\_\_\_\_

Primary Habitat Attributes

	YES	NO
Perennial Nesting Cover Present		
Native Grass Species Present		
Native Forb Species Present		
Milkweed Present		

Primary Trust Species

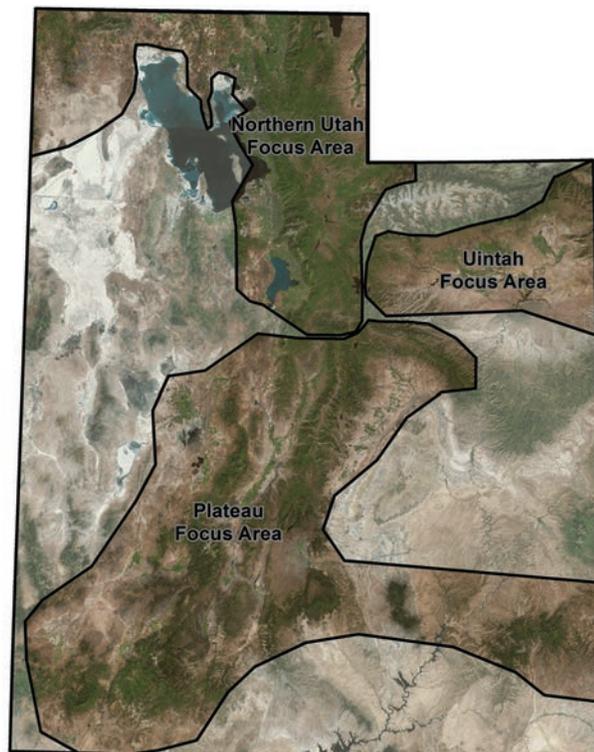
	YES	NO
Grassland Passerines Present		
Shorebirds Present		
Threatened & Endangered Species Present		
Monarch Butterflies Present		
Waterfowl Present		

Trust Species Positively Identified in the Transect

List All Species:



# Utah



*Utah PFW program Focus Areas. USFWS map.*

## Introduction and Overview

Utah is the 13th largest state in the nation with approximately 20% of the land base being privately owned. This private landownership represents considerable habitat potential with approximately 16,980 square miles or 10,867,200 acres being privately owned.

Utah is the second driest state in the nation with 13" of average annual precipitation. This dry climate makes lakes, streams, and springs extremely important areas for both human and Federal Trust Species. The importance of the Great Salt Lake and wetland complexes associated with it becomes apparent when data from the Great Salt Lake Waterbird Survey (1997–2001) is considered. Significant portions of various North American populations use the Great Salt Lake area during

their life cycle. Specific examples of species use in relation to nationwide population include 25% of the

white-faced ibis population, 27% of American avocet population, 25% of black-necked stilt population,



*Greater sage-grouse foraging within a PFW program riparian enhancement project, Utah. Photo by Karl Fleming, USFWS.*



*White-faced ibis utilizing a PFW program-restored wetland, Utah. Photo by Karl Fleming, USFWS.*

and 7% of the nation's green-winged teal population (Paul and Manning 2008). This use is even more dramatic considering these survey areas documenting these numbers only totals 404,905 acres, or an area slightly greater than 17.5 townships.

Sagebrush steppe habitat associated with low precipitation zones is a valuable habitat type for numerous Service trust species. One species that is dependent upon sage brush is the greater sage-grouse. Utah supports 8% of the total range wide population. Private lands have an important role in the preservation of greater sage-grouse in Utah because 1/3 of the habitat, and 55% of the leks are on private property.

Some of the threats to key habitats include invasive species, developmental pressure, past and current land use practices.

**Focus areas were developed using the following criteria**

- Species Diversity and Trust Responsibility
- Intact Landscapes
- Threats
- Public Land – Private Land relationships and patterns
- Partnership Opportunities

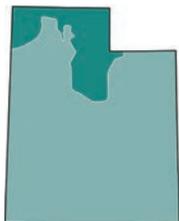
Focal species were identified for the state of Utah and classified as Level I, II, or III. All focal species occurred within the state and could be considered a priority because they were a migratory bird, a federally listed species, or a species identified as a priority in another plan developed by one of our partners. To be considered a Level I species specific criteria needed to be met. The criteria for a Level I were; spatial data available, long term population data (5+ years), understanding of threats, understanding of required conservation measures, and have

the political, social or logistical ability to deliver on-the-ground implementation during the next 5 years. Level II species have the political, social or logistical ability to deliver on-the-ground implementation during the next 5 years but lacks spatial data, long term population data (5+ years), understanding of threats, or an understanding of required conservation measures. Level III species have spatial data, long term population data (5+ years), understanding of threats, and an understanding of required conservation measures but lack the political, social or logistical ability to deliver on-the-ground implementation during the next 5 years. All projects implemented in the next five years will either benefit a Level I species or any threatened, endangered or candidate conservation species.



*Utah PFW program staff develop rest-rotation grazing plans throughout sagebrush habitat to enhance rangeland conditions for wildlife and livestock. Photo by Karl Fleming, USFWS.*

### Northern Utah Focus Area



This Focus Area contains the watershed for the Bear River, the Ogden River, and a portion of the Jordan River watershed. These three watersheds contribute the majority of the water for the Great Salt Lake. This Focus Area has 68% private ownership with the private ownership being comprised primarily of farming, ranching, private wetland management areas, and municipalities. Northern Utah has diverse habitat types influenced primarily by changes in elevation and precipitation. Wetland habitats are found within this Focus Area

and are often associated with the Great Salt Lake and the valley corridor of the Bear River. The value of the wetland complexes in this area to shorebirds was recognized with the designation as a site of hemispheric importance by the Western Hemispheric Shorebird Reserve Network. The designation of hemispheric importance indicates the area has at least 500,000 shorebirds annually and at least 30% of a species biographic population. The importance of the Great Salt Lake, and wetland complexes associated with it, becomes evident when data from the Great Salt Lake Waterbird Survey is considered.

The upland portions at lower elevations are dominated by sagebrush intermixed with grassland areas which provides valuable habitat to sagebrush dependent species. Interspersed

throughout the area are stream/riparian communities which are important to native fish and neotropical migrants.

### Primary Habitat Restoration and Enhancement Efforts

- Upland
  - o Seeding/vegetative manipulation
  - o Invasive Species Control
  - o Grazing Management
- In-stream and Riparian
  - o Channel restoration
  - o Riparian plantings
  - o Invasive species control
  - o Grazing management
  - o Removal of fish barriers
  - o Installation of fish screens
- Wetland Management and Enhancement
  - o Repair/installation of dikes and water control structures
  - o Invasive species control
  - o Grazing management



*The Bear River Watershed in northern Utah. USFWS photo.*

### Northern Utah Focus Area Focal Species (Level I)

- Greater sage-grouse
- Sage thrasher
- Sage sparrow
- Brewer's sparrow
- Cinnamon teal
- Green-wing teal
- Red head
- Northern pintail
- Mallard
- American avocet
- Black-necked stilt
- White-faced ibis
- Columbia spotted frog
- Least chub
- Yellow-billed cuckoo (Threatened)
- Bonneville cutthroat trout
- Colorado River cutthroat trout
- Yellowstone cutthroat trout
- Northern leatherside chub
- Pygmy rabbit

### Northern Utah Focus Area Habitat Targets

- Wetland Restoration/Enhancement: 500 acres
- Upland Restoration/Enhancement: 5,000 acres
- In-stream and Riparian Restoration/Enhancement: 4 miles
- Fish Passage Structures: 10

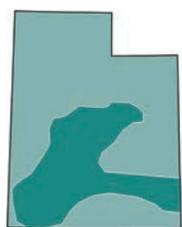
### Northern Utah Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 75
- Percent Leveraging: 1:3 Service to partners dollars
- Technical Assistance: 250 staff days



American avocet resting on a PFW program-enhanced wetland, Utah. Photo by Clint Wirick, USFWS.

### Plateau Focus Area



This Focus Area is 20% privately owned with the predominate use being grazing or irrigated farmland. The other 80% of the land mass is managed by the BLM, U.S. Forest Service, National Park Service, and the State of Utah. There are three physiographic regions within this focus area and they are the Colorado Plateau, the Great Basin, and the transition zone between the Colorado Plateau and the Great Basin. The landscape consists of a wide variety of habitat types with upland areas consisting of sagebrush, pinyon-juniper, and aspen conifer communities.

Streams and rivers with riparian habitats occur throughout the area with some localized wetland habitat interspersed throughout valley bottoms. This Focus Area contains numerous species that are federally threatened and endangered. Federally listed species found within this focus area include the southwestern willow flycatcher, yellow-billed cuckoo, humpback chub, and virgin chub. The only populations of the threatened Utah prairie dog are found within this focus area and upland work on private property will be a priority when the work can be done to benefit this species.

### Primary Habitat Restoration and Enhancement Efforts

- Upland
  - Seeding/vegetative manipulation
  - Invasive species control
  - Grazing management
- In-stream and Riparian
  - Channel restoration
  - Riparian plantings
  - Invasive species control
  - Grazing management
  - Removal of fish barriers
  - Installation of fish screens
- Wetland Management and Enhancement
  - Repair/installation of dikes and water control structures
  - Invasive species control
  - Grazing management



*PFW program riparian restoration project before invasive species removal.*



*PFW program riparian restoration project after Russian olive and other invasive species were removed. Photos by Sue Fearon, Grand Staircase Escalante Partnership.*

### Plateau Focus Area Focal Species (Level I)

- Greater sage-grouse
- Gunnison sage-grouse (Threatened)
- Sage thrasher
- Sage sparrow
- Brewer's sparrow
- Pygmy rabbit
- Southwestern willow flycatcher (Endangered)
- Yellow-billed cuckoo (Threatened)
- Bonneville cutthroat trout
- Colorado River cutthroat trout
- Southern leatherside chub

### Plateau Focus Area Habitat Targets

- Wetland Restoration/Enhancement: 200 acres
- Upland Restoration/Enhancement: 3,000 acres
- In-stream and Riparian Restoration/Enhancement: 3 miles
- Fish Passage Structures: 2

### Plateau Focus Area Partnerships

- Private Landowner Agreements: 30
- Partnerships: 90
- Percent Leveraging: 1:3 Service to partners dollars
- Technical Assistance: 150 staff days

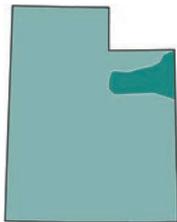


*Volunteers helping with riparian plantings along the Escalante River, Utah. Photo by Clint Wirick, USFWS.*



Response to invasive species control and planting along a riparian area, Utah. Photo by Clint Wirick, USFWS.

### Uintah Focus Area



This Focus Area is 31% privately owned and contains two physiographic regions. The two regions are the Colorado Plateau, and the Middle Rocky Mountains. The landscape is comprised primarily of upland areas consisting of sagebrush, pinyon-juniper, and aspen conifer communities. Scattered within the Focus Area are streams and rivers with riparian habitats and wetlands associated with the rivers. Greater sage-grouse, humpback chub, bonytail, Colorado pikeminnow, razorback sucker and Colorado

River cutthroat trout are found within this focus area.

#### Primary Habitat Restoration and Enhancement Efforts

- Upland
  - o Seeding/vegetative manipulation
  - o Invasive species control
  - o Grazing management
- Stream and Riparian
  - o Channel restoration
  - o Riparian plantings
  - o Invasive species control
  - o Grazing management
  - o Fish barrier removal
  - o Installation of fish screens
- Wetland Management and Enhancement
  - o Repair/installation of dikes and water control structures
  - o Removal of dikes to restore connectivity of river floodplains
  - o Invasive species control
  - o Grazing management

**Uintah Focus Area Focal Species  
(Level I)**

- Greater sage-grouse
- Sage thrasher
- Sage sparrow
- Brewer's sparrow
- Humpback chub
- Bonytail
- Colorado pikeminnow  
(Endangered)
- Razorback sucker  
(Endangered)
- Colorado River cutthroat trout

**Uintah Focus Area Habitat Targets**

A PFW Biologist is not located in this focus area so the target for this focus area is primarily technical assistance. The technical assistance will be accomplished utilizing a joint position that will have a sole emphasis of utilizing Farm Bill funding to benefit greater sage-grouse and sagebrush habitat. There is also potential to work with the state, the Colorado River recovery efforts, and the Fisheries Assistance Office to do projects to benefit the threatened and endangered fish species found in the Colorado River and some tributaries located within this focus area.

**Other Management Plans Related to the UT PFW Focus Areas**

- Intermountain West Joint Venture Coordinated Bird Conservation Plan (IWJV 2005)
- United States Shorebird Conservation Plan (Oring 2007)
- Waterbird Conservation for the Americas, North American Waterbird Conservation Plan (Kushlan 2002)
- Coordinated Implementation Plan for Bird Conservation in Utah (Utah Steering Committee 2005)
- Partners in Flight Physiographic Regions (Pashley 2000)
- Utah Wildlife Action Plan: A plan for managing native wildlife species and their habitats to help prevent listing under the Endangered Species Act (Utah Wildlife Action Plan Joint Team 2015)
- Range-Wide Conservation Agreement and Strategy for Bonneville Cutthroat Trout (Lentsch 2000)
- Conservation Assessment of Greater Sage-grouse and Sagebrush Habitat (Connelly 2004)
- Status Assessment and Conservation Action Plan for the Long-billed Curlew (*Numenius americanus*) BTP-R6012-2009 (Fellows and Jones 2009)
- Lower Bear River Conservation Action Plan (Lower Bear River Conservation Action Plan Implementation Team 2012)
- North American Waterfowl Plan (USFWS 2012a)
- Boreal toad (*Bufo boreas boreas*) Conservation plan in the State of Utah (Hogrefe 2005)
- Conservation agreement and strategy for least chub (*Notichthys phlegenthontis*) in the State of Utah (Bailey 2005)
- Conservation Agreement and Strategy for Spotted Frog (Perkins 1998)
- Gunnison Sage-grouse (*Centrocercus minimus*) Conservation Plan San Juan County, Utah (San Juan County Gunnison Sage-grouse Working Group 2000)

# Utah Statewide Goals



## Broaden and Strengthen Partnerships

### Objective

Accomplish our work through voluntary partnerships.

- 1) Develop at least one new partner in addition to the private landowners for each focus area.
- 2) Minimum 1:3 Service dollar spent on the ground to partner dollar match.

## Improve Information Sharing and Communications

### Objective

Collaborate and share information and concerns with our partners, stakeholders, potential future partners, decision-makers, and others to protect, restore, and enhance trust resources.

- Complete a yearly annual report detailing number of technical assistance contacts.
- Attend coordination meetings which include; state technical NRCS committee meeting, Intermountain West Joint Venture yearly meeting, Sage-grouse working group meetings, and local Utah partners for conservation development working groups.
- Coordinate with other Service offices, NRCS, TU, DU, Conservations districts, and Utah Department of Natural Resources offices to consolidate efforts for Service trust species.

## Enhance Workforce

### Objective

Maintain and support the PFW program staff to insure successful implementation of the program and achieve on-the-ground results for Federal Trust Species.

- Ensure all employees attend a minimum of 40 hours of training each year
  - o Media and public outreach training
  - o Grant writing training
  - o Technical training such as GIS, census techniques, etc.
- Leadership program
  - o Attend leadership training and share experiences through job shadowing
  - o Temporary details to work with other programs and branches within and outside the Service.
- Ensure IDP's and employee performance appraisal plans are reviewed and implemented with input from the employees.

## Increase Accountability

### Objective

Measure, assess, and report the effectiveness, efficiency, and fiscal integrity of the PFW program in Utah.

- Achieve 90% habitat accomplishment within established HabITS polygons.
- 100% projects linked to Priority I species or threatened, endangered or candidate conservation species in HabITS.
- Projects reported in HabITS will have some type of photo associated with the project
  - o 75% will contain pre- and post-restoration photos in HabITS.
  - o The pre- and post-restoration photos will be entered into HabITS within three years of project completion.
- Have a follow up inspection on 50% of the projects within 3 years of project completion and have the inspections entered into HabITS .
- 90% accuracy for data entry into HabITS.
- Complete 100% HabITS data entry by date requested each fiscal year.

## Monitoring Plan

### Background

The PFW program in Utah has been working with private landowners while being located within the National Wildlife Refuge system since 1992. Early efforts focused on private landowners adjacent to the Bear River Migratory Bird Refuge and the enhancement of wetland and riparian habitat. The program currently works with landowners in three different focus areas throughout the state to restore or enhance wetland, sagebrush steppe, in-stream and riparian habitats. The program has worked with approximately 132 different landowners to complete 158 projects that have enhanced/restored 109,570 acres of habitat. Monitoring has been a component of PFW projects at varying levels and time intervals in the past. Habitat monitoring was performed by PFW biologists, Utah Division of Wildlife Resources (DWR), graduate students, Utah Department of Environmental Quality (DEQ), Conservation Districts, and various other partners. Any species population monitoring has usually been done by the Utah DWR, Trout Unlimited, or graduate students in conjunction with research associated with masters or PhD studies. This monitoring plan will identify basic standardized monitoring be done by PFW staff for every project.



*PFW program biologist, Clint Wirick, and a landowner seeding a riparian area in Utah. The riparian project was identified as a priority by three stakeholders. USFWS photo.*

This plan will also outline potential for site specific and landscape scale monitoring efforts that could be implemented on PFW projects.

### **Level I Monitoring**

Level I monitoring will be conducted for each agreement within a year of the restoration/enhancement work being completed. A site visit will be performed and standardized information will be recorded for each project. This information will be used to monitor the progress of the work outlined in the agreement developed with the landowner. The information collected and recorded on the compliance form can also be used to complete the close-out reports in HabITS and PRISM, as well as the milestone reports for FBMS. The appropriate data form for Level I monitoring can be found in Attachment 1.

### **Level II Monitoring (Site specific monitoring)**

Level II monitoring efforts for Utah will have degrees of monitoring and be identified as low intensity or high intensity with the designation referring to the expected effort required to complete the monitoring. Level II monitoring completed by PFW will focus primarily on the habitat response Technical training

such as GIS, census techniques, etc. There are high intensity level II monitoring efforts collecting site specific wildlife populations in areas that contain PFW projects and these monitoring activities will be conducted by other entities. Typical high intensity level II wildlife monitoring efforts would include lek counts, population counts, point counts, aerial surveys, electroshocking, and trapping.

