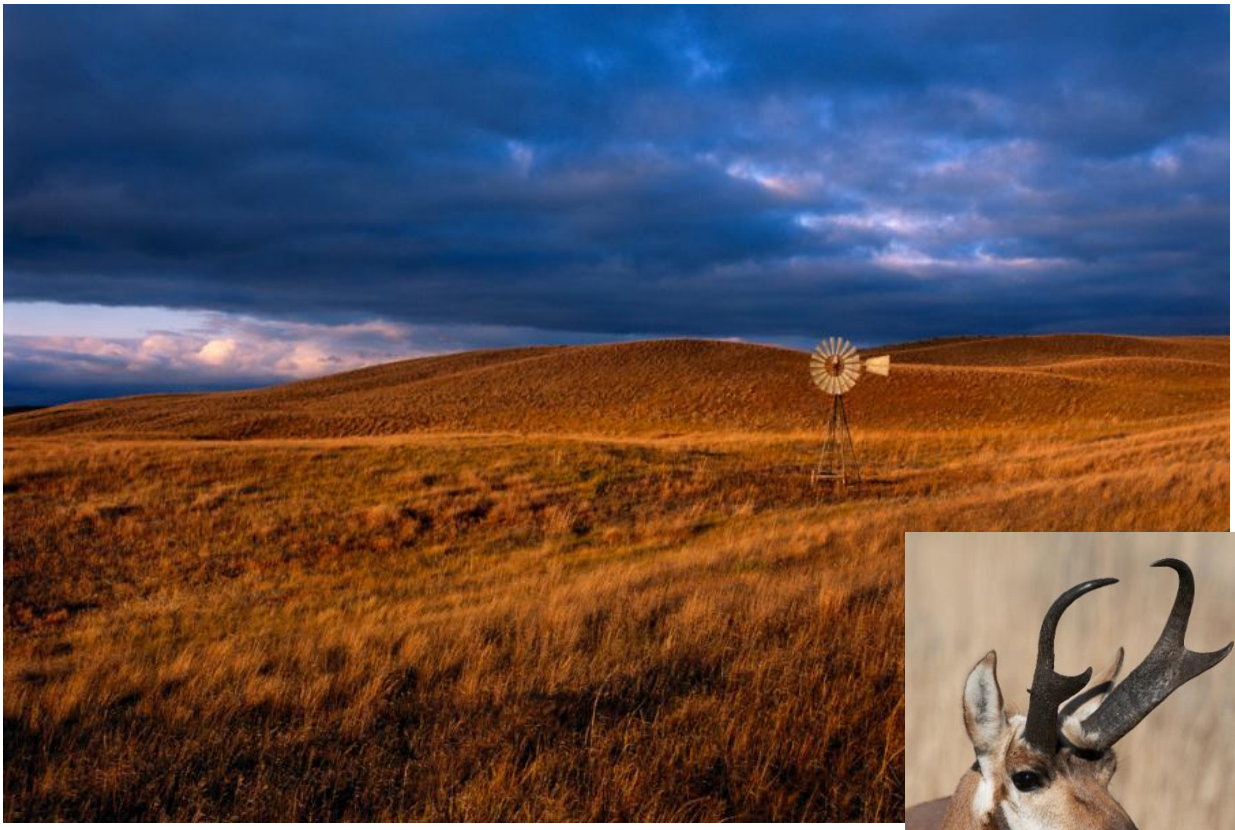


National Fish and Wildlife Foundation

Business Plan for the Northern Great Plains

September 2016

(Updated 2021)

Purpose of a Business Plan

The purpose of a NFWF business plan is to provide a concise blueprint of the strategies and resources required to achieve the desired conservation outcomes. The strategies discussed in this plan do not represent solely the foundation's view of the actions necessary to achieve the identified conservation goals, but instead reflect the majority view of the many federal, state, academic, and organizational experts that consulted during plan development. This plan is not meant to duplicate ongoing efforts but rather to invest in areas where gaps might exist so as to support the efforts of the larger conservation community.

Acknowledgements

Numerous organizations, agencies and funding partners provided invaluable insight and feedback in the development of this plan. Special thanks to: The U.S. Fish & Wildlife Service, U.S. Forest Service, Natural Resources Conservation Service, Bureau of Land Management, Margret A. Cargill Foundation, Burlington Northern Santa Fe Railroad, World Wildlife Fund, Bird Conservancy of the Rockies, and the Northern Great Plains Joint Venture.

About NFWF

The National Fish and Wildlife Foundation protects and restores our nation's wildlife and habitats. Chartered by Congress in 1984, NFWF directs public conservation dollars to the most pressing environmental needs and matches those investments with private contributions. NFWF works with government, nonprofit and corporate partners to find solutions for the most complex conservation challenges. Over the last three decades, NFWF has funded more than 4,000 organizations and committed more than $2.9 billion to conservation projects. Learn more at *www.nfwf.org*.

Conservation Need

Significance of the Landscape

Stretching from the foothills of the Rockies into the badlands of the Dakotas and Nebraska, the Northern Great Plains (NGP) cover over 180 million acres. They are characterized by expansive grasslands supporting a unique assemblage of wildlife adapted to this landscape. These species require large open spaces as habitat with little or no disturbance to sustain their populations.

Much of the region remains in grasslands that are in perennial grass cover which may include native range, non-native pastures, and hay meadows. Ninety-nine percent of non-urban land in the Northern Great Plains is used for farming and ranching purposes (Forrest et al., 2004). Almost eighty percent of the NGP is in private ownership, 12% is public land and almost 10% is under tribal management (World Wildlife Fund, 2016). Unlike many other regions in the West where the state and federal government is a major stakeholder, private interests dominate the NGP and make it imperative to engage with the sector in conservation practices.

Comparatively, America's grasslands have received much less conservation attention than other ecosystems. Grasslands are associated with uneventful landscapes, experience harsh climate conditions and are located far from population centers. The NGP is no different, but this intact grassland system also represents an incredible conservation opportunity. The vast majority of the landscape is in cattle grazing which, when managed, is a compatible agricultural use which relies on the very same grasslands as wildlife, and allows conservation efforts and rural communities to co-exist.

Fortunately, there is a growing understanding of the importance of grasslands to both wildlife and the culture and livelihoods in the region. Recognizing the growing threats, the absence of dedicated funding, and a strong interest in conservation efforts by key stakeholders, NFWF is leveraging its resources to strategically invest at a landscape scale, focusing on the highest quality and largest remaining grassland areas in the region.

Through this plan, NFWF will bring resources and expertise to ensure grasslands of the NGP remain as a resource for future generations and native wildlife, species. To do this, we will work to bring new tools and expanded financial resources to ranching communities, tribes, NGOs and public land managers who steward these lands.

Imperiled and unique species

Despite large intact tracts of grasslands, not all associated species are thriving. Grassland passerine birds such as longspurs, Baird sparrows, Sprague's pipits, lark buntings and western meadowlark populations have declined sharply over the last 40-50 years. One species, thick-billed longspur, declined almost 95% since the 1960s (Dwyer, 2015), indicating the presence of major stressors impacting this and many other species dependent on the NGP. Greater sage grouse, pronghorn, swift fox, mountain plover and burrowing owl continue to be found on the landscape, but may not be able to sustain healthy populations without conservation action.