Low intensity level II monitoring would consist of photo point(s) and basic field notes indicating habitat conditions, conditions that may have influenced the success of the restoration/enhancement efforts, and presence/absence of focal species for each accomplishment. The low intensity level II monitoring data would be collected using a standardized form at established time intervals.

Riparian areas are extremely important areas for Service trust species in the Western United states. It is estimated that less than 1% of the western North American landscape is riparian yet it provides habitat for more species of birds than all other vegetation types combined (Knopf 1988). The importance of riparian areas for migratory birds has led to a focus



*Nobody cares how much  
you know, until they know  
how much you care.*

**Theodore Roosevelt**

*Research biologist collecting sage-grouse monitoring data. USFWS photo.*

of riparian restoration by the PFW program in Utah. Methodology described in General Technical Report RMRS-GTR-47 would be utilized by PFW staff to perform high intensity level II monitoring for riparian projects (Winward 2000). High intensity monitoring performed for riparian areas would start with a pre-project inventory and then another monitoring effort being completed 5 years after the restoration work is done to determine the change in vegetation and community types. Another monitoring effort 10 years after restoration work is completed would be recommended with additional monitoring being completed on a 10 year interval. If another entity provides funds to help accomplish the riparian restoration and volunteers to do project monitoring the PFW program would defer to their monitoring protocol and include a copy of the monitoring report in the file.

Historic stream channel degradation due to mechanical manipulation of the stream channel or land use practices has provided ample opportunities to perform stream restoration projects throughout the state of Utah. Natural stream channel design is the restoration methods utilized by the PFW program in Utah when channel reconstruction or bank protection is required. Pre-project monitoring is done so that

natural channel design can be used for the restoration plan. Pre-project monitoring includes cross sectional surveys, longitudinal surveys, pebble counts, bank erosion hazard index, bar sample, and Pfankuch channel stability evaluation. If the PFW program performs high intensity level II monitoring for a stream restoration project the standard pre-project monitoring/data collection would be done and follow up monitoring would include cross sectional surveys and the Pfankuch evaluation. The cross sections for the stream restoration monitoring could be done in the same area as the cross sectional survey done for the riparian monitoring. The establishment of cross sectional survey points and a Pfankuch evaluation would be completed within the first year of restoration efforts. Additional monitoring efforts would be completed 5 years and 10 years after restoration efforts with additional surveys being completed on a 10 year rotation. Extensive level II monitoring by the PFW program would require the collection of all pre project data 10 years after the restoration efforts are completed. If another entity provides funds to help accomplish the stream restoration, and volunteers to do project monitoring, the PFW program would defer to their monitoring protocol and include a copy of the monitoring report in the file.

Restoration or enhancement of sagebrush steppe habitat has been a priority for the PFW program in the past and will continue to be a priority in the future because of its value to sagebrush-obligate species. Monitoring of upland range sites has been done throughout the State by the Utah Division of Wildlife Resources (DWR) for approximately 10 years and has included monitoring areas that have received treatments. If PFW in Utah completes a high intensity level II monitoring of upland treatments we will utilize the same methods employed by the UT DWR so the

data collected can be additive to the established data set. The proposed Level II monitoring timetable for upland sites would be pre-treatment, 1 year after treatment, 5 years after treatment and then every 10 years.

**Level III monitoring (Landscape scale monitoring)**

Any landscape scale monitoring will be done to evaluate habitat conditions, wildlife populations, or the interaction of those two. Landscape scale monitoring will be performed by other entities.

Type of monitoring	Year of completion	3 Years after completion	5 years after completion	10 years after completion	Additional 10 year increments
Low intensity	X	X	X	X	X
High riparian	X		X	X	X
High stream	X		X	X	X
High upland	X		X	X	X

**Level III monitoring activities that are applicable to species identified in Utah’s PFW 1012-2016 Strategic Plan.**

Species	Northern Utah Focus Area	Uintah Focus Area	Plateau Focus Area
Bonneville Cutthroat Trout	X	X	X
Greater Sage-Grouse	X	X	X
Gunnison Sage Grouse			X
Utah Prairie Dog			X
Waterfowl, Waterbirds, and Shorebirds	X		

**Other Level III monitoring activities that are being done in Utah**

Monitoring Efforts	Northern Utah Focus Area	Uintah Focus Area	Plateau Focus Area
Upland vegetative conditions	X	X	X
Juniper stands and conditions	X	X	X
Bluehead Sucker populations	X		
Northern Leatherside Chub	X		
Autumn buttercup			X





**Attachment 2**  
**UT PFW Level II**



**Accomplishment Monitoring Form**

**To be completed prior to Monitoring Accomplishment**

Agreement Date: \_\_\_\_\_ Date Work Completed: \_\_\_\_\_

PLA Number: \_\_\_\_\_

Accomplishment Type: (Acres &/or Miles) Upland \_\_\_\_\_ Wetland \_\_\_\_\_ Riparian \_\_\_\_\_

Primary Trust Resources: \_\_\_\_\_

Accomplishment Objectives:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Photo Point Coordinates (Decimal Degrees)**

Photo Point # \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_

**Observed Biological and Habitat Monitoring Metrics: (related to accomplishment objectives)**

**Factors that influence current condition: (i.e. climate, grazing, time since fire or other disturbances)**

\*See Table 1 in UT PFW Level II Monitoring Guidelines

**Cooperator Comments: (are cooperator's objectives being met?)**

**Are accomplishment objectives being met: Yes No**

**Observations:**

## Utah PFW Level II Monitoring Guidelines

- **Timing of Monitoring:**  
Attempt to monitor same time of year (i.e. Fall, Spring)  
  
Monitoring for specific wildlife species should adhere to established  
  
Monitoring protocols if applicable. (i.e. shorebird surveys following National Shorebird Survey/Cornell dates, grassland birds following the Breeding Bird Survey time frames.)
- **Minimum of one photo point per accomplishment**
  - Photo point establishment will follow guidance provided by USDA publications concerning:
    - General selection criteria
    - Photo point marking
    - Reference point
    - GPS
    - Image management
- **Standardized photo name (i.e. 64860-14-RL01-2014-04-15-P1N)**  
(PLA Number-Year-Month-Day-Photo Point # Direction)
- **Monitoring Veg Response:**  
Estimate veg condition related to accomplishment  
  
Objectives related to (height, density, species comp)
- **Comments regarding whether accomplishment objectives are being met could include:**  
Concerns, Observations, Recommendations, Future Project Needs

## Attachment 3

## Utah Ongoing Monitoring Efforts Listed by Focus Area

### All Focus Areas

- A. Utah Division of Wildlife (DWR) - Sage-grouse lek surveys
  - i. Document the number of male sage-grouse on designated lek sites.
- B. Sage Grouse Monitoring
  - i. Using GPS transmitters looking at Sage grouse movements, habitat use, habitat characteristics, and vital rates.
  - ii. Monitoring being done by several agencies, Utah State University, Brigham Young University, local working groups.
- C. National Resource Inventory
  - i. Vegetative and soil surveys
  - ii. Permanent points surveyed every few years
  - iii. Conducted by Natural Resource Conservation Service
- D. Utah DWR Range Trend Studies
  - i. Monitor, evaluate and report range trend at designated key areas throughout the state, and inform Division biologists, public land managers and private landowners of significant changes in plant community composition in these areas.
- E. Breeding Bird Survey
  - i. Standardized survey routes and methodology for long-term monitoring of breeding bird trends that is conducted by numerous individuals and organizations.
- F. NRCS Pinyon/Juniper Density Study
  - i. Thematic raster data representing tree canopy cover (% cover per acre) in the following classes: less than 1% or absent; 1 - 4%; 4 - 10%; 10 - 20%; 20 - 50%; greater than 50

### Northern Utah Focus Area

- A. Great Salt Lake Ecosystem Project - Great Salt Lake Waterbird Survey
  - i. Survey conducted around and within the Great Salt Lake (GSL) during a specified survey period, and limiting the target species to waterbirds of the families: Gaviidae, Podicipedidae, Pelecanidae, Phalacrocoracidae, Ardeidae, Threskiornithidae, Anatidae, Rallidae, Gruidae, Charadriidae, Recurvirostridae, Scolopacidae, Laridae.
- B. Utah DWR Aerial Breeding Pair Count
  - i. Annual breeding waterfowl GSL area.
- C. Utah DWR Bonneville and Yellowstone Cutthroat Trout Surveys
  - i. Electroshocking used to determine fish/mile population.
- D. Utah State University– Vegetation Response to Juniper Removal
  - i. Line transects
  - ii. line point for shrub cover
  - iii. Daubenmire for herbaceous cover.

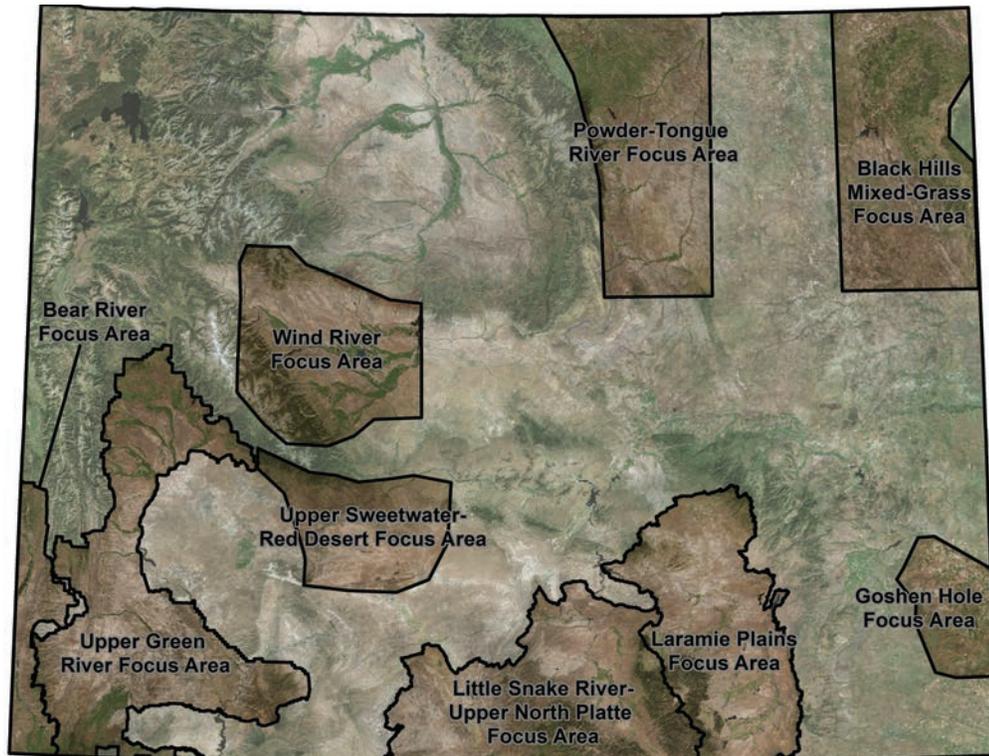
### **Plateau Focus Area**

- A. Utah DWR Bonneville and Colorado River Cutthroat Trout Surveys
  - i. Electroshocking used to determine fish/mile population.
- B. Annual monitoring of federally listed plant species, Autumn buttercup
  - i. Annual monitoring of vegetation community, small mammal populations, and plant survival on one of the last know Autumn buttercup sites.
  - ii. Coordinated by USFWS Partners, The Nature Conservancy, and Weber State University.
- C. Bird survey and banding
  - i. Mist net surveys twice a year
  - ii. Birds banded to record recapture
  - iii. Conducted by University of Utah

### **Uintah Focus Area**

- A. Utah DWR Bonneville and Colorado River Cutthroat Trout Surveys
  - i. Electroshocking used to determine fish/mile population.

# Wyoming



Wyoming PFW program Focus Areas. USFWS map.

## Introduction and Overview

Wyoming is at the edge of two of North America's largest landforms, the Rocky Mountains and the Great Plains. In general terms, the western two-thirds of the state is a great plateau broken by a number of mountain ranges, while the Great Plains slopes eastwardly from the Rockies with the Black Hills being the major exception. Having the second highest mean elevation in the United States at 6,700 ft above sea level, this topographical diversity creates a wide-ranging semi-arid climate. Annual precipitation from rain and snow ranges from as little as five inches to as much as 45 inches per year. Plants and animals found here have adapted to variable and often harsh climatic conditions typical of a high elevation cold desert. Plant communities of the great plateau are primarily sage brush steppe

whereas mixed and shortgrass prairie dominate the eastern plains area. With 85% of the state being considered rangelands, it's no surprise that domestic livestock production is an important component of Wyoming's economic and cultural identity.

Like many western states, Wyoming is comprised of a combination of private, state, federal and tribal lands. Agricultural lands are an important part of Wyoming's landscape. Wyoming is 46% private and tribal land of which 90% is devoted to agriculture (Hamerlinck et al. 2013). While private land is dominated by agricultural production, public land leases are an essential part of many western ranching operations. Roughly 2,800 ranchers in Wyoming hold grazing permits on BLM public land. These ranchers represent

44% of the ranching operations in the state and about 73% of the acres in ranching (BLM 2014). These facts demonstrate that a relatively small number of ranches provide an immense amount of open space and wildlife habitat and strongly influence the majority of the land management in the state. There continues to be outstanding opportunities for landscape-scale conservation on working agricultural lands in Wyoming.

## Plan Development

The Wyoming Strategic Plan identifies areas of greatest conservation need and species richness (focus areas), focal species, desired conservation actions and habitat improvement targets. Focal species were initially identified from dedicated categories of Federal Trust Species along with internal national, regional,

and refuge specific operational and resource priorities (Table 1). Consideration was also given to species identified in the many local, state and federal resource conservation plans of our partners (e.g., Wyoming State Wildlife Action Plan). It was further refined to species that met at least one of the following five characteristics, 1) high conservation need, 2) representative of a broader guild of species sharing the same or similar conservation needs, 3) high level of current program effort, 4) potential to stimulate partnerships, and 5) high likelihood

that factors affecting the status can realistically be addressed. PFW recognizes that this list of wildlife resources is also held in trust and/or important to our federal, state, and local partners. Therefore, it was important that our Strategic Plan incorporate partner input that is consistent with Service needs and mandates.

Focus areas were established to more efficiently conserve priority fish and wildlife species and/or priority habitats through the implementation of collaborative habitat restoration, management

and protection measures. These areas were identified through a combination of consensus of opinion and technical assessment based on available biological and sociopolitical data. Focus areas were developed using several elements including land ownership patterns, threats/stressors (limiting factors), habitat improvement and partnering opportunities, focal species habitats, unique lands and trust responsibilities. In general, focus areas target priority sagebrush/grassland species on predominately privately owned lands containing

Table 1. Table of Service focal species and priority landscapes.

National	Regional	Regional Refuge
Sagebrush Ecosystem	Sagebrush Ecosystem	Sagebrush Ecosystem
Monarch Butterfly	Monarch Butterfly	Bear River Watershed
	Grassland Migratory Birds	
	Colorado River Fishes	
	Native Salmonids	
	Golden Eagle	
	Pallid Sturgeon	
	Black-Footed Ferret	
	Grizzly Bear	
	Lynx	

Table 2. Wyoming PFW land area, land ownership, percent of greater sage-grouse core areas, and National Wetland Inventory (NWI) statistics by focus area.

Focus Area	Area (ac) Contained	% Private Land	% Sage-Grouse Core	NWI (ac)
Bear River	791,000	46%	32%	44,000
Green River	3.98 million	49%	42%	260,000
USRD	1.52 million	5%	65%	15,000
Wind River	2.48 million	25% & 54% tribal	20%	96,000
Powder Tongue River	3.04 million	75%	25%*	29,000
Black Hills Mixed Grass	3.18 million	77%	21%*	25,000
Goshen Hole	855,000	92%	N/A	12,000
Laramie Plains	2.78 million	64%	23%	127,000
LSUNP	3.28 million	33%	33%	79,000

\*Includes WYGEO “Connectivity Area”

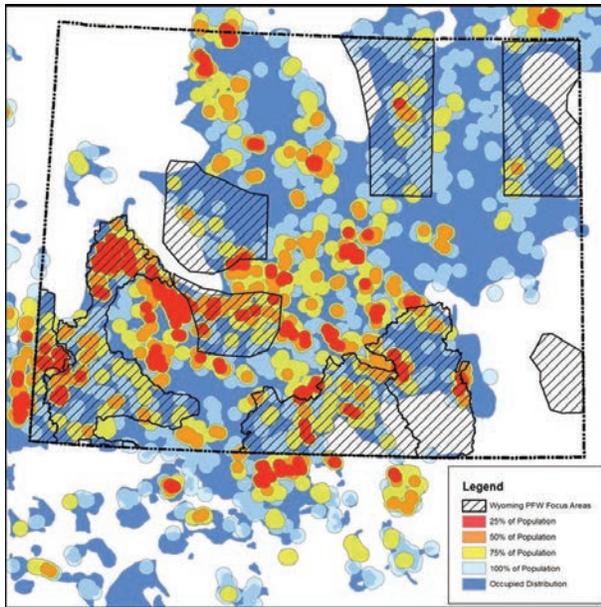


Figure 1. Rangewide greater sage-grouse breeding densities and Wyoming PFW Focus Areas.

important wetland, riparian and riverine resources (Table 2). Overall, these areas are relatively intact landscapes containing important natural resources that provide high ecological values and ecosystem function.

Wyoming PFW (WY PFW) concentrates its private land conservation efforts on priority species and habitats in geographic focus areas. One such keystone species is the greater sage-grouse. Wyoming is home to about 37% of all known greater sage-grouse. Numerous conservation efforts have been catalyzed around this species and the WY PFW Focus Areas include substantial portions of the highest density breeding areas for greater sage-grouse (Fig. 1). Core areas are the state's highest priority areas for sage-grouse conservation and encompass 85% of known sage-grouse populations in Wyoming.

Historic settlement patterns largely determine current land use. Lands that have sparse human settlement are far more likely to be in public land status than are lands heavily settled. Western Wyoming counties contain as little as (~3%) private lands while eastern counties are more than 90% privately owned. The Green River Focus Area (approximately

49% private) overlays several counties containing approximately 25% private lands (Table 2). Inherently, western WY PFW focus areas also contain significant amounts of public lands often in a checkerboard fashion. PFW recognizes public land leases are integral and long-standing for most ranching operations as BLM provides private landowners with a legally recognized preference for the use of public land grazing privileges. Working with both key private landowners and public land management agencies, PFW has the ability to influence land use and management activities on both private and public lands at a landscape scale.

Wetland/riparian habitats are among the rarest habitat types in western North America as well as the most important for western wildlife species. Wetlands make up approximately 1.25 million acres or approximately 2% of the semi-arid state of Wyoming's surface area (Yuhas 2003). Chaney et al. (1990) observed that greater than 75 percent of terrestrial wildlife species in southeastern Wyoming are dependent on these types of habitats for a part or all of their lifecycle. The high density and diversity of wildlife within these habitats results from the availability of water and prey

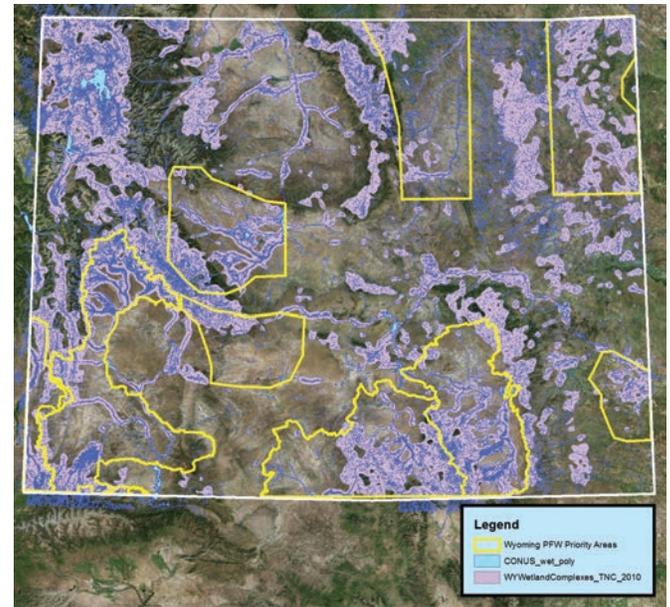


Figure 2. Wetland habitats and Wyoming PFW program Focus Areas.

items, and from high vegetative density, diversity, and structure. PFW targeted private lands in Wyoming are disproportionately valuable for the wildlife habitat they provide, since most wetlands and streams are on private land. In fact, about 30% of the state is contained in PFW focus areas, while roughly 50% (687,000ac) of Wyoming's wetlands fall within designated focus areas (Fig. 2).

During the plan revision process, WY PFW sought input from internal and external stakeholders regarding, 1) project priorities, 2) focus areas and boundaries, 3) important species, 4) resource plans and available data sets, and 5) PFW staffing location and levels. Information considered while formulating WY PFW's Strategic plan and subsequent revisions was primarily gathered through established conservation partner working relationships, questionnaires and stakeholder meetings. Multiple opportunities for stakeholder input on the front end resulted in common support from our partnerships. We are grateful for the time, expertise and energy that our many partners and stakeholders provided to help us through this process. Since this has become a living document that is updated every 5 years, we will continue to welcome partner input



*Energy development in Wyoming. USFWS photo.*

as we implement this Strategic Plan.

Plans and initiatives considered for target species, focus areas, and project priorities.

- Wyoming State Wildlife Action and Strategic Habitat Plan
- Wyoming Landscape Conservation Initiative (WLCI)
- Wyoming Sage Grouse Core Area Strategy
- Service - A Plan for the Management of Fish and Wildlife Resources on the Wind River Reservation; The Status and Management of Waterfowl on the WRR (1982), A Plan for Wildlife Management on the WRR (1982) and Trumpeter Swan Re-introduction and Management WRR (2013)
- North American Waterfowl Management Plan

- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Inter-mountain West Joint Venture (IWJV) Implementation Plan
- National Fish Habitat Action Plan (NFHAP)
- Service Refuge Comprehensive Conservation Plans

In addition, several landscape level planning processes and documents from our non-governmental partners were integrated when possible:

- Local Workgroup Priorities and Plans
- Coordinated Resource Management Plans
- UT, WY TNC Rocky Mountain Eco-regional Plan and Wyoming Basins Ecoregional Plans (TNC)

- TNC’s Bear River Conservation Action Plan
- Audubon – Important Bird Areas of Wyoming
- Ducks Unlimited, Inc, Wyoming: the Platte River and Rainwater Basin Initiative in the Southern Great Plains and the High Country Wetlands initiative in the Northern and Southern Rockies
- Western Native Trout Initiative – A Plan for Strategic Action

**Generalized Threats/Opportunities**

Wyoming has always had more acres than people, starting with emigrants passing through the “big desert” on their way to the coast. The 1870 census counted only 9,700 hearty souls willing to stay. The most recent 2015 census lists Wyoming as the least populated state (586,000 people). Potential long term isolation coupled with rugged landscapes, large livestock operations, and plenty of open

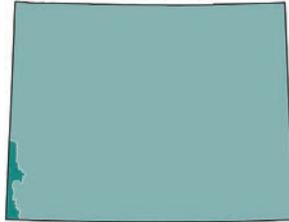


*Habitat fragmentation resulting from energy development and urban sprawl. USFWS photos.*

space has maintained rich fish and wildlife resources. However, similar to other western states, Wyoming's 1.3% annual population growth rate since 2000 is outpacing the United States' population growth rate as economics and the amenities of the American West attract increasing numbers of residents. Energy production is the largest component of Wyoming's economy. As of 2014, Wyoming is the primary producer of coal, fifth producer of natural gas, and eighth producer of crude oil in the United States (US Energy Information Administration). The BLM administers 40.7 million acres of federal mineral estates in Wyoming. About 13% of the state, or 8.2 million acres of federal minerals, is currently leased for oil and gas extraction (BLM 2014). Rural subdivision and energy infrastructure, including renewable energy, continue to

change Wyoming's landscape and impact fish and wildlife habitat by conversion to other uses, fragmentation, and degradation.

#### Bear River Focus Area



The Bear River Focus Area encompasses about 791,000 acres, of which 46% is private land and 54% is public land. Wet meadow and willow-dominated habitats of the Bear River floodplain make up the heart of this area, while surrounding uplands are mostly comprised of sagebrush and foothills shrublands. The private lands within this focus area are

part of the Bear River Watershed Conservation Area, a unit of the National Wildlife Refuge System that seeks to acquire voluntary conservation easements from private landowners, in recognition of the area's valuable habitat for fish and wildlife. The focus area hosts at least 67 state Species of Greater Conservation Need (SGCN), as well as numerous other more common fish and wildlife species.

The southwest Wyoming focus areas are located in the Wyoming Basin, the largest intact sagebrush landscape in North America. This habitat is characterized especially by the presence of big sagebrush, a plant species essential to the survival of much of the area's wildlife. A healthy sagebrush community is also composed of other shrubs, grasses, and forbs that provide additional



*PFW program wetland restoration project, Bear River Focus Area, Wyoming. Photo by David Kimble, USFWS.*



*Bear River Focus Area sagebrush habitat, Wyoming. Photo by David Kimble, USFWS.*

food and cover for wildlife. WY PFW projects in the sagebrush habitat seek to promote a healthy interspersed of sagebrush, other shrubs, grasses, and forbs to meet the habitat needs of native wildlife. Project types include ranch infrastructure such as fences and water developments to facilitate livestock management and vegetative treatments. Focal species targeted to benefit from sagebrush habitat projects in the Bear River Focus Area include greater sage-grouse and pygmy rabbit. Approximately 32% of this focus area overlaps with greater sage-grouse core area.

Mountain snowmelt from the Uinta Mountains and southern portions of the Wyoming Range is the lifeblood of the aquatic habitats of the Bear River Focus Area. Streams provide habitat for native fish and cottonwood, willow, and sedge

plant communities of riparian zones provide habitat for numerous wildlife species. A notable species is the Bonneville cutthroat trout, native only to tributaries of the Great Salt Lake. Other focal species include northern leatherside chub and yellow-billed cuckoo (federally threatened). Focus area projects in streams include removing fish passage barriers, preventing fish entrainment into irrigation canals, and improving stream stability and habitat with natural channel design structures. WY PFW seeks to improve riparian zone habitat through tree/shrub planting and adding necessary ranch infrastructure to facilitate livestock grazing management in riparian areas.

Streamflows are also essential for irrigated hay production, a practice which has created and maintained many wetlands. A complex of over

44,000 acres of wetlands in the Bear River Focus Area has been identified by the Wyoming Bird Habitat Conservation Partnership and others as high-priority for conservation. These wetlands, which include natural wetlands and those maintained by flood-irrigation practices, provide breeding and migratory habitat for a diversity and abundance of waterfowl, shorebirds, and other waterbirds. The Bear River Focus Area is particularly important for wetland wildlife due to its proximity and connectivity to the continentally-important wetlands of the Great Salt Lake. Wetlands on Cokeville Meadows National Wildlife Refuge and surrounding private lands host a spring breeding duck pair density of 76.4 per square mile (WGF 1987), which is comparable to much of the better habitat of the Prairie Pothole Region of the Dakotas.

Focal species include white-faced ibis, greater sandhill crane, northern pintail, cinnamon teal, redhead, and American bittern. WY PFW seeks to encourage long-term preservation of flood-irrigated wetlands by repairing and improving infrastructure such as dikes and water-control structures. We also seek to restore historic wetlands and create new wetlands where there are opportunities and suitable sites.

### Bear River Focus Overlapping Priorities

- Sagebrush Ecosystem
- Bear River Watershed
- Native Salmonids



*Willet within the Bear River Focus Area, Wyoming. Photo by David Kimble, USFWS.*

### Bear River Focus Area Focal Species

- Greater sage-grouse
- Pygmy rabbit
- White-faced ibis
- Greater sandhill crane
- Northern pintail
- Redhead
- American bittern
- Yellow-billed cuckoo (Threatened)
- Bonneville cutthroat trout
- Northern leatherside chub

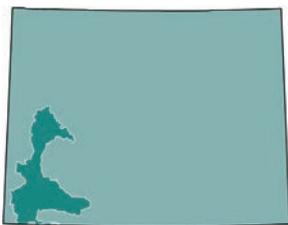
### Bear River Focus Area Habitat Targets

- Upland (sagebrush/aspens) Enhancement: 4,000 acres
- Wetland Restoration/Enhancement: 500 acres
- Riparian Enhancement: 5 mi
- Stream Restoration: 12,000 ft
- Fish Passage Structures: 8 units

### Bear River Focus Area Partnership Targets

- Private Landowner Agreements: 15
- Partnerships: 180
- Technical Assistance: 75 staff days
- Percent Leveraging: 1:4 Service to partner dollars

### Upper Green River Focus Area



The Green River Focus Area encompasses 3.98 million acres, 49% of which is private land. This focus area has been significantly enlarged since our previous strategic plan to correspond with the Service and its partners' strong emphasis on landscape conservation in the entire Green River watershed. It is a biologically diverse and complex area, ranging from the conifer-aspen forest interface at the highest elevations to the cottonwood-willow and aquatic habitats of the Green River just above Flaming Gorge Reservoir. The State of Wyoming

has identified at least 79 SGCN that reside in the focus area.

Quaking aspen are considered a keystone plant species due to the high quality wildlife forage they provide, the conditions they provide for the establishment of other plants, and the number of wildlife species that depend on them for most of their habitat needs, including many federal trust migratory bird species. However, aspen coverage in the West has declined substantially over the past 100–150 years, with most estimates of the decline varying from 50%–90%. Among other factors, a major cause of the decline is a lack of fire that causes shade tolerant conifers to gradually outcompete the aspen. The Green River Focus Area contains significant private land aspen habitats that can be managed with vegetative treatments or prescribed fire to perpetuate this important habitat. The red-naped

sapsucker, among others, is a focal species dependent upon aspen habitats in the Green River Focus Area.

The longest known annual mule deer migration route exists in this focus area, from the Hoback River Basin to the Red Desert—a distance of 150 miles. Large, unfragmented landscapes are essential for long-distance mammal migrations and greater sage-grouse habitat alike. This focus area and our Upper Sweetwater Red Desert Focus Area encompass the heart of the Red Desert-Hoback mule deer migration corridor and Wyoming's Greater South Pass sage-grouse core area—the greatest concentration of sage-grouse breeding habitat in the world. Overall, 42% of the Green River Focus Area is a core area for greater sage-grouse. WY PFW project types in the Green River sagebrush include



Montane landscape within the Upper Green River Focus Area, Wyoming. Photo by David Kimble, USFWS.

ranch infrastructure such as fences and water developments to facilitate livestock management and vegetative treatments. The projects work in concert with other efforts of our conservation partners to maintain an intact landscape.

USDA and several private land trusts have been very successful at working in this area to secure conservation easements from willing private landowners that maintain open space and wildlife

habitats. Focal species that benefit from WY PFW sagebrush habitat projects in the Green River Focus Area include greater sage-grouse, pygmy rabbit, and golden eagle. Extensive ribbons of riparian

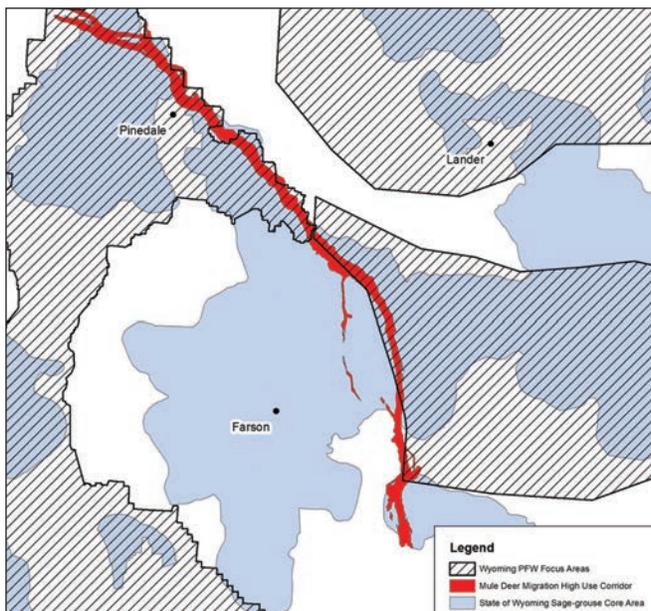


Figure 3. Wyoming PFW focus areas align with the Red Desert to Hoback Basin mule deer migration route and Wyoming greater sage-grouse core areas.



*Upper Green River wetland complex. USFWS photo.*



*Wyoming PFW-restored wetland, Upper Green River Focus Area. USFWS photo.*



*Grazing management system to enhance wet meadow habitat for late season greater sage-grouse brood rearing. Photo by David Kimble, USFWS.*

habitats exist along the Green and New Fork Rivers and their tributaries, providing important multi-layered vegetative structure for migrating and resident riparian birds and other wildlife. Yellow-billed cuckoo and willow flycatcher are PFW focal species that utilize this habitat in the focus area. The WY PFW program seeks to improve riparian zone habitat through tree/shrub planting and adding necessary ranch infrastructure to facilitate livestock grazing management in riparian areas. The streams and rivers that flow through these riparian habitats are home to priority native fish species such as Colorado River cutthroat trout and flannelmouth sucker. WY PFW projects in streams include removing fish passage barriers, preventing fish entrainment into irrigation canals, and improving stream stability and

habitat with natural channel design structures.

About 30% of this focus area is comprised of the Green River Basin wetland complex, identified by the Wyoming Bird Habitat Conservation Partnership as high priority for conservation. This focus area contains a diverse mix of about 260,000 acres of natural and flood-irrigation created wetlands. The glacially formed potholes and lakes in the north are unique for the state and contain the highest breeding density of diving ducks in Wyoming, including lesser scaup. Flood-irrigated wetlands in parts of the focus area also provide exceptional habitat for the long-billed curlew. The Green River Focus Area also contains an important breeding range expansion area for the Rocky Mountain sub-population of

trumpeter swans (WBHCP 2014). WY PFW wetland projects in the focus area include restoring historic drained wetlands, repairing or improving flood-irrigation infrastructure in key wetland areas, and creating new wetlands on environmentally and economically appropriate sites.

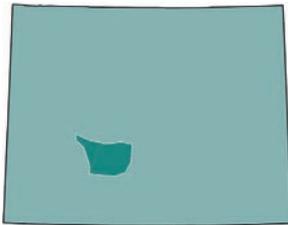
#### **Upper Green River Focus Area Overlapping Priorities**

- Sagebrush Ecosystem
- Colorado River Native Fishes
- Native Salmonids

### Upper Green River Focus Area Focal Species

- TruSpeter swan
- Lesser scaup
- Long-billed curlew
- Greater sage-grouse
- Golden eagle
- Willow flycatcher
- Colorado River cutthroat trout
- Pygmy rabbit
- Flannelmouth sucker
- Yellow-billed cuckoo (Threatened)
- Red-naped sapsucker

### Upper Sweetwater – Red Desert Focus Area



The 1.52 million acre Upper Sweetwater River – Red Desert Focus Area is a high elevation desert characterized by sagebrush containing numerous playa wetlands, springs, ephemeral and perennial streams, and riparian corridors. With an elevation

### Upper Green River Focus Area Habitat Targets

- Upland (sagebrush/aspens) Enhancement: 25,000 acres
- Wetland Restoration/Enhancement: 75 acres
- Riparian Enhancement: 5 mi
- Stream Restoration: 15,000 ft
- Fish Passage Structures: 5 units

### Upper Green River Focus Area Partnership Goals

- Private Landowner Agreements: 15
- Partnerships: 180
- Technical Assistance: 75 staff days
- Percent Leveraging: 1:4 Service to partner dollars

ranging from approximately 5,000– 9,500 ft (1,524–2,896 m), the Red Desert is the highest desert in North America. It is also one of the largest unfenced regions in the continental United States benefiting many resident migratory animals like antelope, mule deer and sage-grouse. Winter range for the longest mule deer migration, the largest migratory herd of pronghorn in the lower 48 states and the world’s largest desert elk herd inhabit the region (NWF 1996–2012). Public lands (~95%) dominate this intact landscape, home to many familiar sagebrush birds including golden eagle, ferruginous hawk, prairie falcon,

greater sage-grouse, mountain plover, sage sparrow, and Brewer’s sparrow. Approximately 65% or 988,000 acres of this focus area is considered “core sage-grouse area” containing one of the highest concentrations and important strongholds of greater sage-grouse in the nation.