Many species are dependent on early succession grasslands which are created by forces such as fires, intensive grazing from ungulates, and black-tailed prairie dogs. Reduction of these grazing species thought of as "bio-engineers" has subsequently reduced a number of species populations reliant on those habitat types. One such species, the black-footed ferret, was presumed extinct until a small population was discovered in Wyoming in 1981. The species is now bred in captivity. Since the mid-1990s ferrets have been released on 27 sites throughout the West, including 11 sites in the NGP. Currently, approximately 300 individuals exist in the wild with 170 of those spread across six NGP sites. Black-tailed prairie dog has seen a 98% decline in occupied acres from historic estimates due to grassland conversion, persecution and more recently outbreaks of sylvatic plague (NatureServe, 2015). Sylvatic plague, a bacterial infection, has locally decimated prairie dog and ferret colonies and is the primary limiting factor to their survival.

Like many Great Plains species in the mid to late 19th century, the pronghorn experienced steep and dramatic declines due to overharvest with European settlement of the West. Many states developed game laws as early as the 1870s to regulate the harvest. Winter weather and fences are now the highest cause of regional population mortality. Some populations are highly migratory while others are resident, and all face risks by having their movements limited by highways, railroads and fences.

Threats to the Northern Great Plains

While seemingly endless, the grasslands of the Northern Great Plains are disappearing before our eyes, with more than a million acres being converted to cropland annually (WWF 2016). Large areas have been lost in the last decade and the number of grassland strongholds is dwindling. This conversion is driven by incentives, new technologies and economic pressures that encourage plowing of grassland for crop production and is the single most destructive activity to grassland wildlife. Once native grasslands have been plowed and/or converted to other uses, their ecological services are lost (e.g., carbon storage, water retention, climate modulation, disease abatement and habitat for wildlife). Restoration back to functioning native grasslands can take decades.

The NGP also holds significant oil and gas reserves, especially in the Bakken formation of North Dakota. The expansion of the oil and gas industry has transformed large portions of the landscape and resulted in the development of infrastructure and urban growth. With the push for renewable energy, windfarms and energy crops are also proliferating across the landscape with large windfarms being constructed in Wyoming and Montana.

Effective grassland management requires a unique set of skills and the potential loss of the ranching way of life and the generations of management capacity it brings is a major threat to this region. Young ranchers are finding it difficult to afford the costs associated with a profitable ranching business and many are migrating to urban centers where they take on other livelihoods.

Current Conservation Context

In the NGP, federal agencies protect several iconic landscapes like the U.S. Forest Service's Thunder Basin, Little Missouri River and Buffalo Gap National Grasslands, the National Park Service's Badlands and Theodore Roosevelt National Parks and the U.S. Fish & Wildlife Service's (USFWS) Charlie Russell National Wildlife Refuge in eastern Montana, which alone conserves more than one million acres of grasslands. However, it is the private landowners and ranchers in particular that manage the vast majority of the NGP. Ranchers in particular hold the greatest potential to influence land use practices

that are beneficial to both cattle production and conducive to maintaining healthy native grasslands and associated wildlife.

Farm Bill programs administered through the U.S. Department of Agriculture's Farm Service Agency and Natural Resources Conservation Service (NRCS) exercise considerable influence over private lands with programs that have both negative and positive effects on the regions grasslands. Many of the conservation programs such as Agricultural Conservation Easement Program (ACEP) and Environmental Quality Incentive Program (EQIP) can both protect perennial grass cover and incentivize altered management. Other such subsidy programs and policies included in the Farm Bill such as crop insurance, disaster assistance and marketing loans also influence land practices (Classen et al. 2011). The Conservation Reserve Program developed in the 1980s has recently had huge effects on perennial grass cover on the landscape. The 2014 Farm Bill reauthorized the program, however it reduced the national enrollment cap from 32 million acres to 24 million acres, putting millions of acres of restored grassland at risk of conversion. Although national level policy exerts considerable influence over the future of NGP grasslands, policy interventions are beyond the current scope of this Program.

In Canada, 360,000 acres of largely native grasslands are federally-designated community pastures, managed with two main objectives, the maintenance of biodiversity and livestock production. In 2013, the Canadian government decided to divest of the community pastures and transfer management to the provincial governments by 2020. It will be critical to work with Saskatchewan and Alberta landowners who lease community pastures to ensure those lands remain in working grasslands.

Partnerships like The Nature Conservancy's Matador Ranch Grassbank with private ranchers in eastern Montana offer promising new approaches that support cattle production and conservation on the same landscape. There are numerous non-government organizations focused on supporting grassland conservation while working closely with ranching and tribal communities. These organizations provide trained technicians who help ranchers access federal and state wildlife incentive programs. Some are also able to hold and manage conservation easements acquired through these programs - an important tool for grasslands conservation. Increasingly, rancher-led associations recognize the need to promote a conservation ethic on the grasslands.

The North American Waterfowl Management Plan was the first coordinated, multi-stakeholder effort to embrace grassland and wetland conservation in this region. However, grasslands to the west of the prairie pothole region were peripheral owing to their limited wetland extent. The Northern Great Plains Joint Venture provides a constructive forum for bridging natural resources interests of agencies, NGOs, academia and private landowners. Newly created networks for sharing information on grasslands issues are gaining momentum, demonstrating a growing interest in grassland conservation.

This Business Plan outlines an approach that builds on existing interests and expertise, while remaining flexible to support innovation, strategic investments and new approaches. NFWF's presence will also provide a proven ability to match private funding with federal resources, a unique landscape perspective, and will act as a catalyst to encourage collaboration among multiple partners working toward similar goals in the region.

In 2016, NFWF undertook an assessment of our initial three years of grantmaking in the region and found that the approaches we funded were effective, and that with modifications, NFWF would be well positioned to make a large impact on these grasslands over the next decade. This Business Plan has been informed by that assessment, as well as by program grantees and external experts.

Conservation Outcomes

Working through partnerships, NFWF's goal is to directly maintain or improve more than 6 million acres of interconnected, native grasslands in focal areas within the NGP (i.e. core areas) to sustain healthy populations of grassland-obligate species while fostering sustainable livelihoods and preserving cultural identities.

Recognizing the importance of core native grassland areas to birds and other wildlife species, NFWF will deliberately target these areas within each of the focal geographies. This approach will be further refined by investing in areas that are under greatest threat from conversion – in essence, targeting resources to maintain native grasslands while ensuring activities that sustain native grasslands also benefit working lands (e.g. ranching). Through targeted grasslands restoration projects, NFWF will amplify its impact by establishing corridors and linking functionally isolated patches to one another. It is anticipated that this will lead to a disproportionately higher impact on species versus making random investments across any single focal geography.

The following habitat and species outcomes are anticipated as a result of NFWF's investments in the NGP over the next ten years.

Outcome 1: Demonstrate successful models for grassland habitat conservation.