As biologically important as this area is, few protections exist. For more than a century, individuals and conservation organizations have recognized the unique values of the Red Desert and have moved to protect them. During 1898, Wyoming hunters tried to designate much of the Red Desert



*Continental Peak, Upper Sweetwater River Basin. USFWS photo.*



*Sagebrush of the Red Desert. USFWS photo.*

as a Winter Game Preserve due to the high numbers of pronghorn and desert elk that inhabit the area. During 1935, Wyoming Gov. Leslie Miller tried to designate part of the area as a national park and more recently several citizen-driven wilderness efforts have been attempted. The greater conservation community is holding their breath as energy development continues to work the periphery of the Red Desert.

Primary land use is livestock grazing within a landscape that contains few impediments to migratory wildlife. However, the lack of fencing leaves landowners and land managers little control over grazing patterns. During the warm summer month's livestock migrate off the large expanse of uplands and spend a significant amount of time around permanent water sources such as riparian corridors, wet meadows, and playa lakes. Much of the PFW program work has concentrated on grazing management infrastructure

to provide greater operational flexibility for landowners while minimizing the influence of fencing on migratory resident wildlife.

#### **Upper Sweet Water – Red Desert Focus Area Overlapping Priorities**

- Sagebrush Ecosystem

#### **Upper Sweet Water – Red Desert Focus Area Focal Species**

- Greater sage-grouse
- Meadow pussytoes
- Willow flycatcher
- American avocet
- Wilson's phalarope
- Golden eagle

#### **Upper Sweet Water – Red Desert Focus Area Habitat Targets**

- Upland (sagebrush/aspens) Enhancement: 5,000 acres
- Wetland Restoration/Enhancement: 50 acres
- Riparian Enhancement: 10 mi
- Stream Restoration: 5,000 ft
- Fish Passage Structures: 1 unit

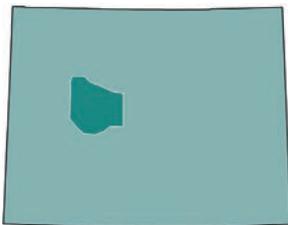
#### **Upper Sweet Water – Red Desert Focus Area Partnership Targets**

- Private Landowner Agreements: 5
- Partnerships: 60
- Technical Assistance: 45 staff days
- Percent Leveraging: 1:4 Service to partner dollars



*Wind River Peak Glacier. USFWS photo.*

### Wind River Focus Area



The Wind River Range contains 63 glaciers making it the largest concentration of glaciers in the American Rocky Mountains. Glaciers serve as repositories of water contributing significantly to regional hydrologic regimes. The melt water from these glaciers provides late season flows for over 3,000 miles of low elevation perennial streams. As a result, the basin is one of the leading agricultural regions in the state with more than 260,000 acres of irrigated crop and hay lands. Sagebrush and grassland make up the majority of the area at 1.7 million acres with livestock production being the primary land use in the valley. Of the total land

base in this priority area, tribal lands make up 63%, private 27% and public 10%.

The heart of the focus area is the 2.1 million acre Wind River Reservation (WRR) which owes its intactness to the fact that cultural and traditional uses are important and 85% is still in tribal ownership. In fact, some 30 years before the passing of the Wilderness Act, WRR Tribes designated almost 200,000 acres of roadless area in the 1930's due to urging from a frequent visitor, wilderness activist Bob Marshall. In 1998, a Memorandum of Understanding (MOU) was signed between the Service, Eastern Shoshone and Northern Arapaho Tribes (Tribes) to jointly work on habitat projects for tribal designated fish and wildlife species of cultural importance. The Tribes have identified an extensive number of culturally significant fish and wildlife species covering a broad spectrum of habitat types. The protected nature of the landscape

and sheer ruggedness contributes to the areas wildness with a full complement of North Americas largest carnivores including grizzly bears, wolves, lynx, and recently discovered wolverines. The focus area is also home to 78 state designated SGCN.

The Wind River Focus Area watershed contains three distinct wetland areas, valley floor, extended foothills and glaciated montane regions connected by a corridor of riverine habitat. The complex serves as a winter stop



*Grizzly Bear in the Wind River Basin, Wyoming. USFWS photo.*



*Valley wetlands provide an important stopover until montane lakes and wetlands open with spring thaw. USFWS photo.*

over location, seasonal migration route, and regionally important breeding ground for waterfowl, waterbirds, and numerous other avian species. Shaped primarily by glaciation, the mountains contain high elevation lakes, ponds and wetlands that provide breeding habitat for waterfowl including ring-necked ducks, lesser scaup, and bufflehead. The valley floor holds 43,618 acres of palustrine emergent wetlands, either associated with river floodplains, flood irrigation wastewater or wind blown depressions.

In 2013, the WRR Tribes in partnership with the Service and several key conservation organizations worked together to re-establish trumpeter swans within the valley. Sufficient quantity and quality habitat now exists for these efforts to continue until a minimum of 7 breeding pairs are established in the valley.

In general, most intact native fish assemblages reside in fragmented populations or are constricted to headwater environments where



*High elevation desert, Wind River Reservation. USFWS photo.*

public ownership and relative inaccessibility have moderated detrimental impacts. Throughout the West, there are a number of reasons for declining native fish populations including, non-native introductions, habitat degradation, dewatering, entrainment and fish barriers impeding migration. Assessments have been completed that help target important streams for restoration. Conservation

partners' efforts have concentrated on creating connectivity and migration pathways to allow lifecycle completion as well as provide resiliency to changing habitat conditions. Creating conservation populations of native fishes through the restoration of isolated streams is a project growth area for WRR.



*Wind River Reservation Ray Canal rotating vertical fish screen (left) and fish ladder prevents fish entrainment and provides passage past irrigation diversion. USFWS photos.*

### Wind River Focus Area Focal Species

- Greater sage-grouse
- Trumpeter swan
- American avocet
- Wilson’s phalarope
- Yellowstone cutthroat trout
- Ling
- Sauger
- Gray wolf
- Grizzly bear
- Bald eagle

### Wind River Focus Area Habitat Targets

- Upland (sagebrush/aspens) Enhancement: 10,000 acres
- Wetland Restoration/Enhancement: 200 acres
- Riparian Enhancement: 10 mi
- Stream Restoration: 10,000 ft
- Fish Passage Structures: 2 units

### Wind River Focus Area Partnership Targets

- Private Landowners Agreements: 12
- Partnerships: 144
- Technical Assistance: 100 staff days
- Percent Leveraging: 1:5 Service to partners dollars

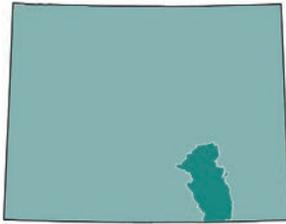
### Wind River Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Native Salmonids



*Wind River Reservation honor students assisting with a trumpeter swan release (left). Trumpeter swan cygnets released at Alkali Lake, a PFW restoration project. USFWS photos.*

## Laramie Plains Focus Area



Located on the eastern edge of the Wyoming Basin physiographic region, Laramie Plains Focus Area is cradled between the Shirley, Laramie and Medicine Bow mountains and contains three sub-basins (Laramie, Hanna and Shirley; Fig. 4). The focus area encompasses 2.78 million acres characterized by isolated mountains, buttes, and river valleys interspersed with the sagebrush-grasslands, mixed grass prairie, greasewood and saltbush flats, aspen and pine. With the exception of a rather small percentage (~4%) of land in cultivation along floodplains, most of the landscape is intact with ranching as the dominant land use. Well-known for its “plains lakes”, the area contains more than 120,000 acres of alkali and freshwater depressions with the heaviest concentration in the southern third of the focus area. Wetland hydrology is more permanent in southern portions of the focus area benefitting from

irrigation and irrigation return flows.

Mortenson Lake, Hutton Lake, and Bamforth National Wildlife Refuges are all a part of the wind-blown landscape of southern Laramie Plains. A unique erosional feature called the Big Hollow is a large elongated depression that contains Mortenson and Hutton Lake National Wildlife Refuges. Hutton Lake and Bamforth were established under the Migratory Bird Conservation Act while Mortenson Lake came to existence under the Endangered Species Act for protection of the federally endangered Wyoming toad. Extirpated from its historic range by the early 1990’s, the last remaining wild toads were brought into captivity during 1994. Thanks to captive breeding efforts, Wyoming toads are being reintroduced back into the wild. With an umbrella Safe Harbor Agreement in place, habitat restoration on private lands has been utilized for a source of new reintroduction sites.

The vast expanse of un-fragmented mixed grass and sagebrush habitat of the Laramie Plains Focus Area offers an enormous conservation opportunity, especially for the management and protection of

greater sage-grouse and sage dependent bird species like the sage thrasher, sage sparrow and the Brewer’s sparrow. One of the best ways to help the largest number of native species in this focus area is to help maintain or improve sagebrush/grassland, wetland and riparian habitats. As area ranches continue to transition from sheep operations to cattle, WY PFW is working with landowners to establish grazing management plans, implement much needed infrastructure such as interior fencing and water developments to provide operational flexibility in managing rangelands and accompanying riparian and wetland habitats.



Figure 4. Basin Topography (Knight et al. 1976).



Plains Lake, Laramie Plains Focus Area. USFWS photo.



Wyoming toadlet ready for release (left) on a PFW wetland restoration site. Photos by Mindy Meade, USFWS.

### Laramie Plains Focus Area Focal Species

- Wyoming toad (Endangered)
- Greater sage-grouse
- Mountain plover
- Ferruginous hawk
- Black-footed ferret (Endangered)
- Preble's meadow jumping mouse (Threatened)
- McCown's longspur
- Lesser scaup
- American avocet

### Laramie Plains Focus Area Habitat Targets

- Upland (sagebrush/aspens) Enhancement: 10,000 acres
- Wetland Restoration/Enhancement: 200 acres
- Riparian Enhancement: 10 mi
- Stream Restoration: 10,000 ft
- Fish Passage Structures: 2 units

### Laramie Plains Focus Area Partnership Targets

- Private Landowner Agreements: 12
- Partnership: 144
- Technical Assistance: 50 staff days
- Percent Leveraging: 1:5 Service to partner dollars

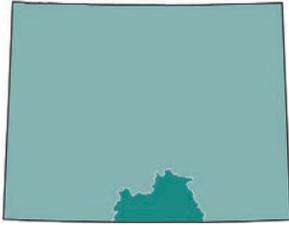
### Laramie Plains Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Grassland Migratory Birds



PFW partners-funded water development (left) and a riparian fence. Photos by Mindy Meade, USFWS.

### Little Snake River – Upper North Platte Focus Area



The Little Snake River – Upper North Platte Focus Area lies within an ecological transition point between the Southern and the Northern Rocky Mountains. This focus area contains the Sierra Madres (maximum elevation is 10,000 ft) which is recognized for its diverse plant communities that include aspen, mixed mountain shrub, sagebrush, Gambel's oak, and conifer plant communities. The Little Snake and the Upper Platte Rivers, the two dominate river systems are lined with mature cottonwood galleries. Sloping to the west is a high elevation desert (6,000 ft elevation) which consists of an extensive ridge and basin system with outcrops of sandstones, clays, and shales. Lower elevation ridges are frequently covered with a mosaic of juniper woodland that transition to mesic upland scrub plant

communities. Private lands (30%) within this focus area are typically intermixed in a checker-board fashion with federal (64%) and state lands (6%). This co-mingling of land ownership necessitates strong working relations with a variety of partners.

Unique to this area, its the northern extent of the Gamble oak plant community common to lower montane area of the southern rockies. It contains the only known breeding population of Columbian sharp-tailed grouse in Wyoming which overlaps greater sage-grouse habitat. Thirty-nine percent of the Columbia sharp-tailed grouse range lies within lands that are privately owned. In addition, the focus area is very important for numerous SGCN as identified by the Wyoming Game and Fish Department, including seven species of fish, four species of amphibians, two reptile species, seventeen bird species, eleven bat species, and nine mammal species.

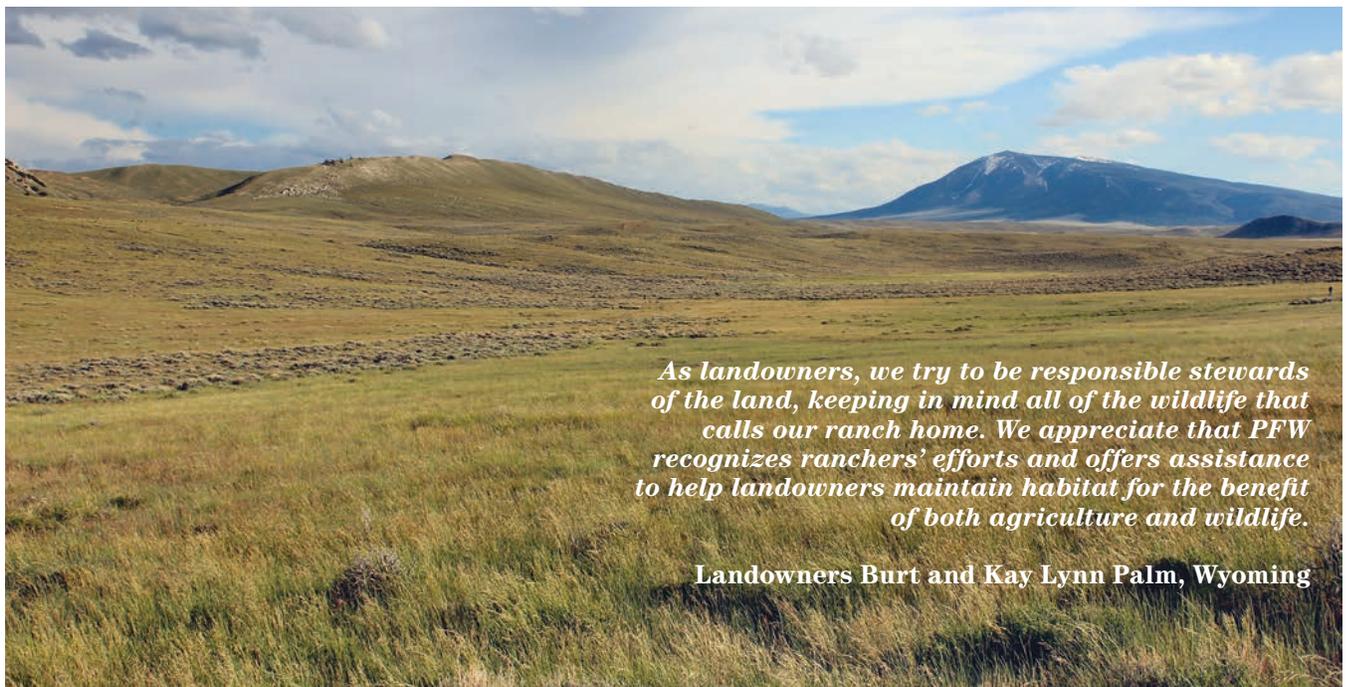
An extensive network of oxbow lakes and backwater sloughs along the major river corridors serve as important areas for breeding and migratory birds. A preliminary reconnaissance report

conducted in the early 1960's by the Service identified this as an important waterfowl area with the recommendation for wetland acquisition. Harry B. Crandell, Wildlife Biologist, "This is a very good area and we should try our best to get something for waterfowl here."

Since 1999, WY PFW has been working intensively with its conservation partners in the Little Snake River watershed to pursue a true watershed approach to habitat restoration, aquatic and terrestrial. WY PFW program efforts will continue to focus on providing fish passage, maintaining in-stream flows, and habitat improvement for both cold water Colorado cutthroat trout, and cool water species of concern, like bluehead sucker, flannelmouth sucker, and roundtail chub. Wetland and upland projects place heavy emphasis on providing breeding and migratory habitat for several federal trust avian species.

#### Little Snake River – Upper North Platte Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Native Salmonids



*As landowners, we try to be responsible stewards of the land, keeping in mind all of the wildlife that calls our ranch home. We appreciate that PFW recognizes ranchers' efforts and offers assistance to help landowners maintain habitat for the benefit of both agriculture and wildlife.*

**Landowners Burt and Kay Lynn Palm, Wyoming**

Wyoming PFW program staff develop grazing management systems to enhance wildlife habitat. Photo by Mindy Meade, USFWS.



*Riparian fencing used to enhance a cottonwood gallery forest along the Upper North Platte River, Wyoming. Photo by Mindy Meade, USFWS.*

#### **Little Snake River – Upper North Platte Focus Area Focal Species**

- Greater sage-grouse
- Columbian sharp-tailed grouse
- Sage thrasher
- Lesser scaup
- American avocet
- Colorado cutthroat trout
- Bluehead sucker
- Flannelmouth sucker
- Roundtail chub

#### **Little Snake River – Upper North Platte Focus Area Habitat Targets**

- Upland (sagebrush/aspen) Enhancement: 10,000 acres
- Wetland Restoration/Enhancement: 30 acres
- Riparian Enhancement: 15 mi
- Stream Restoration: 10,000 ft
- Fish Passage Structures: 2 units

#### **Little Snake River – Upper North Platte Focus Area Partnership Targets**

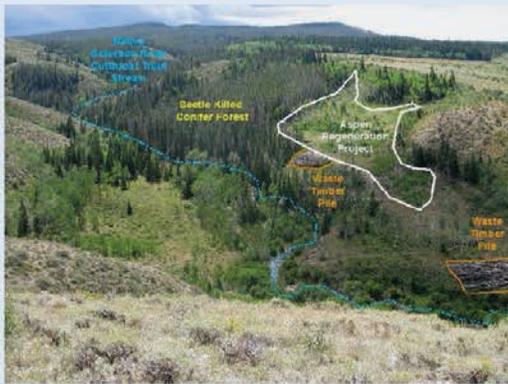
- Private Landowner Agreements: 16
- Partnerships: 192
- Technical Assistance: 50 staff days
- Percent Leveraging: 1:6 Service to partner dollars



*Toe-wood and rock vane structure installed on the Little Snake River. Photos by Mindy Meade, USFWS.*

**Little Snake River Watershed: a story of beetle killed coniferous forests, aspen regeneration, and in-stream habitat enhancements**

Little Snake River Watershed is one of Wyoming’s best examples of watershed or landscape level restoration. For more than a decade, numerous conservation interests were brought together by the local Little Snake River Conservation District to address the health of this 250,000 acre watershed. The dominant land use of the watershed is ranching anchored in small rural communities. To have success, habitat conservation must work hand-in-hand with both to be accepted and sustainable. A project near the headwaters of the East Fork of Savery Creek demonstrates just how a naturally interconnected watershed can benefit top to bottom from a little human intervention.



**Mixed private/public ownership with several ongoing projects**

To set the stage, extensive conifer tree mortality from large insect and disease outbreaks is altering western montane ecological processes, with significant economic and social

Lower in the watershed, non-marketable timber, residual wood-slash, root balls from fallen beetle kill trees, or undesirable wood species, was put to use restoring reaches of the Little Snake River and its tributaries.

implications. For a period of time, large expanses of dead timber lead to diminished habitat quality and presented a significant threat of catastrophic wildfire fire to local forests, agricultural operations and surrounding communities. To help speed up plant succession and healing process, select clear cutting of dead stands and thinning of live stands was implemented throughout the watershed. Selective logging aided the recovery of a healthy mosaic of grass, shrub and forest improving habitats for a variety of fish and wildlife species, including Cassin’s finch and Columbian sharptail grouse as well as improving surface and groundwater flows to local streams benefitting native fishes like Colorado cutthroat trout. In addition, salvaged marketable timber helped diversify the financial portfolio for landowners which support their local economy.



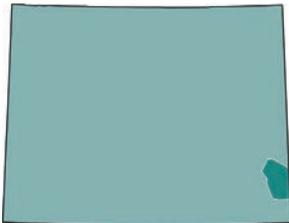
**Amphibian habitat - oxbow restoration.**

Woody material harvested in the upper watershed integrated into river restoration project in the lower watershed.



*Diverse habitats and land uses occur throughout the Goshen Hole Focus Area, Goshen County, Wyoming. USFWS photo.*

### Goshen Hole Focus Area



Goshen Hole is a great widening of the North Platte Valley defined by a 400-500 ft escarpment (Goshen Rim) to the west and south. Ranging from 4,000-4,600 ft above sea level it's among the lowest elevations in Wyoming. A part of the Great Plains, the land ranges from undulating to rolling with mostly short- and mid-grasses. Goshen Hole has a land area of 855,000 acres, predominantly privately owned lands (approximately 92%) of which 15 % is used for irrigated cropland, 15% for dry land cropland, and 60% rangeland. The 12,000 wetland acres that make up the Goshen Wetlands Complex also includes the alluvial floodplain of the lower North Platte River.

Farmland is concentrated at the center of the focus area which also contains the highest wetland densities. These interior wetlands often rely on supplemental water from irrigation return flows to provide consistent water for added management capabilities. However, not having a mountain watershed as a primary water source, the lack of late seasonal water often limits water availability for wetlands and subjects them to greater seasonal variations. From the Wyoming-Nebraska state line upstream to the Goshen-Platte county line, the alluvial floodplain of the lower North Platte River contains significant backwater areas and oxbow wetlands.

The grasslands of eastern Wyoming are classified as either shortgrass or mixed-grass prairie. Mixed-grass prairie is common across much of eastern Wyoming while shortgrass prairie is restricted to the southeast corner. Wyoming once represented the western periphery for many grassland species. Intensive conversion of

grassland outside of Wyoming and relative intactness of the state's grasslands now makes the Great Plains portion of Wyoming the core of many grassland species distributions.

Eastern Wyoming grasslands and wetlands are also an important migration corridor and stopover habitat for many avian species. Goshen Wetlands Complex has been identified as one of nine priority complexes for waterfowl and waterbirds which warrants increased conservation attention (WY Joint Ventures Steering Committee 2010). PFW program emphasis has been on restoring wetland and adjacent shortgrass upland habitats for an assortment of ground nesting species, including mountain plovers, McCown's longspur, bobolinks and a variety of waterfowl. This is one of three unstaffed focus areas.

### Goshen Hole Focus Area Overlapping Priorities

- Grassland Migratory Birds

### Goshen Hole Focus Area Focal Species

- Northern pintail
- Lesser scaup
- American avocet
- Wilson's phalarope
- Mountain plover
- Long-billed curlew
- McCown's longspur
- Prebles's meadow jumping mouse (Threatened)

### Goshen Hole Focus Area Habitat Targets

- Upland (sagebrush/aspens) Enhancement: 500 acres
- Wetland Restoration/Enhancement: 20 acres
- Riparian Enhancement: 1 mi
- Stream Restoration: 0 ft
- Fish Passage Structures: 0 units

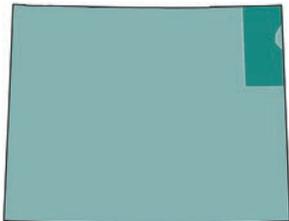
### Goshen Hole Focus Area Partnership Targets

- Private Landowner Agreements: 3
- Partnerships: 36
- Technical Assistance: 3 staff days
- Percent Leveraging: 1:3 Service to partner dollars



*Aerial images of a restored backwater slough completed to benefit waterfowl and native prairie fishes. USFWS photos.*

### Black Hills Mixed-Grass Focus Area



Taking in portions of Crook and Weston counties, Black Hills Mixed-Grass Focus Area contains forest edge periphery grasslands and sagebrush around the Black Hills. Connecting these habitats is more than 6,500 miles of riverine habitat and 14,000 acres of woody riparian habitats within BHMG focus area. The southern extent includes a small segment of the Thunder Basin National Grasslands, known for ferruginous hawks, swift fox, greater sage-grouse and black-tailed prairie dogs. The black-tailed prairie dog is

particularly important in this area for its role building burrows and cropping vegetation that creates habitats of sparse grasslands for other species such as burrowing owls, mountain plovers and Sprague's pipit. Others, such as the Ferruginous Hawk, prey upon prairie dogs. Some of these species like the mountain plover will also use heavily grazed, previously disturbed, or tilled land. Many of these grassland birds like the long-billed curlew migrate from as far away as Mexico and South America to spend part of each year in the focus area. Important prairie grassland areas have been identified in the Wyoming State Wildlife Action Plan that help guide coordination among partners in delivering funding to these sites (Fig. 5).

This focus area contains 680,000 acres of greater sage-grouse core

area with connectivity areas, most of which are privately owned (approximately 77%). Most leks in northeast Wyoming are small with less than 20 males observed during the peak male count. Since 1995, northeast Wyoming has the lowest average peak male lek attendance in the state, averaging 9 males per active lek in 2013 compared to the statewide average of 17 males per active lek. Additional insight into the northeast Wyoming greater sage-grouse population can be gained by tracking the percentage and number of active and inactive leks. Unfortunately, both have decreased significantly, suggesting a notable decrease in population (NE Sage Grouse Working Group).

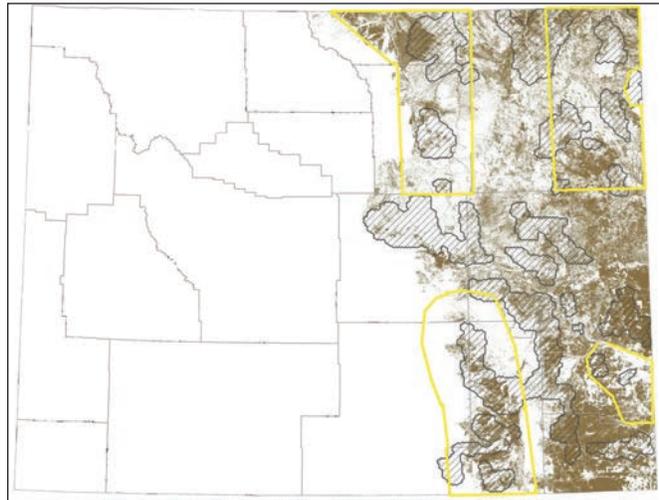
The Conservation Objective Team (COT; Service 2013) listed energy development, infrastructure, improper livestock and/or wildlife grazing practices, weeds and



*Black Hills Mixed-Grass Focus Area, Wyoming. USFWS photo.*



*Greater sage-grouse brood in northeastern Wyoming. USFWS photo.*



*Figure 5. Wyoming Great Plains Grasslands with Species of Greatest Conservation Need (SGCN) Priority Areas (cross-hatched areas) and eastern Wyoming PFW program focus areas. USFWS map.*

annual grasses, mining and recreation as broadscale threats to greater sage-grouse in the Powder River Basin. PFW efforts have concentrated on grassland/sagebrush and riparian habitats in the form of livestock fencing, water developments, and grazing management plans. Water developments include constructing multi-purpose wetlands, water gaps, wells, pipelines, and water troughs. The Black Hills Mixed-Grass Focus Area is one of three unstaffed focus areas in Wyoming.

PFW habitat efforts align well with the general conservation objective identified by the COT:

- Stop population declines and habitat loss.
- Implement targeted habitat management and restoration.
- Develop and implement state and federal sage-grouse conservation strategies and associated incentive-based conservation actions and regulatory mechanisms.

**Black Hills Mixed-Grass Focus Area Overlapping Priorities**

- Sagebrush Ecosystem
- Grassland Migratory Birds

**Black Hills Mixed-Grass Focus Area Focal Species**

- Greater sage-grouse
- Mountain plover
- Black-tailed prairie dog
- Burrowing owl
- Long-billed curlew
- Northern pintail
- Wilson’s phalarope

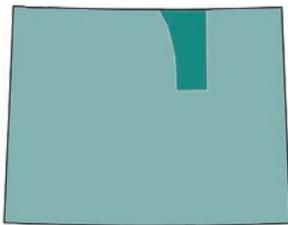
**Black Hills Mixed-Grass Focus Area Habitat Targets**

- Upland (sagebrush/aspens) Enhancement: 2,500 acres
- Wetland Restoration/Enhancement: 50 acres
- Riparian Enhancement: 3 mi
- Stream Restoration: 0 ft
- Fish Passage Structures: 0 units

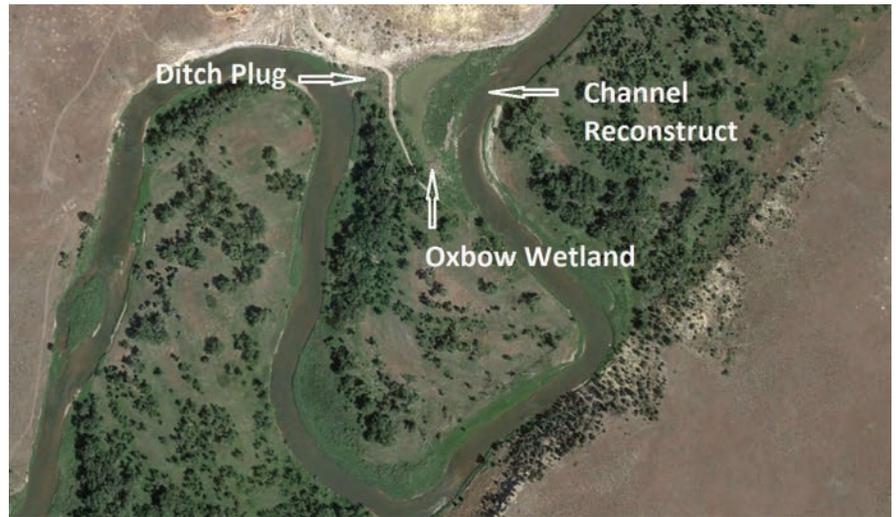
**Black Hills Mixed-Grass Focus Area Partnership Targets**

- Private Landowner Agreements: 5
- Partnerships: 60
- Technical Assistance: 8 staff days
- Percent Leveraging: 1:3 Service to partner dollars

**Powder-Tongue River Focus Area**



Starting at the eastern slope of the Big Horn Mountains and extending to the Powder River, this focus area receives considerably more summertime precipitation and more closely resembles the southern Rockies in vegetative land cover. Mixed-grass and sagebrush make up more than 92% of the area and roughly 80% is in private ownership. Vegetation communities within the Powder River Basin are naturally fragmented, as they represent a transition between the intermountain basin sagebrush communities to the west and the prairie communities to the east. The Powder River Basin is also near the eastern edge of greater



*Tongue River Stream Restoration, Wyoming. Restoration included moving the channel to its previous position and installation of a ditch plug/small dike with added floodplain features such as an oxbow wetland and woody debris to benefit native fish and amphibians. PFW and other conservation partners prevented further degradation of the channel and protected 5,000 ft of the Tongue River.*

sage-grouse range. Wetlands are commonly found in association with floodplain and riparian habitats. As western rivers go, the Powder

River is distinctive because it’s not blocked by dams or irrigation diversions. The relative intact and unchanged nature of the Powder



*Completed bank-full bench (left) and high-water over bankfull bench, Tongue River, Wyoming. USFWS photos.*



*Willow regeneration along the Little Powder River, Wyoming. USFWS photo.*

River provides habitat for unique fish species like the sturgeon chub and western silvery minnow adapted to high turbidity and low summertime flows. As the Great Plains ecosystem continues to be fragmented from land conversion and water projects, the remaining

fragments are not large enough to support naturally-functioning watersheds (Dodds et al. 2004) leading to steep declines in distribution of many native prairie fishes. Those systems that persist require dedicated conservation efforts such as river restoration,

fish passage and rangeland assistance to minimize rangeland conversion.

For northeast Wyoming, greater sage-grouse numbers have declined significantly and the long term trend continues to be a



*Constructed bench, back water area and rock barb (left). High water over project area, Tongue River, Wyoming. USFWS photos.*



*A view of rugged breaks along Clear Creek and a PFW riparian fence and wetland restoration project. USFWS photo.*

concern. The current decreasing trend is likely a combination of the cyclic nature of greater sage-grouse populations combined with documented influences from fire, land conversion, West Nile virus and energy development in the Powder River Basin (NE SG working group 2012). A sagebrush cover assessment within Powder River Basin estimated sagebrush coverage to be 35% with an average patch size less than 300 acres, representing a 63% decrease in patch size during the past forty years (Rowland et al. 2005). Most of the occupied greater sage-grouse habitat in the Powder River Basin is privately owned and contains approximately 70% of known leks (Northeast Wyoming Sage-grouse Working Group 2006).

Since 1998, WY PFW and its partners have concentrated habitat work on implementing an assortment of projects to improve the health of sagebrush communities, including livestock fencing, off-site water

developments, and grazing management systems. In addition, fish passage, stream and oxbow slough restoration are the primary habitats of landowner interest.

#### **Powder-Tongue River Focus Area Overlapping Priorities**

- Sagebrush Ecosystem
- Grassland Migratory Birds
- Native Salmonids

#### **Powder-Tongue River Focus Area Focal Species**

- Greater sage-grouse
- Sage thrasher
- Bairds sparrow
- Northern pintail
- Wood duck
- Sandhill crane
- Yellowstone cutthroat trout

#### **Powder-Tongue River Focus Area Habitat Targets**

- Upland (sagebrush/aspen) Enhancement: 4,000 acres
- Wetland Restoration/Enhancement: 20 acres
- Riparian Enhancement: 6 mi
- Stream Restoration: 2,000 ft
- Fish Passage Structures: 1 unit

#### **Powder-Tongue River Focus Area Partnership Targets**

- Private Landowner Agreements: 5
- Partnerships: 60
- Technical Assistance: 5 staff days
- Percent Leveraging: 1:5 Service to partner dollars

# Wyoming Statewide Goals



## Broaden and Strengthen Partnerships

The sharing of restoration and partnership expertise between stakeholders is an important driver in the success of WY PFW restoration efforts. The working knowledge and technical expertise contributions of PFW staff continues to be an integral component in individual partnership project success as well as a restoration and conservation technique driver of change statewide. As new initiatives come on-line, shared positions have improved project coordination between the agencies at the field level, increased project initiation rates, as well as serving to bridge the gap between funding programs and partners. Being part of an office team, PFW staff make themselves available to local duty station and provide valuable biological input and technical expertise to the Uinta-Wasatch-Cache National Forest, Laramie NRCS/Laramie Rivers Conservation District and Lander Fish and Wildlife Management Assistance Office.

Technical resource sharing has become commonplace among partners especially when significant gaps are identified. For example, a national priority shift to sagebrush landscapes necessitated an increase in

capacity which was met by our conservation partners teaming together to place several jointly funded rangeland positions in key locations around the state. Partnership planning positions were established to assist NRCS with the delivery of rangeland projects along with SGI. More recently, a rangeland specialist position was developed in conjunction with the National Wildlife Refuge Association and a private foundation for southwest Wyoming to directly work with PFW staff. These range ecologists positions are responsible for conducting rangeland and wildlife assessments, identifying resource concerns and landowner objectives, developing plans to address those concerns and objectives, and implementing plan strategies using available cost-share programs across a diverse landscape benefitting Service focal species and species important to our partners.

## Improve Information Sharing and Communication

Generating habitat projects and information transfer comes from the establishment of an extensive network of conservation partners and landowners. WY PFW continues to work through traditional avenues of USDA State Technical Committee meetings, local



*Wyoming PFW program staff providing conservation partners with a project update, Wyoming. USFWS photo.*



*Wind River Reservation-hosted NRCS Wetland Plant Identification Workshop. USFWS photo.*

USDA work groups, and various partner coordination functions as well as giving presentations on habitat restoration techniques and habitat project updates at several gatherings of professionals including several fish and wildlife agency and conservation partner annual meetings. WY PFW staff members routinely attend local interagency meetings within their respective work areas which include representation from local county commissioners to congressional staffers providing a good forum for periodic program updates. WY PFW maintains a place in the classroom through local science fair judging and participating in a variety of youth outdoor classroom experiences held throughout the state.

### Implementation

- Maintain working with partners and stakeholders on individual planning documents.
- Provide partners with an annual accomplishment report.
- Utilize farming and ranching industry associations and publication.
- Initiate state level landowner and/or partner award/recognition program.
- Support existing and explore new opportunities for long term funding options.
- Refine local project priorities through established local workgroup settings.
- Continue to provide resource information at workshops, conventions and coordination meetings.