Objective 1: By 2026, increase grassland connectivity by permanently conserving a minimum of 1,000,000 acres of native grasslands in core areas within the identified focal areas.
The acquisition of native grasslands will be adjacent to or embedded in large blocks of native grassland to maintain or increase landscape connectivity by preventing lands from sub-division and sod-busting while maintaining working ranches.

Objective 2: Increase connectivity of core native grasslands by restoring a minimum of 300,000 acres of degraded habitat adjacent to native grasslands by 2026.
Restoration activities include returning cropland to native grass, prescribed fire, removal of woody invasive species and wet meadow/riparian restoration efforts.

Objective 3: Improve management on 5,000,000 acres of working land in core areas by 2026.
Management agreements with landowners are an effective tool for implementing habitat improvements at large scales through prescribed grazing, infrastructure to facilitate rangeland management, and behavior modifications.

Outcome 2: Improve population levels and related outcomes for grassland species in targeted focal areas.

Grassland Passerines

Objective 4: By 2026, increase population density of Baird's sparrow, Sprague's pipit, chestnut-collared, thick-billed longspur, and lark buntings in areas where NFWF funded conservation projects are implemented.

Overall program investments will result in the following outcomes for grassland passerines[1]:

- Grassland passerines with improved population trend over the regional baseline:
    - Baird's sparrow - increase population density at NFWF sites in the Missouri-Milk River Grassland focal area above baseline of 1.04 birds per acre
    - Sprague's pipit - increase population density at NFWF sites in the Missouri-Milk River Grassland focal area above baseline of 0.22 birds per acre
    - Chestnut-collared longspur - increase population density at NFWF sites in the Missouri-Milk River and Dakota Grassland focal areas above baseline of 6.09 birds per acre
    - Thick-billed longspur - increase population density at NFWF sites in the Missouri-Milk River and Thunder Basin-Powder River Grassland focal areas above baseline of 0.68 birds per acre
    - Lark bunting - increase population density at NFWF sites in the Missouri-Milk River, Thunder Basin-Powder River and Dakota Grassland focal areas above baseline of 12.4 birds per acre

Black-footed Ferret

Objective 5: Through the application of sylvatic plague vaccine, establish and maintain three populations of Black-footed ferret with 30 breeding females each in sites identified as priority locations by the USFWS.

NFWF will focus on the colony at Conata Basin, which currently has more than 30 breeding adults, and support the expansion of two others. Potential sites for expansion include the following: UL Bend National Wildlife Refuge, Lower Brule Sioux Reservation, Wind Cave National Park and a private site in South Dakota.

Pronghorn

Objective 6: Improve landscape permeability for pronghorn along major migratory routes of pronghorn populations in the Missouri-Milk River Grasslands Focal Area by removing and modifying 500 miles of fence and installing five structures to minimize mortality at road crossings and bottleneck sites by 2026.

Fence removal, modification or installation of structures to bypass barriers will increase permeability and thus survivorship.

[1] Five migratory grassland birds were selected as indicator species through a structured decision making process with partners using multiple weighting criteria including: importance to stakeholders, threats, proportion of population in the region and rate of decline among a number of others. (See the full report in Appendix A). The five selected species are highly endemic to the NGP with three species, Baird's sparrow, chestnut collared longspur and Sprague's pipit, having greater than 95% and thick-billed longspur and lark bunting having about 60% of their global population in the region. In addition to being regionally important, this suite of species has exhibited extreme annual declines (-2.4 to -6.1%) since the inception of the Breeding Birds Survey in 1966. These 5 species will be monitored across the NGP in expectation that conservation efforts being implemented in the region are having a positive net gain on their populations.

Greater Sage-Grouse

Objective 7: Sustain populations of greater sage-grouse through the protection of25,000 acres of habitat via conservation easements, restoration of 200 wet meadow acres and removing or marking 150 miles of fence around key leks in Sage Grouse Focal Areas.

This intermediate outcome supports the outcomes described in NRCS's Sage Grouse Initiative (SGI) 2.0.

Geographic Focus

The NGP Program reaches from southeastern Alberta and southwestern Saskatchewan south through Montana, Wyoming, the Dakotas and northern Nebraska bordered on the east by the Missouri Couteau and the west approximately where the high plains meets the Rocky Mountain front. NFWF will focus support on areas where investments will have the most impact on the conservation outcomes as identified in the business plan. Specific focal areas, shown below in figure 1, were identified based on highest percentage of grasslands, occupancy of priority species, geographic diversity and areas where partnership and capacity needs can be bolstered.

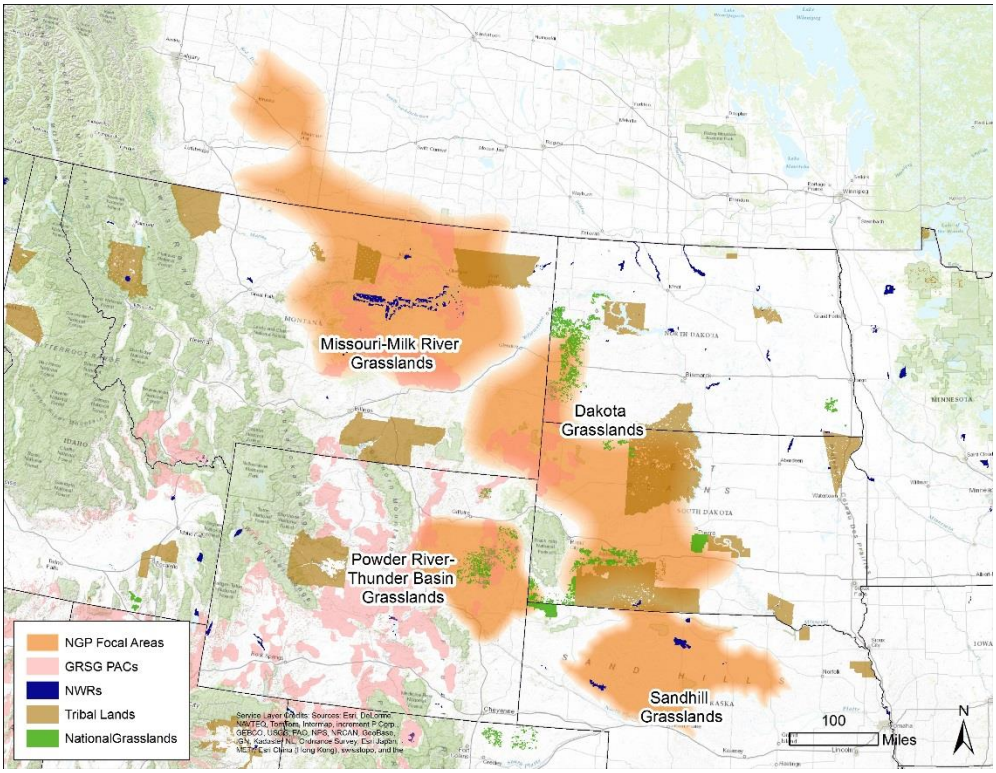


Figure 1: Map of Northern Great Plains Program boundaries with four focal areas identified in orange

Missouri -Milk River Grasslands:

The Missouri-Milk River Grasslands is the largest focal area at 40,466,857 acres reaching from southwestern Saskatchewan and southeastern Alberta, into much of northeastern Montana. Roughly 74% of this focal area is in grasslands. This focal area includes two large Native American reservations

Fort Belknap and Fort Peck, vast BLM holdings, the Charles M. Russell National Wildlife Refuge complex, The Nature Conservancy's Matador Ranch Grassbank, and the American Prairie Reserve. It is also the only focal area in the NGP to include areas of Canada. Wildlife species do not recognize international boundaries and grasslands north of the boarder hold significance for many of the focal and indicator species in the plan. The focal area contains many large cattle ranches and is home to the locally led conservation collaborative The Ranchers Stewardship Alliance. This focal area has high potential to see native grass plowed out if economic conditions favor such practices; therefore, land protection via conservation easement is a high priority.

Dakota Grasslands:
The Dakota Grasslands focal area spans much of South Dakota west of the Missouri River, excluding the Black Hills, and extends into southwest North Dakota and several counties in southeastern Montana. It encompasses 30,214,544 acres with 85% in grasslands. The focal area includes five Native American reservations including Standing Rock, Cheyenne River, Rosebud, Lower Brule and Pine Ridge. Federally managed lands include Badlands National Park, Fort Pierre, Buffalo Gap, Grand River, and Little Missouri River National Grasslands. Much of the remaining land is in private ownership in ranching use and is home to the locally-led collaborative South Dakota Grasslands Coalition. This focal area is considered by many to be the front line regarding potential plowing of grasslands as technology advances; therefore, conservation easements will be a priority.

Powder River – Thunder Basin Grasslands:
Located in northeastern Wyoming the Powder River Basin and Thunder Basin Grassland focal area is perhaps the most anthropogenically impacted of the focal areas having seen significant energy exploration on several occasions in the last half century. The area is 9,458,813 acres and runs from the base of the Bighorn Mountains east to the Black Hills. In the 1970s, the coal boom began and in the 1990s the extraction of coal bed methane for natural gas production become widespread in the region. The area's 15 mines produce 40% of the nation's coal. While energy still plays a key role in the area's economy, 97% remains in grasslands. Thunder Basin National Grassland which hosts some of the largest remaining prairie dog colonies in the region is included in this focal area. Local landowners are working on proactive collaborative efforts through the Thunder Basin Grasslands Prairie Ecosystem Association.

Sandhill Grasslands:
The Nebraska Sandhills' 14,253,411 acres encompass more than a quarter of the state of Nebraska. Grasslands cover of 92% of the focal area. The sandy soils have high erosion potential which make the area largely unsuitable for modern farming activities. Ranching is the main land use and the region has seen only sparse energy development to date. Large tracts of managed grasslands in this focal area include the Valentine, Crescent Lake, and Fort Niobrara National Wildlife Refuges as well as The Nature Conservancy's Niobrara Valley Preserve. The area is home to one of the oldest locally led conservation collaboratives, The Sandhill's Task Force.

Implementation Strategies

This plan outlines a multi-pronged approach to achieve conservation outcomes across the broad, diverse landscape (figure 2). Depending on the most critical needs of a focal geography, certain strategies will be prioritized (table 1). For instance, conservation easements may not be a critical strategy to implement in the Nebraska Sandhills Focal Area due to the reduced threat of tillage based on soil type, but habitat restoration through eastern red cedar removal and the reintroduction of fire are high priority strategies. In contrast, conservation easements are a high priority strategy in the Dakota Grasslands and Missouri-Milk River Grasslands where tillage risk is far higher.

Table 1: Implementation strategies as they apply to focal geographies

Focal Area	Permanent Conservation	Restore - Improve Management	Grassland Birds	BFF	Pronghorn	Sage Grouse
Missouri-Milk River Grasslands	X	X	X	X	X	X
Dakota Grasslands	X	X	X	X	X	X
Nebraska Sandhills		X	X			
Powder River – Thunder Basin Grasslands		X	X	X	X	X

Outcome 1: Demonstrate successful models for grassland habitat conservation.

Objective 1: By 2026, increase grassland connectivity by permanently conserving a minimum of 1,000,000 acres of native grasslands in core areas within the identified focal areas.

Strategy 1: Permanently protect important grasslands with conservation easements and other tools to maintain large blocks of habitat.

Conservation easements are a powerful tool in wildlife conservation. By purchasing development rights and limiting conversion, the land is protected in perpetuity while remaining in ranching and private ownership. Conservation easements are a key strategy to address the grassland conversion and fragmentation threat in the NGP.

1.1 Direct participation in land conservation transactions

Conservation easements can be a very effective tool in keeping large landscapes intact. In recent years, the ranching communities of the western United States have increasingly employed conservation easements, but have not uniformly embraced them. Easements represent a low cost way (about 30% of the cost of outright acquisition) to secure high quality habitat and retain it in private ownership and management.

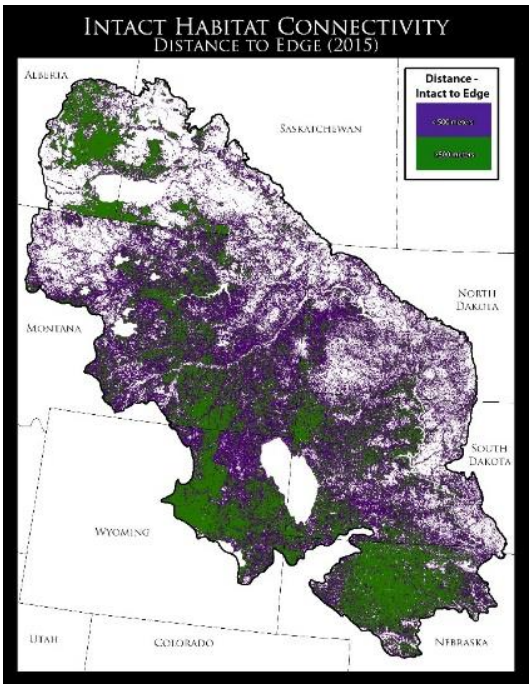


Figure 2: The above map provided by the World Wildlife Fund depicts areas of intact perennial grass cover (grasslands including hay meadow, conservation reserve program, and non-native pasture) in blue (low risk of plow out) through shades of red (high risk of plow out). The green is either

In this plan, NFWF will focus on land conservation efforts on two focal landscapes where conversion is a clear and present threat: the Missouri/Milk River Grasslands and the Dakota Grasslands. Priority will be given to efforts in and immediately adjacent to areas of intact grasslands (figure 2). Specifically, we will seek to help our partners secure lands that are at high risk of conversion due to their soils and in those areas where current conversion is happening on subpar soils. While remnant areas of grasslands that are surrounded by cropland or other uses are likely to be locally important, they will not be the focus of this plan. Nor do we expect to make land conservation investments in those areas where direct conversion is not a threat, but we will monitor the extent of the threat over the life of the Business Plan.