### Enhance Our Workforce

Wyoming PFW continues to build on a strong technical assistance foundation delivering effective habitat conservation by improving workforce capacity when necessary and improve existing technical and leadership skills of staff to meet the needs of our conservation partners and trust resource responsibilities. Staff work closely with conservation

partners providing restoration guidance on a variety of habitat projects within their dedicated work areas, including project designs and permitting, project cost analysis, and appropriate construction methodologies. Facilitating a wide array of terrestrial and aquatic habitat projects requires a substantial investment of staff time in working with conservation partners, as well as a high degree of expertise in a wide range of technical disciplines. We will continue to strengthen our partnerships, habitat delivery, and customer service in an effort to restore and conserve habitat in an ever-changing landscape.

### Implementation

- Refine and implement a strategic workforce plan to ensure that the right skills are in the right location to deliver an efficient and effective habitat conservation program.
- Seek-out partnership efforts that develop and share employee skills across conservation partner lines.
- Review annually career development guidance and training programs for staff and ensure resources are available to improve habitat conservation delivery, partnership development, and leadership skill sets.
- Continue to coordinate with other Federal, State, and local government units, Tribes, and non-governmental partners to utilize available training and development opportunities to maintain technical excellence in an environment of rapidly expanding knowledge and technology.

### Increase Accountability

The mechanics (structural function) and habitat response from on-the-ground habitat restoration is fairly well understood and predictable. Forecasting project biological benefits is less certain and relies on the intuition and professional judgment of staff



Wyoming PFW program staff working with Conservation Corp students to install grazing management fence. USFWS photo.

biologists and conservation partners. To help improve accountability, a standardized monitoring process was implemented using available measurable parameters to evaluate project success. Three levels of monitoring are recognized within this monitoring plan framework, status review, site-scale and landscape scale.

Capital costs for habitat restoration projects vary greatly across the state and from year to year. To help maintain a cost-efficient program, fiscal measures are used to evaluate annual restoration capital costs. Accurately determining habitat projects costs ensures equitable and reliable sources of funding, timely project delivery, and quality habitat projects.

### Implementation

- Implement and refine monitoring plan.
- Continue to incorporate creative partnerships to assist with monitoring. For example, employ the assistance of local birding groups to collect biological data and in return expand birding opportunities on lands available through willing landowners.
- Maintain and refine fiscal measures for estimating project cost, which include internal review of all previous years Service habitat work within Wyoming and published statewide annual cost analysis of conservation practices by our conservation partners.

### External Factors

Factors beyond the control of the WY PFW program that could affect progress towards accomplishing long-term habitat goals and objectives include the following:

- Extreme weather, climate fluctuations, and environmental change that affect ecological processes and local economies.
- Fluctuating habitat conservation funding.

- Cyclical nature of energy development, direct impact to resources as well as project funding potential.

## Monitoring Plan

### Background

The PFW program is the Service's primary mechanism for delivering voluntary on-the-ground habitat improvement projects on private lands for the benefit of Federal Trust Species. Through our strategic planning process, priority based habitat focus areas were established to efficiently conserve priority fish and wildlife populations through a variety of habitat restoration, management and protection measures. Focal species selection was centered on Service trust resources, such as listed species, species of special concern to the Service, migratory birds, tribal significant species or designated important species of our conservation partners. WY PFW recognizes that this list of fish and wildlife resources is also held in trust and/or important to our federal, state, and local partners. Therefore, it was important that our WY PFW Strategic Plan incorporates partner input and to the degree practicable is consistent with Service needs and mandates. The plan also provides direction on conservation actions needed to reduce or eliminate threats/stressors and habitat improvement targets. This strategic plan effort spans the period of 2017–2021.

With the construction of an overarching conservation delivery roadmap complete, site scale project planning efforts are in the hands of local PFW biologists and our many conservation partners. Primary mission of PFW field biologists is to develop opportunities, determine site threats/stressor, conservation actions needed to



Wyoming PFW staff and a conservation partner conducting rangeland monitoring. USFWS photo.

reduce or remove threats/stressors, implement actions and monitoring provisions sufficient to document project implementation and removal of threat/stressors. Three levels of monitoring are recognized within this monitoring plan framework, status review, site-scale and landscape scale. The goal of this monitoring plan is to standardize a process using available measurable parameters to evaluate project success.

#### **Level I – Status Review**

WY PFW program will conduct Level I Status Reviews on all new projects to ensure scope of work is completed as defined in the Private Landowner Agreement (PLA). Annual site visits will be conducted by PFW biologists until all phases of the project are complete and a final site visit report completed at project end (Attachment 1). The site visit form will be submitted to the Lander PFW office as part of the payment process and incorporated into the official field file.

#### **Level II – Site Specific Biological Monitoring**

WY PFW program works in four major habitat types, upland, wetland, riparian and stream. Monitoring provisions included in Level II will be sufficient to determine if habitat objectives are being met and document removal or reduction of threat/stressors. Project generated data will be the primary source of measurable parameters for evaluating projects success. Three types of information routinely collected to aid in project design and corresponding monitoring

plan include: 1) existing conditions (pre-construction), 2) as-built conditions (post-construction), and 3) characteristics and conditions of suitable reference site. Reference sites are most commonly used in situations where detailed data is not readily available.

Threats/stressors and remediation measures are determined during the planning process. In some cases, threats have been previously identified through established sources. For example, a statewide fish passage database identifies significant barriers to fish passage on many of Wyoming's rivers establishing a removal importance hierarchy. In this instance, fish passage monitoring would be documenting barrier (threat) removal or presence/absence survey. Level II monitoring will determine if threat has been removed or reduced through evaluation of key habitat attributes (Table 2.). A standardized form will be used to collect presence/absence (Table 1, Class A) data for each site. Field measurement surveys (Table 1, Class B) data if available will be attached to the standardized form. WY PFW or representative will conduct a status review on a subset of projects with a goal of completing reviews on 10% of active projects. Set intervals for post-construction evaluations were influenced by several factors including, project complexity, manpower availability, financial investment, newness of technology and other factors (Table 2.).

Table 1. Level II Monitoring

WY PFW Conservation Practice	Key Habitat Attribute - Class A (Presence/Absence Survey)	Key Habitat Attribute - Class B (Field Measurement Survey)
Stream Restoration	Bed Features (Y/N) Bank Features (Y/N) Correct Pattern (Y/N) Correct Profile (Y/N) Correct Dimension (Y/N)	BEHI Index Pfankuch Companion Inventories Photo Point Transect
Riparian Restoration	Cover Types: Native Grass (Y/N) Wetland Plants (Y/N) Shrubs (Y/N) Trees (Y/N) Recruitment/Reproduction (Y/N)	Proper Function Condition Green line Stability Cover by Life Form Transect Stubble Height Photo Point Transect
Fish Passage	Physical Barrier Removed (Y/N) Thermal Barrier Removed (Y/N)	Fish Passage Survey Temperature Loggers
Fish Entrainment	Open System: Fish Screen (Y/N)	Fish Loss Survey

Sage Steppe Enhancement	Perennial Cover (Y/N) Sagebrush(Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Grassland Enhancement/Res toration	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Wetland Establishment	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect
Wetland Restoration	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect

Table 2. Projected Evaluation Intervals

WYPFW Conservation Practice	Project Evaluations Interval (Year)
Stream Restoration	1,2,5,10
Riparian Restoration	1,3,10
Fish Passage	1,5
Fish Loss/Entrainment (Screening)	1,5,10
Sage Steppe Enhancement	1,3,10
Grassland Enhancement	1,5
Wetland Restoration/Enhance ment	1,5

**Level III – Landscape Scale Monitoring**

Landscape scale monitoring is designed to document the status or change over time of a resource. Availability of Level III data sets is variable across focus areas. The state wildlife agencies are the greatest source of information for game and non-game species of special concern along with Service Federal trust and Tribal trust species. The ability to monitor select species was considered during focal species list development.

For example, Bear River Focus Area target species (Exhibit 2) relates well with on-going local monitoring efforts by several conservation partners (Exhibit 1). Local monitoring efforts provide broad status and trend information for target species found within the watershed. In some instances, local population sampling takes place on PFW projects providing the ability to more precisely see influence of habitat actions validating planning process.

Exhibit 1.

<b>Current Monitoring Efforts -Bear River Focus Area</b>	
NRCS, UCCD, and UW conduct rangeland health monitoring at selected sites	
RMBO- Monitoring Wyoming’s Birds (MWB) Program (6 locations)	
TU - radio-tagged Bonneville cutthroat trout in the upper Bear River	
TU- irrigation ditch salvage; documenting numbers and species of fish	
UCCD - water quality monitoring	
USFWS Cokeville NWR Migratory Bird Surveys	
USFWS Cokeville NWR Habitat Evaluations	
WYGF - secretive marsh bird breeding survey	
WYGF - greater sage-grouse annual lek counts	
WYGF - semi-annual stream electrofishing for SGCN fish species	
WYGF - annual waterfowl surveys	

Exhibit 2.

<b>Priority Species – Bear River Focus Area</b>
<b>Upland – U, Wetland –W, Riparian– R, Stream-S</b>
White-faced ibis - W
Northern pintail -W
Redhead -W
American bittern -W
Sandhill crane - W/R
Yellow-billed cuckoo - R
Greater sage-grouse - U
Bonneville cutthroat trout-S
Leatherside chub-S

**Level III WY PFW Monitoring Commitment**

WY PFW will continue to work with conservation partners on landscape-scale monitoring efforts to better determine variables influencing populations, improving future conservation work targeting and project success. For example, work with partners to develop a methodology to link habitat restoration actions with on-site sage-grouse data to specifically determine if habitat projects are having success at the population level (Table 3).

Non-game species often lack population goals making it difficult to determine habitat restoration targets. WY PFW will work with conservation partners to create and/or utilize site specific predictive habitat modeling needs assessments tools like Energetic Carrying Capacity (ECC) and Resource Site Factors (RSF) modeling to determine quantity of habitat needed to carry a predetermined population as well as specific site habitat contributions. WY PFW will continue to focus on identified target species, incorporate population level determinations when defined and build them into future strategic plans. WY PFW will continue to employ creative partnerships to assist with monitoring, for example, utilize the assistance of local birding groups to collect biological data and in return expand birding opportunities on lands available through willing landowners.

Table 3. Sage Grouse Lek Count Data (Sand Hills PFW Grazing System).

*Wind River Reservation Sage Grouse Leks in the Sandhills area - peak number of males observed on leks.*

4/12/2014

Lek Name	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Peak Males	Low Males	Avg Males 1986 to 2012	% of Peak Males for 2013	% of Average for 2013
Sand Hills (#35)																												5	0	1	0%	0%	
Sharpnose (#22)	480	159	102	64	107	67	39	18	19	0	56	90	74	166	123	71	87	96	155	143	106	62	33	38	67	49	20	480	0	97	4%	21%	
Sharpnose Draw																						12	0	0	0	0	0	12	0	2	0%	0%	
Sharpnose Draw Northwest																											7	15	7	100%			
Sharpnose East																29	54	42	11	6	7	0	0	0	0	0	0	54	0	21	0%	0%	
Sharpnose Reservoir				37																							37	0	12	0%	0%		
Sharpnose Southeast (#23A)			40	5	55	1	6	3	0	0	67	0	30														67	0	10	0%	0%		
WyFo (#16)				43	23	17	2	0	20	23	0	44	50	6	28	13	16	11	26	60	36	20	0	0	0	0	60	0	20	0%	0%		
WyFo Pipeline A																					15	0	0	0	0	0	15	0	4	0%	0%		
<b>Total Peak Males for 8 leks</b>	<b>480</b>	<b>199</b>	<b>144</b>	<b>162</b>	<b>131</b>	<b>90</b>	<b>44</b>	<b>18</b>	<b>44</b>	<b>23</b>	<b>123</b>	<b>134</b>	<b>154</b>	<b>172</b>	<b>151</b>	<b>84</b>	<b>103</b>	<b>107</b>	<b>210</b>	<b>274</b>	<b>196</b>	<b>93</b>	<b>39</b>	<b>45</b>	<b>67</b>	<b>56</b>	<b>35</b>			<b>168</b>			

Table 3. Sage Grouse Lek Count Data (Sand Hills PFW Grazing System).

**Limitations**

Our ability to achieve monitoring objectives is influenced by a variety of factors including the availability of human and technical resources, the level of support we receive from our conservation partners, and other variables such as unbridled development and weather. It should be also recognized in some management situations, formal monitoring may not be necessary when the outcome of an action is well known (Williams et al. 2007).



# Attachment 1 WY PFW Level I Monitoring Form



## SITE VISIT REPORT

Landowner Agreement # \_\_\_\_\_

Prism FA Award # \_\_\_\_\_

### Final or Interim

Select One

### Scope of Work

(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

### Project Status

(To be used for an interim report ie...what's been done up to the 1 year mark)

(Example Language)-About 2 paragraphs

### Species Benefited

\_\_\_\_\_. (You can reference conservation plans as/if you deem necessary)

*Optional/ Literature Cited: (Example)*

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012–2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

### Payment Method

Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # \_\_\_\_ (project type ex. Wetland enhancement) has been completed (or for interim...is in the process of being completed) in accordance with all provisions of the agreement.

\_\_\_\_\_  
PFW Biologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Landowner / Cooperator

\_\_\_\_\_  
Date



**Attachment 2**  
**WY PFW Level II**



**Monitoring Report Form**

Project Name and PLA Number: \_\_\_\_\_

Primary Federal Trust Resource: \_\_\_\_\_

Project Scope/Objectives (include agreed changes/PLA modification): \_\_\_\_\_

Project Objectives Met: \_\_\_\_\_ Yes \_\_\_\_\_ No (if no, explain) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Project Biological Outcomes**

Wyoming PFW Conservation Practice(s): \_\_\_\_\_

Key Habitat Attribute Class A: \_\_\_\_\_

Key Habitat Attribute Class B: (attach to form) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Photo Point Name:

UTM \_\_\_\_\_

Minimum one photo point per project

**Project Non-Biological Outcomes**

Planned Project Components	Deliverables	Project Start Date	Project Completion Date
(i.e. 1,000 ft 4-strand barbed fence)			

Planned Project Components	Budgeted Cost	Final Cost
(i.e. 1,000 ft 4-strand barbed fence)		

**Lessons Learned**

(What worked, what didn't and ways to improve project construction/delivery):

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\_\_\_\_\_  
Private Lands Biologist

\_\_\_\_\_  
Date

## Level II Monitoring

WY PFW Conservation Practice	Key Habitat Attribute - Class A (Presence/Absence Survey)	Key Habitat Attribute - Class B (Field Measurement Survey)
Stream Restoration	Bed Features (Y/N) Bank Features (Y/N) Correct Pattern (Y/N) Correct Profile (Y/N) Correct Dimension (Y/N)	BEHI Index Pfankuch Companion Inventories Photo Point Transect
Riparian Restoration	Cover Types: Native Grass (Y/N) Wetland Plants (Y/N) Shrubs (Y/N) Trees (Y/N) Recruitment/Reproduction (Y/N)	Proper Function Condition Green line Stability Cover by Life Form Transect Stubble Height Photo Point Transect
Fish Passage	Physical Barrier Removed (Y/N) Thermal Barrier Removed (Y/N)	Fish Passage Survey Temperature Loggers
Fish Entrainment	Open System: Fish Screen (Y/N)	Fish Loss Survey
Sage Steppe Enhancement	Perennial Cover (Y/N) Sagebrush(Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Grassland Enhancement/Restoration	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Wetland Establishment	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect
Wetland Restoration	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect

## Projected Evaluation Intervals

WY PFW Conservation Practice	Project Evaluations Interval (Year)
Stream Restoration	1,2,5,10
Riparian Restoration	1,3,10
Fish Passage	1,5
Fish Loss/Entrainment (Screening)	1,5,10
Sage Steppe Enhancement	1,3,10
Grassland Enhancement	1,5
Wetland Restoration/Enhancement	1,5

### Attachment 3

## Wyoming Ongoing Monitoring Efforts Listed by Focus Area

### Bear River Focus Area

- A. NRCS, Uinta County Conservation District (UCCD), and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. Trout Unlimited
  - i. Radio-tag Bonneville cutthroat trout in the upper Bear River
  - ii. Irrigation ditch salvage; documenting numbers and species of fish
- E. UCCD – water quality monitoring
- F. Cokeville National Wildlife Refuge
  - i. Migratory bird surveys
  - ii. Habitat evaluations
- G. Wyoming Game and Fish Department
  - i. Secretive marsh bird survey
  - ii. Greater sage-grouse annual Lek counts
  - iii. Semi-annual stream electrofishing for Species of Greatest Conservation Need (SGCN) fish species
  - iv. Annual (winter and spring) waterfowl surveys
  - v. Stream barrier assessment
  - vi. Site specific fish entrainment surveys

### Upper Green River Focus Area

- A. NRCS and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Survey
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. Trout Unlimited
  - i. Fish barrier study
  - ii. Irrigation ditch salvage; documenting numbers and species of fish
- E. Seedskaadee National Wildlife Refuge
  - i. Migratory bird surveys
  - ii. Habitat evaluations
- F. Wyoming Game and Fish Department
  - i. Secretive marsh bird survey
  - ii. Greater sage-grouse annual Lek counts
  - iii. Semi-annual stream electrofishing for SGCN fish species
  - iv. Annual (winter and spring waterfowl surveys)
  - v. Annual trumpeter swan survey
  - vi. Stream barrier assessment
  - vii. Site specific fish entrainment surveys

### Upper Sweetwater – Red Desert Focus Area

- A. NRCS, BLM and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys

- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. Wyoming Game and Fish Department
  - i. Greater sage-grouse annual Lek counts
  - ii. Annual waterfowl surveys
  - iii. Annual raptor surveys with BLM
  - iv. Stream barrier assessment

#### **Wind River Focus Area**

- A. NRCS, BIA, U.S. Fish and Wildlife Service and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. U.S. Fish and Wildlife Service
  - i. Irrigation ditch salvage; documenting numbers and species of fish
  - ii. Lander Fish and Wildlife Conservation Office (FWCO) large carnivore surveys
  - iii. Lander FWCO sage grouse Lek counts
  - iv. Lander FWCO big game surveys
- E. Wyoming Game and Fish Department
  - i. Secretive marsh bird survey
  - ii. Greater sage-grouse annual Lek counts
  - iii. Semi-annual stream electrofishing for sauger
  - iv. Annual (winter and spring) waterfowl surveys
  - v. Colonial waterbird survey
  - vi. Annual trumpeter swan survey with Service
  - vii. Annual raptor survey with Service
  - viii. Stream barrier assessment with Service
  - ix. Annual stream and lake fish surveys with Service
  - x. Site specific fish entrainment surveys with Service