Due to the high cost of acquiring either easements or other interests in land, NFWF expects that any investments made will be highly leveraged. In some areas there is significant public funding available for land conservation projects that require a modest percentage of non-federal matching funds. We see a role for NFWF funding in supplying that critical match and enabling much larger public investments to be made by both land trusts and local and state government conservation partners.

1.2 Grassbanks and other long term tools for conservation and improved ranch viability.

There are several new and emerging land conservation tools that have shown promise in the region for collaboration between the conservation and ranching communities. The most prominent of these is The Nature Conservancy's Matador Ranch Grassbank in eastern Montana. While parcels conserved through conservation easements or fee title purchase associated with grassbanking provide long term assurance that conservation will remain secure into the future, the benefits of this tool are far reaching. As a result of a grassbank, ranchers develop a management agreement with the grassbank holder in exchange for some benefit to their production such reduced grazing fees or access to additional forage on the grassbank. In return, the rancher implements some agreed upon conservation practices on their deeded land. Grassbanks and similar tools also have the potential for addressing ranchland succession issues within local ranching communities.

NFWF may selectively invest in planning and capacity efforts to develop alternative land conservation approaches which could include private, public or tribal lands, or the possibility of exchanges or conservation leasing that will enhance the wildlife values of grasslands while also supporting local communities.

Objective 2: Increase connectivity of core native grasslands by restoring a minimum of 300,000 acres of degraded habitat adjacent to native grasslands by 2026.

Strategy 2. Restore grasslands for the benefit of grassland wildlife and agricultural operations/ranching.

Implementation of these strategies often strengthens a community's land ethic and catalyzes future conservation efforts through collaboration and long term protection activities. Specific activities include returning marginal cropland to native grass, removal of woody encroachment, grassland banking, prescribed fire and invasive species control.

2.1 Grassland restoration/re-seeding: Restoration can be a locally important tool in combating grassland fragmentation. The practice, which involves re-seeding a site with native vegetation, can be expensive and can take a number of years to establish. However, the results often yield functional wildlife habitat and increase landscape connectivity. When investing in restoration, a high level of assurance that the restored site will remain in grass cover will be provided to ensure adequate return on investment. Restoration will be targeted to areas with adjacent intact prairie as indicated by spatial modeling tools.

2.2 Wet meadow restoration: This practice specifically addresses the need of wildlife species in times of water scarcity, generally late in the summer through the fall. For example, late brood rearing habitat is often a limiting factor in the life-cycle of greater sage-grouse. Over time many wet meadows have been altered and degraded through un-managed grazing, alteration for irrigation and livestock watering, decreasing water availability (McGuire, 2013) and changing vegetation composition and structure in these areas. This limits the production of forbs and the associated insects that are critical food sources to young birds which can have a huge impact on the productivity and utility of neighboring upland habitats for wildlife and livestock (Sage Grouse Initiative, 2016). Restoration practices in perennial systems may include excavation, reconnection of channels to floodplain, grade structure stabilization and "beaver mimicry" efforts and in more ephemeral systems, installation of "induced meandering" methods such as log vanes, one rock damns and Zuni bowls.

2.3 Removal of predator habitat: Human settlement on the NGP came with associated infrastructure such as homes, outbuildings, trash piles, shelterbelts, roads, and power poles. Landscapes with higher percentages of developed land are associated with an increase in nest predators of grassland birds (Klug, Wolfenbarger, and McCarty, 2009). As human populations have declined, much of the infrastructure remains and provides ample and ideal habitat for what would otherwise be sparsely populated predators. Meso-carnivores such as raccoons, skunks, red fox and feral cats as well as avian predators like common raven, american crow and black-billed magpie all utilize such sites for nesting and roosting cover. Removal of these structures is a far more sustainable means of predator control then other options, like trapping, shooting and poisoning, and also results in large areas of neighboring habitat increasing in utility to grassland species.

2.4 Prescribed fire: Fire is a naturally occurring phenomenon in the NGP with data from Landscape Fire and Resource Management Planning Tools Project (LANDFIRE) suggesting that an approximately ≤35 year fire interval was the pre-settlement norm over most portions of the region. The region's fire regime has been altered so that fire severity has increased while fire frequency has decreased (Wakimoto et al., 2005). Species that rely on more frequent disturbance to the landscape have been negatively impacted by these changes. Fire can be an important tool for resetting grassland succession and providing habitat for early to mid-succession grassland species such as Mountain Plover and Sprague's Pipit (Augustine and Derner, 2012) (Jones, 2010). Fire also has utility in the control and follow-up management of treating sites invaded by woody species. In some areas of the NGP, there may be significant social objection to the practice as the perception is that fuel for prescribed fires is also valuable forage for livestock. However, in some areas like the Nebraska Sandhills, landowners recognize the need for periodic fire to eliminate or manage encroachment by woody vegetation that has little to no nutritional value and competes for water uptake with more desirable grasses.

2.5 Control of woody vegetation: In portions of the NGP, invasion by eastern red cedar has transitioned the grasslands to a more forested system. A shift towards woody plant dominance can result in loss of ecosystem services and decreased livestock production (Briske 2011). A number of studies have shown that woody encroachment negatively effects habitat availability and reproductive success for many grassland bird species (Bakker, 2003) and unless meeting a specific management prescription, should be removed from grassland systems. Methods to remove woody encroachment may vary from prescribed fire to mechanical and hand crew removal.

2.6 Infrastructure modification and minimization: With ranching comes the necessity of infrastructure development to better facilitate grazing management. Structures such as watering facilities, corrals and fences, while installed with good intention, can have unintended, negative consequences to native wildlife on a local scale. Practices to minimize these consequences may include fence markers, removal or modification, installation of stock tank ladders, alteration of watering facilities to make them more wildlife friendly (Taylor and Tuttle 2007) and capping open pipes (Kern Audubon 2011). These practices are often low cost and low tech and provide opportunities for conservation practitioners to provide tangible solutions to issues of direct mortality. One study showed that fence markers can reduce sage grouse mortality up to 83% (Stevens et al. 2012). Because this mortality is often visible by those working and living in this landscape, these practices are as important for outreach efforts and conversation starters as they are in preventing wildlife mortality.

2.7 Invasive weed management: Weed management using an integrated approach is an important tool for land managers in the NGP to maintain economically viable grazing as well as ecosystem function.

Objective 3: Improve management on 5,000,000 acres of working land in core areas by 2026.

Strategy 3. Facilitate management of grasslands for the benefit of grassland wildlife and agricultural operations/ranching.

3.1 Management agreements: In large grasslands, management alterations via practice modification and changed behaviors may provide prolific results. Management agreements often incentivize such modifications and provide technical and financial assistance to do so. Studies have shown that once behaviors are changed and positive results are shown, landowners tend to maintain those practices post incentive (Ramsdell et al. 2015). Behavior changes may include activities such as modified prairie dog management (i.e. decreased poisoning and shooting), delaying the timing of harvesting hay or other crops to coincide with birds nesting dates, deploying range riders or using water and mineral distribution to move livestock. Management agreements may come by way of multiple programs including, but not limited to, NRCS's Environmental Quality Incentive Program (EQIP), USFWS's Candidate Conservation Agreements with Assurances (CCAA) or via participation in a grassbank.