#### **Laramie Plains Focus Area**

- A. NRCS and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. U.S. Fish and Wildlife Service
  - i. Annual Wyoming toad surveys
- E. Wyoming Game and Fish Department
  - i. Greater sage-grouse Lek counts
  - ii. Annual (winter and spring) waterfowl surveys
  - iii. Annual small mammal surveys
  - iv. Trumpeter swan surveys with Service
  - v. Raptor surveys with Service
  - vi. Stream barrier assessment with Service
  - vii. Annual stream and lake fish surveys with Service

#### **Little Snake River – Upper North Platte Focus Area**

- A. NRCS, Little Snake River Conservation District (LSRCD) and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program

- D. LSRCD – waterbird surveys
- E. Wyoming Game and Fish Department
  - i. Greater sage-grouse annual Lek counts
  - ii. Semi-annual stream electrofishing for SGCN fish species
  - iii. Annual (winter and spring) waterfowl surveys
  - iv. Stream barrier assessment
  - v. Annual river fish surveys and non-native fish removal program

#### **Goshen Hole Focus Area**

- A. NRCS and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. Wyoming Game and Fish Department
  - i. Annual (winter and spring) waterfowl surveys
  - ii. Annual small mammal surveys
  - iii. Raptor surveys
  - iv. Stream barrier assessments
  - v. Annual stream and lake fish surveys

#### **Black Hills Mixed-Grass Focus Area**

- A. NRCS and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. Wyoming Game and Fish Department
  - i. Secretive marsh bird breeding survey
  - ii. Greater sage-grouse annual Lek counts
  - iii. Annual (winter and spring) waterfowl surveys
  - iv. Stream barrier assessment
  - v. Annual stream and lake fish surveys
  - vi. Site specific fish entrainment surveys

#### **Powder – Tongue River Focus Area**

- A. NRCS and University of Wyoming rangeland health monitoring
- B. North American Breeding Bird Surveys
- C. Bird Conservancy of the Rockies – Monitoring Wyoming’s Birds (MWB) Program
- D. Wyoming Game and Fish Department
  - i. Secretive marsh bird breeding survey
  - ii. Greater sage-grouse annual Lek counts
  - iii. Annual (winter and spring) waterfowl surveys
  - iv. Stream barrier assessment
  - v. Annual stream and lake fish surveys
  - vi. Site specific fish entrainment surveys

# Executive Summary



## Goal I. Conserve Habitat – Regional Objectives

In addition to conducting work in targeted ecosystems and/or geographic areas previously described, Region 6 PFW will:

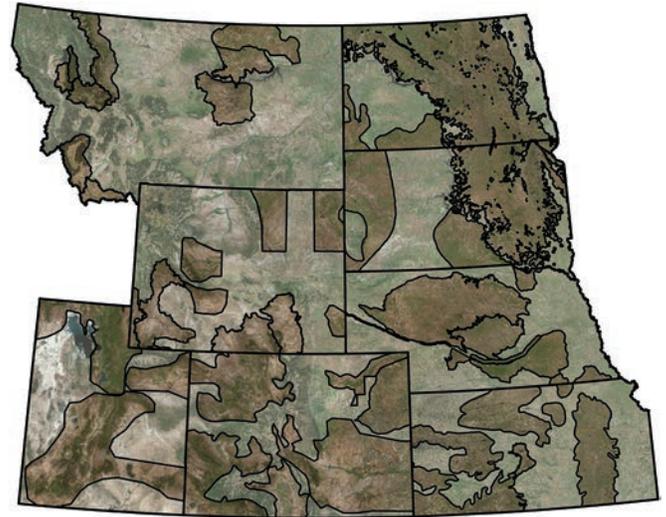
- Maintain intact landscapes to benefit suites of Federal Trust Species
- Restore or enhance habitat for threatened, endangered, and candidate species
- Restore and enhance habitat for Native species of trout
- Restore and enhance habitat for migratory birds of conservation concern, as identified in the Service’s migratory bird conservation plans (e.g.’s, United States Shorebird Conservation Plan, North American Waterfowl Management Plan)
- Keep the populations of Federal Trust Species at stable population levels to avoid costly recovery efforts
- Build upon the goals and objectives of the National Wildlife Refuge System by restoring and enhancing private lands adjacent to Service lands
- Seek out opportunities to maximize private lands restoration efforts by working with partners to leverage resources
- Be proactive and visionary in determining the threats to Federal Trust Species and focusing efforts to restore or enhance private lands that can reduce those threats

## Regional Habitat Five-year Targets

- Wetland Restoration/Enhancement: 19,320 acres
- Upland Restoration/Enhancement: 457,070 acres
- River/Stream/Riparian Restoration/Enhancement: 325.1 miles
- Fish Passage: 71 structures

## Key Strategic Activities

- Work closely with new Service and DOI initiatives to ensure on-the-ground delivery of habitat projects are tied specifically with agency and departmental goals.
- Continue involvement and seek new opportunities with community-based conservation partnerships such as the Tallgrass Legacy Alliance, Comanche Pool Prairie Resource Foundation, Blackfoot Challenge, Sandhills Task Force, and others.



- Continue to promote program hallmarks that emphasize trust, respect, honesty, integrity, flexibility, friendship, and two-way communication with all partners.
- Work cross-program to benefit high priority Federal Trust Species.

## Goal II. Broaden and Strengthen Partnerships

The PFW program has achieved incredible success since its inception, working with hundreds of outstanding partners throughout the Region. Countless agencies, Tribes, non-governmental organizations, industry partners, private landowners, and others have partnered with Region 6 PFW



*Kansas private landowners, members of the Kansas Grazing Lands Coalition, Natural Resources Conservation Service staff, and PFW program staff stop for a break while touring conservation projects throughout Kansas. USFWS photo.*



*The PFW program works with Tribal partners throughout Region 6 to satisfy trust responsibilities and conserve valuable wildlife resources. Photo by Dominic Barrett, USFWS.*

to support restoration efforts and on-the-ground habitat delivery. These efforts have helped to recover threatened, endangered, and candidate species, while also working to keep “common species common”. Partnerships are the foundation of our success and we will continue to work with our partners to improve Region 6 PFW, refine strategic actions, and further conservation delivery. Region 6 PFW will continue to work with partners to enhance our workforce, internally and externally, by providing opportunities for trainings and workshops. Strengthening our partnerships even more and increasing impacts on natural resources, PFW staff will continue to provide technical assistance to state and federal agencies and non-governmental organization that are also implementing habitat delivery.

The Region 6 Partners (PFW) program is working closely with state fish and wildlife agencies to implement state wildlife action plans. In return, our state partners have provided valuable assistance with updating local PFW strategic plans. Both PFW and our state partners have provided valuable information and positively influenced agency planning efforts. Identifying shared goals and combining efforts maximizes benefits to wildlife habitat as well as shared focal species. The PFW program will continue to assist state agencies with the implementation of state wildlife

action plans by providing technical assistance and working on joint projects to leverage resources.

The Mountain Prairie Region overlaps with a significant portion of Tribal lands in the Nation. Region 6 PFW works closely with Tribal partners, providing both technical and financial assistance to support conservation projects benefitting Federal Trust Species. With many Tribal lands occurring within PFW focus areas, these projects have provided tremendous fish and wildlife benefits while also assisting Tribal landowners with desired habitat goals. Tribal partnerships have always been strong in Region 6 and PFW will continue to emphasize enhancing these partnerships and furthering conservation on Tribal lands.

Region 6 PFW wants to extend a special thank-you to internal Service partners who have assisted us in accomplishing our goals. Their guidance and leadership have helped Region 6 PFW maximize efficiencies and work towards the greatest good for Federal Trust Species.

#### **Regional Partnership Five-year Targets**

- Number of Landowner Agreements: 2,007
- Number of Partnerships: 8,213
- Amount of Technical Assistance: 7,551 staff days



*Blackfoot Valley, Montana. USFWS photo.*

### Landscape-level Conservation Partnerships

The PFW program will continue to stay very involved with many landscape-level community based conservation partnerships throughout the region. Due to the fact the Mountain-Prairie Region has several states with private land ownership as its largest percentage, community-based partnerships with private landowners is key to meeting conservation goals. Many of the Region 6 PFW program focus areas are in areas with very little development but increasing pressures and threats. Urban sprawl continues to threaten rural agricultural communities in the Mountain-Prairie states. The Partners program has been involved with many landscape-scale partnerships working to maintain rural lifestyles and support wildlife conservation efforts. The Landscape Conservation Cooperatives (LCC) are partnerships we will be involved in, working together to determine the science needs to support management actions on the ground, for high priority fish and wildlife species. The LCCs cross both regional boundaries as well as international boundaries in Region 6. We will work closely with the LCC coordinators to ensure our efforts work to compliment shared priorities. The Region 6 PFW Program will also continue to be very active with the NRCS special initiatives to support

high priority fish and wildlife species. A few examples include the Sage Grouse Initiative, Lesser Prairie Chicken Initiative and Monarch Butterfly Initiative. Within the Sage Grouse Initiative, the Region 6 PFW program will continue working with the Strategic Watershed Action Team. Region 6 PFW will provide technical support, collaborate on sagebrush habitat projects, and also provide training and mentoring to ensure the best possible outcome for sage-grouse and other sagebrush obligate species.

### Goal III. Improve Information Sharing and Communication

The basis of success for Region 6 PFW and habitat restoration efforts are partnerships. PFW staff work with a broad range of partners and successfully collaborate, find common ground, provide mutual benefits, and promote conservation practices that benefit natural resources. Region 6 PFW biologists have made trust, respect, honesty, flexibility, friendship, and two-way communication the cornerstones of the program. Although financial assistance activities account for 80% of the workload, PFW biologists also provide a tremendous amount of technical assistance to private landowners, agencies, Tribal entities, non-government organizations,

industry, and others. Through technical assistance, highly skilled PFW staff share expertise with our partners to achieve common goals and enhance habitat outcomes. These efforts are accomplished in different ways, depending on the needs of the partners and the objectives.

During the next five years, technical assistance efforts will focus on assisting NRCS and FSA with Farm Bill conservation programs and providing outreach to landowners interested in Service perpetual conservation easements. PFW cooperators often pursue perpetual conservation easements after building trust with local PFW staff and completing successful restoration projects. Conversely, landowners entered into perpetual wetland and/or grassland conservation easements often pursue restoration projects with PFW. The PFW program is commonly referred to as the “book ends” because of our role in the delivery of perpetual conservation easements.

PFW program habitat restoration and enhancements efforts continue to be one of the best recovery tools for at-risk species on private lands. PFW biologists work closely with other Service programs such as Endangered Species, Fisheries and Aquatic Conservation, and Migratory Birds program staff to identify focal species, habitat needs, and implement conservation actions. Through cross-program communication and collaboration, PFW also assists other programs in distributing information to private landowners and external partners. PFW will continue to work with the science support partners (both internal and external) to determine biological outcomes of on-the-ground accomplishments, using the most advanced models, mapping and other science-support tools available.

#### Goal IV. Enhance our Workforce

The Region 6 PFW program is a national role model, often accomplishing 50% of the Nation’s acre accomplishments and hundreds of private landowner agreements annually. One of the reasons that the Region 6 PFW program is so successful is the extremely experienced and talented field staff. The majority of the PFW staff have spent their entire careers with the Region 6 program. They have stayed within their focus areas and become a leader within their communities. By doing so, they have become extremely effective – it takes years for landowners to build the kind of trust that the PFW program now has through the Region. With budget cuts over the past several years, it has made it very challenging to maintain a private lands biologists in all the high priority areas within the Region. We have a very good Work Force Plan, developed by the Regional Coordinator and 8 State Coordinators, which has helped us make the tough decisions on what areas to reduce staff and still accomplish the highest priority needs for our focal species. In several states, we are now below operational capacity, in order to address

all the priorities of the Service Director, Regional Director and Assistant Regional Director for the National Wildlife Refuge System (Refuges).

In addition to the PFW program having a Work Force Plan, Refuges in Region 6 has a new Realignment Strategy in place. All programs within Refuges, including the PFW program, will be going through changes, in order to move all the programs into a new 21st Century way of doing business. One of the things that has been identified is the need to establish entry level positions. With the PFW program celebrating its 30 year anniversary in 2017, we have several employees that have stayed with the program their entire careers and are now getting close to retirement. It is critically important that we recognize this and look for ways to ensure we have some trainee positions and opportunities to mentor them under experienced PFW biologists. As we get opportunities to add new trainee positions, we will look for ways to accomplish this.

The PFW program in Region 6 is uniquely positioned to assist many other Service programs with their conservation goals. While a significant number of states in this country have an exploding human population base, the Mountain-Prairie states have experienced a much slower growth rate. The eight states that make up Region 6 are relatively large in size, with a primarily agricultural or rural focus. There are large contiguous blocks of priority wildlife habitat that is owned and operated by working cattle ranches. These intact landscapes host a tremendous amount of wildlife and have prevented many species from being listed as Threatened or Endangered and, in fact, share credit for having kept common species common. The PFW program has been a catalyst for keeping these natural landscapes intact.

Financial and technical assistance for private landowners has kept rural communities alive by assisting with sustainable rural lifestyles and a viable agricultural community. In a time of declining budgets, the Service needs to focus on doing the right things in the right places. As such, emphasis needs to be placed on working in intact landscapes, where the biggest difference can be made. Efforts need to be focused, and where private landowner funds have been made available, these funds need to be spent wisely. Geographic focus areas have been identified, where high priority efforts have, and will continue to, take place.

Training will be a requirement for all employees within the PFW program. Leadership and guidance will be provided by supervisors to encourage Individual Development Plans that provide a vision for the employee’s future and opportunities for each PFW program employee to be challenged and on the cutting edge of the restoration techniques, partnership development, mapping capabilities, management, and policy. Each employee will have training identified in their performance elements and supervisors will meet



*A private landowner discusses the South Dakota Grasslands Coalition and grassland conservation with Region 6 Service employees at a training workshop in Montana. Photo by Dominic Barrett, USFWS.*

with their employees regularly to ensure training opportunities have been identified and deadlines for registration have been met.

### **Enhance Our Workforce – Regional Objectives**

Increase staff within new geographic Focus Areas, including:

- 1 FTE located within the Flint Hills Legacy Conservation Area, Kansas
- 2 FTEs within the sagebrush ecosystem
- Trainee positions, 2–3 FTEs, locations to be determined
- Trainee position, 1 FTE, located within the Bear River Watershed Conservation Area
- Provide a minimum of 40 hours of training per year to each PFW program staff
- Provide leadership and guidance on the best courses for each employee

### **Goal V. Increase Accountability**

Region 6 PFW has strong Regional Directorate support that ensures PFW program funding will continue to be used for habitat restoration efforts on private lands. The PFW program will continue to ensure that PFW national policy is satisfied.

Regional, state, and Focus Area program reviews will be conducted to ensure policy is being met and best management practices are being implemented throughout the Mountain Prairie Region.

Region 6 will continue to have PFW staff and the Regional HabITS Database Coordinator serve on the national HabITS Working Group. The Regional HabITS Database Coordinator will work closely with State Coordinators and Assistant State Coordinators to conduct quality control and quality assurance prior to annual reporting. Annual reports will be produced to document and share PFW habitat accomplishments with internal and external partners. Habitat accomplishments will be reported at regional, state, and Focus Area levels. Annual reports will compare current accomplishments with five-year strategic goals. Accomplishment data will be submitted to Headquarters to ensure annual Government Performance and Result Act targets are documented and accurate.

Region 6 PFW will increase efforts to measure, assess, and report on the effectiveness, efficiency and fiscal integrity of our habitat restoration efforts through monitoring. In order to monitor the success of on-the-ground projects, as well as biological outcomes from



*Kansas PFW program staff visit projects to inform internal and external partners about conservation practice and habitat outcomes. Photo by Dominic Barrett, USFWS.*

acre and river mile accomplishments, Region 6 PFW staff will work in partnership with others to conduct monitoring activities across focus areas throughout the Region. Monitoring restoration projects will help convey stories of success, better understand impacts to fish and wildlife resources, and improve restoration methodology. To further our mission and enhance our accomplishments, it is important to better understand how habitat outcomes tie specifically to biological outcomes and effective restoration practices are being employed.

### **Partners for Fish and Wildlife Act**

Congress recognized the effectiveness of the PFW program and ratified the Partners for Fish and Wildlife Act on October 6, 2006. Several of our long-term PFW program partners were strong supporters of the Partners for Fish and Wildlife Act and essential to its success. The Act has led to excellent opportunities to provide assistance to private landowners and meet the mission of the Service. Region 6 will continue to work across program lines to restore and enhance terrestrial and aquatic habitat for at-risk fish and wildlife species. PFW program will continue to establish new partnerships with non-governmental organizations and universities to monitor and measure the successes of PFW habitat restoration projects. This will help us determine the PFW program's effectiveness at increasing populations of high priority Federal Trust Species.

With the PFW program celebrating its 30th anniversary in 2017, this is a good time to step back and evaluate how we can become more effective in the future. Region 6 PFW will continue to “raise the bar” and set new standards. We continue to strive to meet or exceed all identified goals and objectives within this plan.

### **Monitoring Plan**

Since 1987, strategically placed PFW program biologists have worked tirelessly to restore valuable wildlife habitats throughout North America. Within Region 6, the PFW program has completed 19,311 projects with private landowners, Tribes, non-governmental organizations, and other cooperators. PFW-funded projects have successfully restored, enhanced, and/or established terrestrial and aquatic habitat for federal trusts species. PFW projects have restored upland habitat for focal species such as greater sage-grouse and enhanced aquatic habitat for Arctic grayling. PFW-lead conservation efforts have catalyzed partnerships, supported large-scale restoration initiatives, and prevented species from being placed on the Federal Threatened and Endangered Species List.

The public has made note of our impacts to fish and wildlife and our ability to effectively work with agricultural producers, such as ranchers and farmers, and other landowners with diverse interests. Congress



*Private landowners from throughout Region 6 discuss Partners for Conservation and the PFW program during a workshop in Montana. USFWS photo.*

recognized the effectiveness of the PFW program and ratified the Partners for Fish and Wildlife Act in 2006. To further our mission and enhance our accomplishments, it is important to better understand our impacts to restored wildlife habitats and ensure effective restoration is being employed. With limited project monitoring and evaluation, it is difficult to fully understand if intended goals and desired outcomes for fish, wildlife, plants, and their habitats are fully achieved. Monitoring restoration projects will help convey stories of success, better understand impacts to fish and wildlife resources, and improve restoration methodology. Furthermore, verifying project completion and monitoring project effectiveness to ensure biological and structural success is required by PFW program policy (Service Manual Chapter 640 1, 1.14).

The Mountain-Prairie Region's PFW program operates under a strategic plan that requires individual state plans with designated focus areas and 5-year targets. To increase accountability (ie., Goal V in our Strategic Plan), Region 6 PFW will measure, assess, and report on the effectiveness, efficiency and fiscal integrity of our habitat conservation programs and activities. In order to monitor the success of on-the-ground projects, Region 6 PFW staff will work in

partnership with other partners to conduct monitoring activities across many focus areas and at multiple scales. The goal is to specifically tie habitat restoration outcomes to biological outcomes whenever possible.

### **Monitoring Plan Process**

Region 6 contains diverse landscapes that provide habitats for a wide array of fish and wildlife. Habitats range between short-mixed and tallgrass to sagebrush and coniferous forests. Similar to the diversity of habitats, PFW projects vary among states and focus areas. For instance, PFW staff throughout North and South Dakota often restore, enhance, or establish wetland habitat for nesting and migratory waterfowl. Equally valuable are PFW projects that protect isolated populations of Rio Grande Cutthroat trout and other native trouts in Colorado, Wyoming, and Utah. PFW projects benefit a diversity of species, including but not limited to native plants, invertebrates, neotropical migrants, and large carnivores.

Evaluating a diverse assortment of projects under one approach or design is neither feasible nor practical. Additionally, there is variability across the states in terms of monitoring opportunities. To account for differences, this plan allows for the collection of

qualitative and quantitative data as appropriate (e.g., completion of conservation practices vs response of focal species) and determined by spatial scale (e.g., project site vs watershed). Region 6 PFW will use a multi-tiered approach to monitor and evaluate restoration projects. These monitoring efforts, described in-depth here, will include three levels of monitoring.

### **Level I Status Review**

Level I monitoring will be completed the same across all states and all PFW program projects. Standard forms will be used to complete the status review or Site Visit Report Form (Attachment 1). The purpose of Level I monitoring is to ensure that the project, as identified within the Private Landowner Agreement, was completed accurately and sufficiently by the landowner or contractor. Level I monitoring will be a site-specific monitoring effort to inspect the project and ensure that the structure and function of the project is sound and designed to the specifications laid out in the Exhibit A of the Private Landowner Agreement. At least one annual site visit will be conducted to ensure the restoration practices are completed accurately and effectively. The Site Visit Report Form will be signed by the PFW program field biologist who was substantially involved with the project. Only general, qualitative data will be collected during Level I monitoring efforts. Completed Site Visit Report forms will be incorporated into the official agreement file at the field level and copies will be included at each respective state PFW office. The initial Site Visit Report form will meet the requirements for compliance monitoring as well as serve as the close-out report for the financial assistance award in PRISM.

### **Level II Site Scale Monitoring**

Level II monitoring will also be at the site-scale. The ultimate goal for Level II monitoring is to tie the on-the-ground habitat outcomes to biological outcomes. We may not have enough current data to get to this “gold standard”, however this is the ideal situation for Level II monitoring, at the site-scale. Since the current monitoring capabilities may not be available yet to accomplish this gold standard, the required Level II monitoring data will include habitat attributes and specifics about what species may be present on the site, as well as signs of the species being present. A framework will guide how each state completes Level II monitoring, however it will vary state-by-state. This will allow each state to take their current monitoring efforts to the next level, no matter what level they are currently at. For a percentage of projects (representative sample) within each state, a process will be developed that identifies which projects will be monitored, what the high focal species are for the project, what the key habitat attributes were, and what was the response by the target species (or signs of their use on the site). Level II monitoring should go into detail about how the site is looking, how

the habitat response tie into specific peer reviewed research, where and how abundant the species were on the site, and any specific information necessary for hydrology, vegetative response, photo points, etc. as specifically identified within each state monitoring plan. When possible, a section on biological outcomes will be included, where these data can be quantified. Specific information on how Level II monitoring will be handled is included in each state monitoring section of this document.

### **Level III Landscape Scale Biological Monitoring**

Level III monitoring will be at a landscape scale. Each state will be developing their own Level III monitoring protocols, based upon the current monitoring and research for the target species identified in the current PFW program Strategic Plan. Level III monitoring will be completed for those species that either the Service, or our partners, have the capacity to assist with. Level III monitoring will be completed at the appropriate landscape-scale that can link site specific restoration to landscape level biological outcomes over a long period of time. Level III monitoring can include habitat outcomes as well as biological outcomes or a combination for high focal species, at a landscape scale. Level III monitoring will vary considerably state-by-state, given the variability of monitoring capabilities with both internal and external partners. Over time, the data will continue to get strengthened and new Level III monitoring capabilities will be possible. The gold standard we are ultimately striving for in Level III monitoring is to link our habitat outcomes (i.e., acres and miles restored and enhanced) to biological outcomes for our high focal species identified for each PFW program Focus Area.

### **Habitat Information Tracking System (HabITS)**

The PFW program will link the habitat outcomes and biological outcomes and report these data in the Habitat Information Tracking System (HabITS) database. HabITS is the PFW program’s national database to collect our Habitat Improvement and Technical Assistance accomplishments, as well as other accomplishments identified within our Strategic Plan. Habitat Improvement data within HabITS is spatial, which allows us the opportunity to share these data with science experts who are modeling the same high focal species identified within the SHC framework.

### **State-by-State Monitoring Plans**

This current Region 6 PFW Program Strategic Plan has individual state monitoring plans imbedded throughout the document. This allows the reader to look at focus area maps, focal species, conservation targets, and monitoring all together. This specifically allows the PFW program to tie habitat accomplishments to biological outcomes and demonstrate how the program plans to monitor their effectiveness overtime.



Attachment 1
Level I Monitoring Form



SITE VISIT REPORT

Landowner Agreement # \_\_\_\_\_

Prism FA Award # \_\_\_\_\_

Final or Interim
Select One

Scope of Work

(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

Project Status

(To be used for an interim report ie...what's been done up to the 1 year mark)
(Example Language)-About 2 paragraphs

Species Benefited

\_\_\_\_\_. (You can reference conservation plans as/if you deem necessary)

Optional/ Literature Cited: (Example)

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012-2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

Payment Method

Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # \_\_\_\_ (project type ex. Wetland enhancement) has been completed (or for interim...is in the process of being completed) in accordance with all provisions of the agreement.

\_\_\_\_\_  
PFW Biologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Landowner / Cooperator

\_\_\_\_\_  
Date

# Appendix A: Stakeholders

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## Colorado

- Key landowners
- Cooperating Landowners
- U.S. Fish and Wildlife Service internal partners (Refuges, Fisheries, Ecological Services, Migratory Birds)
- Southern Rockies LCC
- Great Plains LCC
- Colorado Parks and Wildlife
- Colorado Wildlife Heritage Foundation
- USDA Natural Resources Conservation Service
- Bird Conservancy of the Rockies
- Farm Services Agency
- Ducks Unlimited
- Gunnison Ranch Land Conservation Legacy
- Colorado Natural Heritage Program
- Walton Family Foundation
- Tamarisk Coalition
- Pheasants Forever Incorporated
- Playa Lakes Joint Venture
- Intermountain West Joint Venture
- Mile High Youth Corps
- Karval Community Alliance
- The Nature Conservancy
- Colorado Open Lands
- Colorado Cattlemen's Agricultural Land Trust
- Western Rivers Conservancy
- National Fish and Wildlife Foundation
- Rio Grande Headwaters Land Trust
- Colorado Cattlemen's Association
- South Park Wetland Focus Committee
- Arkansas Headwaters Wetland Focus Area Committee
- San Luis Valley Wetland Focus Area Committee
- South Platte Wetlands Focus Area Committee
- North Park Wetland Focus Area Committee
- Southwest Wetland Focus Area Committee
- Greater Sage-Grouse Working Groups
- Gunnison's Sage-Grouse Working Groups
- Chama Peak Land Alliance
- Colorado Youth Outdoors
- Yuma County Pest Control District
- San Miguel County Weed Control
- Upper Huerfano Conservation District
- Turkey Creek Conservation District
- Three Rivers Alliance

## Kansas

- Key landowners
- U.S. Fish and Wildlife Service internal partners (including Refuges, Fisheries, Ecological Services, Migratory Birds)
- USDA Natural Resources Conservation Service
- Kansas Department of Wildlife, Parks and Tourism
- The Kansas Grazing Lands Coalition
- Tallgrass Legacy Alliance

- Comanche Pool Prairie Resource Foundation
- Smoky Hills Grazers
- The Nature Conservancy
- Kansas Prescribed Fire Council
- Kansas Prescribed Burn Association
- U.S. National Park Service
- Monarch Watch
- Pheasants Forever Inc, and Quail Forever
- USGS Kansas Cooperative Fish and Wildlife Research Unit
- Kansas Livestock Association
- National Wild Turkey Federation
- City of Manhattan, KS
- Northern Flint Hills Audubon Society
- Dow AgroSciences
- USDA Farm Service Agency
- Kansas Association of Conservation Districts
- Ducks Unlimited
- National Fish and Wildlife Foundation
- Commission for Environmental Cooperation
- Westar Energy
- US Army Corp of Engineers
- U.S. Environmental Protection Agency
- Playa Lakes Joint Venture
- Kansas National Wildlife Refuge Project Leaders
- D.O.D. Fort Riley Conservation Team
- Kansas Biological Survey
- Kansas Department of Health and Environment
- Kansas Alliance for Wetlands & Streams
- Great Plains Landscape Conservation Cooperative
- Kansas Forest Service
- Noble Foundation
- Great Plains Fire Science Exchange
- Westar
- Tamarisk Coalition
- K-State Extension
- Western Association of Fish and Wildlife Agencies
- Turner Foundation, Inc.

## Montana

- Key landowners
- U.S. Fish and Wildlife Service internal partners (including Refuges, Fisheries, Ecological Services, Migratory Birds)
- USDA Natural Resources Conservation Service
- Montana Fish, Wildlife and Parks
- Blackfoot Challenge
- Big Hole Watershed Committee
- Centennial Valley Landowners Association
- Ranchers Stewardship Alliance
- Swan Valley Connections
- Trout Unlimited
- Ducks Unlimited
- The Nature Conservancy
- Pheasants Forever Incorporated
- Prairie Pothole Joint Venture
- Northern Great Plains Joint Venture

- Intermountain West Joint Venture
- Bureau of Land Management
- Montana Wetlands Legacy
- Sonoran Institute

### **Nebraska**

- Key private landowners
- Service Nebraska Partners for Fish and Wildlife Program
- Service Ecological Service Field Office (Nebraska)
- Service Rainwater Basin Wetland Management District
- Service Fort Niobrara/Valentine National Wildlife Refuge
- Service Rainwater Basin Joint Venture Office
- USDA Natural Resources Conservation Service
- Nebraska Game and Parks Commission
- Sandhills Task Force
- National Audubon - Lillian Annette Rowe Sanctuary
- National Audubon - Audubon Nebraska
- Platte River Whooping Crane Maintenance Trust
- Ducks Unlimited
- Northern Prairie Land Trust
- Bird Conservancy of the Rockies
- Platte River Basin Environments, Inc.,
- Nebraska Land Trust
- Prairie Plains Resource Institute
- Pheasants Forever and Quail Forever

### **North Dakota**

- Key landowners
- U.S. Fish and Wildlife Service internal partners (including Refuges, Fisheries, Ecological Services, Migratory Birds)
- Ducks Unlimited Incorporated
- Pheasants Forever Incorporated
- USDA Natural Resources Conservation Service
- USDA Farm Services Agency
- North Dakota Game and Fish Department
- Prairie Pothole Joint Venture
- Northern Great Plains Joint Venture
- Delta Waterfowl Association
- North Dakota Natural Resources Trust Incorporated
- American Bird Conservancy
- Audubon Dakota
- National Wild Turkey Federation
- ND Grazing Lands Coalition
- The Nature Conservancy
- North Dakota Action Group
- Soil Conservation Districts

### **South Dakota**

- Private landowners
- South Dakota Association of Conservation Districts
- South Dakota Department of Game, Fish and Parks
- South Dakota Department of Agriculture
- 68 County Conservation Districts
- USDA-NRCS
- USDA-FSA

- The Nature Conservancy
- The Conservation Fund
- National Fish and Wildlife Foundation
- South Dakota Izaak Walton League
- 9 Native American Tribes
- Pheasants Forever
- Northern Prairies Land Trust
- East Dakota Water Development District
- Service Internal Partners
- South Dakota Department of Environment and Natural Resources
- South Dakota Grassland Coalition
- Ducks Unlimited
- Belle Fourche River Watershed Partnership
- Prairie Pothole Joint Venture
- Northern Great Plains Joint Venture

### **Utah**

- Key landowners
- U.S. Fish and Wildlife Service internal partners (including Refuges, Fish and Aquatic Conservation, Ecological Services, Migratory Birds)
- Bear River Land Conservancy
- Ducks Unlimited
- Farm Bureau
- Grand Staircase Escalante partnership
- Intermountain West Joint Venture
- Natural Resource Conservation Service
- Rich County Coordinated Resource Management Team
- The Nature Conservancy
- Trout Unlimited
- Utah Association of Conservation Districts
- Utah Department of Food and Agriculture
- Utah Division of Natural Resources
- Utah Division of Wildlife Resources
- Utah Partners for Conservation Development
- Utah State University
- West Box Elder Coordinated Resource Management Team

### **Wyoming**

- Key landowners
- Audubon Wyoming
- Ducks Unlimited, Inc.
- Eastern Shoshone and Northern Arapaho Tribes
- Intermountain West Joint Venture
- Local County Weed and Pest
- Northern Great Plains Joint Venture
- The Nature Conservancy - Wyoming
- Trout Unlimited
- USDA - Natural Resources Conservation Service
- US Bureau of Land Management
- US Forest Service
- U.S. Fish and Wildlife Service (including Refuges, Fisheries, Ecological Services, Migratory Birds)
- U.S. Army Corps of Engineers – Cheyenne District Office

- Wyoming Association of Conservation Districts and member Districts
- Wyoming Game and Fish Department
- Wyoming Landscape Conservation Initiative
- Wyoming Wildlife and Natural Resource Trust
- Wyoming Water Development Commission
- Wyoming Wildlife Federation

# Appendix B: Literature Cited

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# Appendix C:

## Glossary of Terms

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**Baseline:** Characterizes existing conditions before an action begins. Establishes a benchmark against which the success of the activity or project can be measured.

**Candidate Species:** Any species for which the U.S. Fish and Wildlife Service has enough information to propose the species for listing under the Endangered Species Act.

**Conservation:** Any single or group of actions or decisions that are made to support the fish and wildlife values of a habitat. For the purposes of this document, it is intended to be an all inclusive term including (but not limited to) restoration, enhancement, establishment, maintenance, protection, monitoring, outreach, coordination, assessment, and education for fish and wildlife habitat values.

**Effectiveness:** Determines whether the activity or project has had the desired effect on selected indicators or performance criteria.

**Endangered Species:** Any species which is in danger of extinction throughout all or a significant portion of its range, and is federally listed as “endangered” under the Endangered Species Act.

**Enhancement:** The manipulation of physical, chemical, or biological characteristics of existing habitat to change specific functions.

**Establishment:** The manipulation of physical, chemical, or biological characteristics of a habitat to create and maintain habitat that did not previously exist.

**Federal Trust Species:** The group of species including migratory birds, threatened and endangered species, inter-jurisdictional fish, marine mammals, and species of international concern, for which the Service has a specific legal mandate.

**Federally Listed Species:** A species that has been given federal protection in accordance with Section 4 of the Endangered Species Act.

**Focal Species:** For the purpose of this document, priority species within the Mountain-Prairie Region that the Partners for Fish and Wildlife program will direct most of its program activities and strive to benefit during the next five years (2017–2021).

**Focus Area:** For the purpose of this document, priority private land habitat areas within the Mountain-Prairie Region where the Partners for Fish and Wildlife program will direct most of its program activities over the next five years (2017–2021).

**G1:** Regarding the NatureServe global conservation status ranks, a G1 species is “critically imperiled,” or at risk of extinction due to extreme rarity, very steep declines, or other factors.

**G2:** Regarding the NatureServe global conservation status ranks, a G2 species is “imperiled,” or at a high risk of extinction due to a very restricted range, very few populations, steep declines, or other factors.

**Habitat Improvement:** Any habitat restoration, enhancement, or establishment intended to increase the suitability of an area for a species or community.

**Imperiled:** Any species that is at high risk for extinction due to a very restricted range, few populations, steep declines, or other factors.

**Invasive Species:** A species that grows and spreads rapidly, establishes over large areas, and persists in areas where it is not wanted. A nonnative (alien, exotic) invasive species is one that has been introduced to a location outside its native or natural range.

**Maintenance:** The periodic additional work involving the manipulation of the physical, chemical, or biological characteristics present that is critical for the continuing success of a restoration process.

**Monitoring:** The collection and assessment of repeated observations or measurements over time to evaluate the effectiveness of actions.

**Partnership:** A group of people and/or organizations that have formed a relationship to promote an activity or idea.

**Protection:** A long-term action to safeguard habitats of significant importance to fish and wildlife species.

**Restoration:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning the natural functions to lost or degraded landscapes.

**Science-based:** Founded in information that has been subject to the application of an objective scientific methodology, generally assumed to include rules for concept formation, observation, experimentation, and the validation of hypotheses, and enhanced by review of peers with expertise in the subject matter.

**Threatened Species:** Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, and is federally listed as “threatened” under the Endangered Species Act.



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