3.2 Prescribed grazing: The vast majority of grasslands in the region are being actively grazed by livestock and wildlife across land ownerships. Prescribed grazing is the most frequent practice implemented through management agreements. Grazing by livestock can be ecologically compatible and economically viable land use in the region and as such can be managed to meet both wildlife habitat and production goals (Varva 2005). The implementation of prescribed grazing techniques is extremely site specific and scale dependent and should factor in landowner needs, species needs, and a suite of abiotic factors including soil types and weather patterns. Projects will promote habitat heterogeneity at

ecologically significant scales. Management prescriptions may adjust stocking rates and the timing and intensity of grazing to meet specific habitat outcomes.

3.3 Infrastructure to facilitate management: Improvement of infrastructure is a common practice to facilitate management and may include fence removal, reconfiguration and installation as well as water development.

Outcome 2: Improve population levels and related outcomes for grassland species in targeted focal areas.

Objective 4: By 2026, reduce the annual population decline of Baird's sparrow, Sprague's pipit, chestnut-collared and thick-billed longspur, and lark buntings in areas where NFWF funded conservation projects are implemented.

Strategy 4. Implement passerine monitoring

Birds are often thought of as excellent ecological barometers. From Rachel Carson's "Silent Spring" to the "canary in a coal mine" practice, birds have long served as environmental indicators. The suite of grassland birds in decline all have varied, site specific habitat needs. In ecological restoration and management there are always winners and losers regarding habitat outcomes. For these reasons it is important to maintain a diverse toolbox of management options that creates the proper level of structural heterogeneity in the appropriate geographies (Toombs et al. 2010). A one-size-fits-all approach will not suffice to maintain sustainable grassland bird populations into the future. Maintaining perennial grass cover is the common denominator for all grassland bird species and the highest priority strategy for the conservation of the guild. All of the listed implementation strategies will have some effect on local grassland bird populations. Grassland birds will be a priority for management and will be given full consideration by each of the projects funded under this plan on a project by project basis. Grassland birds will be an indicator species for the NGP program and will play a significant role in the monitoring and evaluation of conservation efforts in the region as suggested in Correll et al. 2016.

Objective 5: Through the application of sylvatic plague vaccine, establish and maintain three populations of Black-footed ferret with 30 breeding females each in sites identified as priority locations by the USFWS.

Strategy 5. Implement sylvatic plague treatment

The limiting factor to re-establishing the Black-footed ferret is the sylvatic plague outbreaks that locally eliminate prairie dog colonies. A recently developed sylvatic plague vaccine (SVP) has been field tested on small plots and is now ready for more widespread distribution. NFWF will work with partners to identify the sites with the highest probability of success and will invest in the conservation of those site through the distribution of SVP.

Objective 6: Improve landscape permeability for pronghorn along major migratory routes of pronghorn populations in the Missouri-Milk River Grasslands Focal Area by removing and modifying 300 miles of fence and installing five structures to minimize mortality at road crossings and bottleneck sites by 2026.

Strategy 6. Pronghorn conservation efforts

The primary strategy for pronghorn conservation is fence removal or modification and the construction of structures at migration or movement bottlenecks that bisect corridors. Solutions for pronghorn conservation efforts are relatively low tech and include fence modification and removal as well as bypass structures for highway, rail lines and other landscape barriers. Often all that is required is reconfiguring the bottom fence strand to be a smooth wire 16-18 inches from the ground allowing pronghorn to go underneath. In other areas, removal of woven wire fences may be needed and in areas of heavy snowfall, a lay-down fence may be preferable. Although barriers to migration are the most significant threat facing pronghorn, habitat improvement through prescribed burns (Howard 1995) and water development projects can also benefit the species.

Objective 7: Sustain populations of greater sage-grouse through the protection of 25,000 acres of habitat via conservation easements, restoration of 200 wet meadow acres and removing or marking 150 miles of fence around key leks in Sage Grouse Focal Areas.

Strategy 7. Sage grouse conservation efforts

The greater sage-grouse is found in all the NGP focal areas, except for the Nebraska Sandhills. The sage grouse, like other grassland species, needs large tracts of undisturbed grass and shrublands and requires multiple habitat types in close juxtaposition to successfully complete their life-cycle. They require nesting areas with shrub overstory and grass/forb understory, wintering habitat containing taller shrub cover and brood rearing habitat often associated with mesic areas that produce increased levels of forbs and insects. Strategies specific to sage grouse conservation will include the conservation of key habitats, mesic wet meadow/riparian restoration and infrastructure modification and minimization.

Strategy 8: Capacity Building (Addresses Outcomes 1 & 2)

According to the 2010 census, four of the five states encompassing the NGP are among the top five least densely populated states. The sparse population presents challenges and opportunities. To implement a successful program, community engagement and ensuring the economic viability of local ranching and tribal communities is critical. Given the vastness of the region, access to conservation expertise and resources is often limited and while many individuals in the region harbor a strong land ethic, it is a challenge for partners in the conservation community to foster and implement work in the region unless locally represented. In contrast, the remoteness of the region provides an opportunity by minimizing the impact of development and instead supporting ranching and its associated benefits to wildlife habitat. The addition of NFWF support to the region will act a catalyst to maintain land management and conservation as the leading industry in the region.

Organizational capacity to provide outreach, program marketing, technical assistance, project logistics and oversight is a critical strategy on two accounts. First, it embeds experts locally that employ techniques guided by the most current science and policy available to maintain and improve habitat for focal and indicator species. Second, the experts ensure techniques deployed are economically beneficial to the ranching operations of participating landowners, ensuring long-term stability in landownership and management. Deploying “boots-on-the-ground”, as it is frequently referenced, allows for NFWF to leverage funds with other federal, state and local habitat conservation funding while providing professional jobs in rural communities.

8.1 Provide partner organizations resources to outreach and implement conservation easements, habitat restoration and enhancement efforts throughout the NGP.

The capacity of organizations to conduct outreach and market easements with landowners is often a limiting factor. As such, NFWF plans to prioritize increasing organizational capacity to deliver conservation easements. Programs such as NRCS's Agricultural Conservation Easement Program (ACEP), Environmental Quality Improvement Program (EQIP) and Montana's Sage Grouse Habitat Conservation Program are several examples of funding programs that may be underutilized in the NGP due to a lack of capacity for implementation.

8.2 Provide resources to foster tribal game and fish agencies wildlife stewardship efforts.

There are eight Native American reservations in the NGP on 8.8% of the region's land, many of which harbor some of the most intact and ecologically functional grasslands. Most tribes have fish and wildlife management programs but additional support to focus beyond game species is often needed. Tribal interest level is high in wildlife conservation but often tribal government resources do not meet the demand to maintain biologist positions or projects. NFWF will selectively make investments in tribal opportunities that align with progress toward conservation outcomes identified in the plan.

8.3 Provide support for community led conservation partnerships

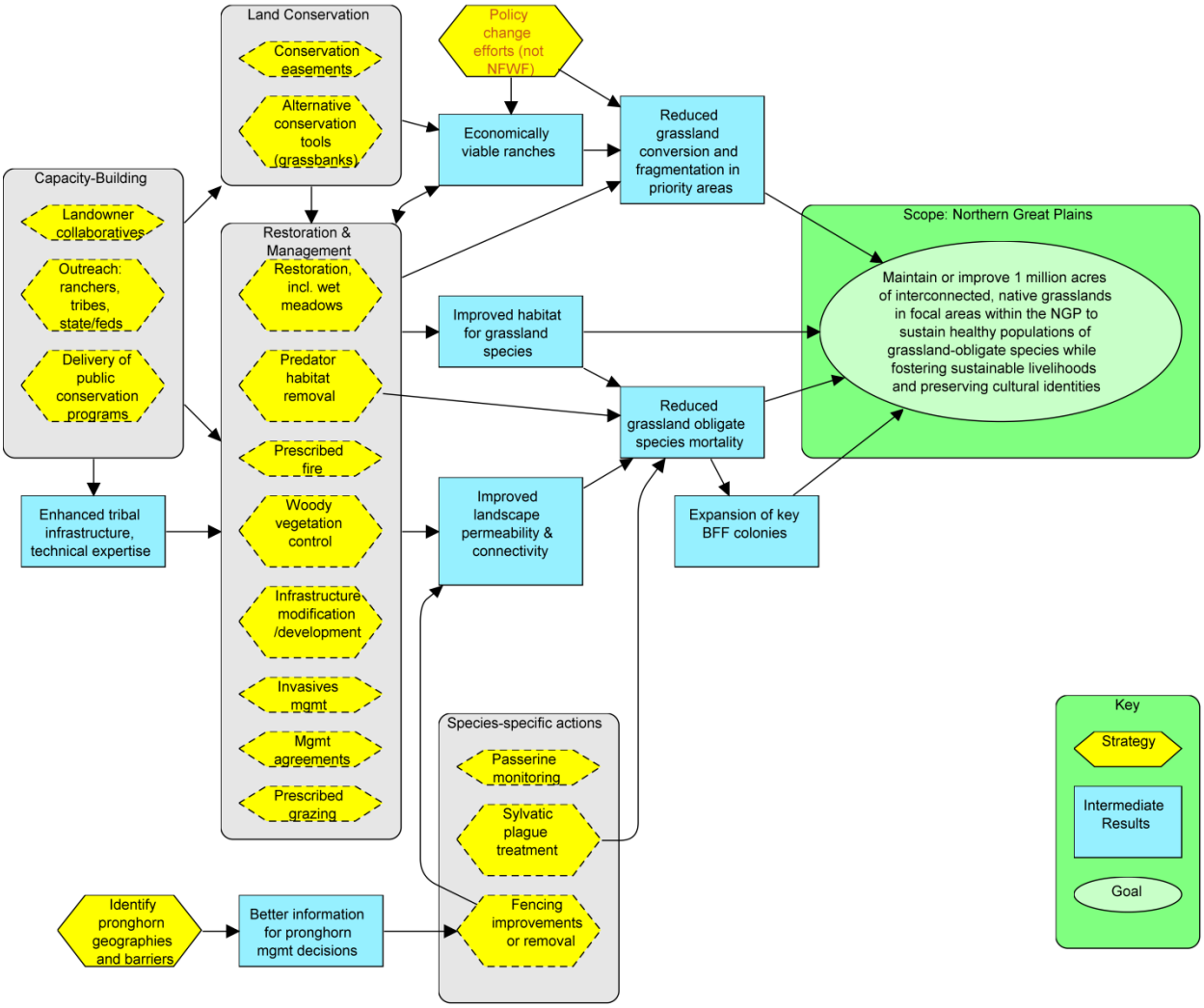
Community led collaborative conservation groups are fast becoming one of the most effective means of implementing conservation in the West. Again, capacity limits the organization of such groups and can be a significant roadblock to effective localized conservation efforts. Often modest levels of support to sustain meetings, coordination and projects have a high level of return on investment. These collaborative efforts act as a sounding board for ideas, allow for peer to peer communication and are critical to gain local input and acceptance of project and policies that influence land use in their communities. In some instances such as prescribed burn associations, the collaborative is directly responsible for the implementation of conservation strategies.

Strategy 9. Research Needs

NFWF will selectively make modest investments in research to improve the ability to achieve the goals of the program. This may include gathering additional information on grassland obligate species that could be used as focal or indicator species and may include but are not limited to:

- Project monitoring to quantify conservation outcomes
- Monitoring efforts on early successional prairie obligates (e.g. mountain plover, burrowing owl, thick-billed longspur, Ferruginous Hawk)
- Greater prairie chicken distribution and habitat use
- Geospatial data and analysis of landscape change across the region
- Develop implementation strategies for, Dakota skipper and plains sharp-tailed grouse habitat conservation

Figure 3: Northern Great Plains results chain depicting strategies and outcomes



Risk Assessment

Risk is an uncertain event or condition which, if it occurs, could have a negative effect on a program's desired outcome. We assessed seven risk event categories to determine the extent to which they could impede progress towards our stated business plan strategies and goals during the next 10 years. Below (table 2), we identify the greatest potential risks to success and describe strategies that we will implement to minimize or avoid those risks, where applicable.

Table 2: Northern Great Plains risk assessment updated from the NFWF Internal Program Assessment 2016.

RISK CATEGORY	RATING	RISK DESCRIPTION	MITIGATING STRATEGIES
Regulatory Risks	**Moderate**	Agricultural policies in Mexico create an inherent risk for migratory birds that overwinter there. Risk that N.D. restrictions on NGOs is picked up by other states in NGP. (Regulatory drivers that create incentives for converting grasslands to crops are scored under economic risks.)	Business plan goals take in consideration threats to migratory species outside of the region. Maintaining and improving partner relations is an important aspect of this plan.
Financial Risks	**Low**	Lack of diversification of private funding sources.	NFWF program raises the visibility of grassland conservation and can help attract resources that could bring financial stability and sustainability.
Environmental Risks	**Low**	Migratory species face environmental pressures outside of the NGP that we have limited opportunity to address through this program. Increasingly hot and dry cycles could minimize risk of grassland conversion to cropland.	Plan goals will emphasize non-migratory species to better isolate the impact of business plan improvements in grassland habitat.
Scientific Risks	**Moderate**	Risk that the vaccine for sylvatic plague is not effective or is applied unsuccessfully on the landscape. Information gaps for key species (e.g., grassland birds, pronghorn) remain.	Much consideration is being given to appropriate site selection and the logistics of applying the vaccine on the landscape so that business plan goals for BFF can be achieved. Strategies to obtain necessary information on key species has been incorporated in the business plan.
Social Risks	**Low**	While projects to enroll landowners require a long lead-up time to gain the landowner's trust and participation, efforts to engage them are gaining traction.	
Economic Risks	**Moderate**	Economic incentives for landowners to convert grasslands to row crops or develop them for oil will remain factors on the landscape.	
Institutional Risks	**Moderate**	Institutional support, technical capacity, and dedicated funding for conservation actions on grasslands varies widely. BLM not fully engaged in some strategies (e.g., BFF).	Business plan emphasizes deeper engagement, including strategies that address institutional risks, in a smaller number of areas where opportunities are more ripe.

Monitoring & Evaluating Performance

Performance of the Northern Great Plains program will be assessed at both project and program scales. At the project scale, individual grants will be required to track relevant metrics from Table 3 for demonstrating progress on project activities and outcomes and to report out on them in their interim and final programmatic reports. Monitoring will be conducted by grantees and where appropriate will follow published best practice guidelines or standardized methods. Contracting to independent (3rd party) monitoring programs or review of monitoring plans is an option for specific projects.

At the program scale, broader habitat and species outcomes will be monitored through targeted grants, existing external data sources, and/or aggregated data from relevant grant projects, as appropriate. In addition, NFWF may conduct another internal assessment or commission a third-party evaluation at a future stage of the program to determine program outcomes and adaptively manage. In some cases these course corrections may warrant increased investment; however, it is also possible that NFWF would reduce or eliminate support if periodic evaluation indicates that further investments are unlikely to achieve intended outcomes.

Habitat monitoring:
Project level GIS data produced by NFWF grantees will be used in conjunction with baseline maps of intact native grassland to track the number of acres acquired, restored, conserved through easements and or placed under a conservation management regime. A data set such as World Wildlife Fund's annual "Plowprint" report could be used to identify core areas, connectivity, and advances of the agricultural frontier and assess progress towards the goal of increasing connectivity.

Grassland Passerine Monitoring
Using the results from the Bird Conservancy of the Rockies' Integrated Monitoring in Bird Conservation Regions (IMBCR) program, NFWF will measure changes in the population trends of the five grassland passerines in areas where NFWF funded conservation projects are implemented. The five species are: Baird's sparrow, Sprague's pipit, chestnut-collared and thick-billed longspur, and lark bunting. NFWF will use the IMBCR to compare the annual population declines of those species at NFWF sites with overall trends in the region[2]. Refer to Appendix A for a full description of the IMBCR.

Black-footed ferret
The USFWS closely monitors ferret populations in the NGP through annual surveys. NFWF will use data from these annual surveys to assess progress towards this goal.

Pronghorn
Grantees will report on (a) miles of fence removed or modified and (b) sites where pronghorn have been redirected to minimize threats from traffic, buildings, bridges and or other infrastructure. Camera traps

[2]IMBCR regional trend data for the five species is currently being developed by the Bird Conservancy of the Rockies (BCR) but was not available for inclusion in the business plan when it was written. That data will be available in the Fall 2016 and used to set baselines and monitor progress for the species at the regional and NFWF site levels. NFWF will work with Bird Conservancy of the Rockies to expand IMBCR coverage to include focal areas in Nebraska and both Saskatchewan and Alberta. Furthermore, NFWF will work with BCR to model the impacts of specific management practices on grassland bird populations to a) quantify relationships between landscape characteristics and bird populations, b) quantify relationships between habitat characteristics and bird populations, and c) quantity annual changes in bird use and abundance on the landscape.

will be installed at the 5 sites to assess whether installed infrastructure redirects or otherwise benefits pronghorn. NFWF will also map barriers to pronghorn movements in northern Montana and adjacent provinces of Alberta and Saskatchewan to identify critical man-made barriers.

Greater sage-grouse
Interim progress will be measured by tracking acres of critical habitat conserved, acres of meadow restored and miles of fence marked adjacent to leks. These intermediate outcomes contribute to the NRCS Sage Grouse Initiative SGI 2.0 goals. Where grouse leks are monitored, NFWF will map existing leks in each of the focal geographies and monitor lek activity at project sites.

Table 3. Program Metrics

Category	*Strategies/ Outcomes*	*Metrics*	*Baseline*	*Goal*
Native grasslands	Land conservation	Acres of easement or land purchased	0	1,000,000 acres
	Habitat restoration	Acres directly restored	0	300,000 acres
	Management	Acres under improved management	0	5,000,000 acres
	Connectivity	TBD	TBD	TBD
Grassland passerines	Baird's Sparrow	Increase population density at NFWF sites in specified focal area	1.04 birds per acre	Improved population trend over baseline
	Chestnut-collared Longspur	Increase population density at NFWF sites in specified focal area	6.09 birds per km^2	Improved population trend over baseline
	Lark Bunting	Increase population density at NFWF sites in specified focal area	12.4 birds per km^2	Improved population trend over baseline
	Thick-billed Longspur	Increase population density at NFWF sites in specified focal area	0.68 birds per km^2	Improved population trend over baseline
	Sprague's Pipit	Increase population density at NFWF sites in specified focal area	.22 birds per km^2	Improved population trend over baseline
Pronghorn	Increase in landscape permeability	Miles of fence removed or improved	0	500 miles
		# movement passage installations	0	5 locations
		Pronghorn movement through installations	0	90% pass through
Black-footed ferret	Secure reintroduced populations from sylvatic plague	# of breeding females sustained in existing colony in Conata Basin)	30	>30 breeding females
		# of new populations established and treated with SPV vaccine in 2/ 4 locations	0	3 populations of > 30 breeding females each
Greater sage grouse	Sustain lek use at project sites	Acres protected/restored	0 acres	25,000 acres
		High priority fences marked	0 miles	150 miles
		Wet meadows restored	0 acres	200 acres
		# leks at NFWF project sites	TBD	Maintain baseline

Budget

The following budget shows the estimated costs to implement the business plan activities. NFWF will have to raise funds to meet these costs; therefore, this budget reflects NFWF's anticipated engagement over the business plan period of performance and it is *not* an annual or even cumulative commitment by NFWF to invest. This budget assumes that current activities funded by others will, at a minimum, continue and was based on general cost levels determined in 2016.

BUDGET CATEGORY	Years 1-5	Years 6-10	Total
Strategy 1. Grasslands Habitat Conservation	$7.5M	$4M	$11.5M
Strategy 2. Grassland Restoration	$6.5M	$4M	$10.5M
Strategy 3. Improved Management	$5.5M	$3.5M	$9M
Strategy 4. Grassland Birds	$1.2M	$1M	$2.2M
Strategy 5. Black-Footed Ferret	$2.0M	$500,000	$2.5M
Strategy 6. Pronghorn	$1.0M	$500,000	$1.5M
Strategy 7. Sage Grouse	$1.2M	$80,000	$2M
Strategy 8. Research Needs	$500,000	$300,000	$800,000
TOTAL BUDGET	$25M	$15M	$40M

Due to differences in urgency and threats in the focal landscapes, it is expected that NFWF will allocate resources differently among them. We expect that the Missouri/Milk River Grasslands and the Dakota Grasslands will receive most of the funding, as they are the largest and also the areas where grassland loss is most actively occurring, thus requiring more investment in land conservation. We expect that the investments in the Nebraska Sandhills and Powder River will result in large gains on the ground from improved management, restoration and species-specific investments over the life of the Business Plan.

Funding Allocations between Focal Areas:

Missouri/Milk River:	45%
Dakota Grasslands:	35%
Nebraska Sandhills	10%
Powder River/Thunder Basin	10%

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Appendix A: (next page)