



# SOUTH DAKOTA STATE TACTICAL PLAN

A supplement to the 2017 Prairie Pothole Joint Venture **Implementation Plan**

March 2017

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Photo: Casey Stemler

# EXECUTIVE SUMMARY



The Prairie Pothole Joint Venture (PPJV) is a voluntary, non-regulatory, self-directed partnership involving federal and state agencies, non-governmental conservation groups, private landowners, scientists, universities, policy makers, and others interested in prairie habitat conservation. PPJV partners realize they can achieve more through collaboration than by acting alone. The PPJV was established in 1987 as one of the six original priority joint ventures under the North American Waterfowl Management Plan (NAWMP 1986). Using rigorous science and robust spatial planning tools, the PPJV partnership strategically conserves, restores, and enhances high priority wetland and grassland habitat to help sustain priority bird populations.

Each of the bird conservation plans (waterfowl, waterbird, shorebird, and landbird) identifies habitat loss in the PPR as a primary cause of population declines for species of concern in that geography. Once a vast grassland ecosystem characterized by millions of wetland depressions, the U.S. PPR is now an agrarian system dominated by cropland across much of the landscape. In general, intensive agricultural land use resulting in wetland drainage

and grassland conversion to cropland has been detrimental to the migratory bird populations that use the PPR. In addition to the > 50% of grassland habitats converted to cropland in the U.S. PPR, > 50% of the total wetland area of the U.S. PPR has been lost to agricultural drainage.

The 2017 PPJV Implementation Plan provides the framework for delivering integrated bird conservation, but it does not provide details such as specific tactics to be employed and associated acreage objectives, costs, and partner responsibilities. Historically, PPJV step-down plans have been developed as tactical plans at various geographic scales for specific bird groups. Although these tactical plans provide guidance for conservation actions according to individual programmatic elements (i.e., protection, restoration, and enhancement) in specific U.S. PPR landscapes, step-down plans do not exist in all PPJV states. The 2017 PPJV Implementation Plan incorporates step-down plans in the form of state tactical plans for the PPJV area in each of the states as supplements. The intent of the South Dakota State Tactical Plans is to provide a cohesive and science-based foundation for conservation actions directed at priority species of concern within the timeline of the Implementation Plan.

The South Dakota State Tactical Plan identifies key goals, objectives, and strategies regarding spatially explicit targeting of habitat delivery for grasslands birds. It also addresses key priority action items and goals for conservation policy and legislation. Additionally, this plan explicitly recognizes the human user component of bird conservation. This is done through objectives and strategies regarding public access to wetland resources in an effort to maintain our migratory bird hunter base and associated financial and political support for bird conservation. Partners are working towards the following 5-year goals and objectives within the SD PPJV.

The intent of the South Dakota State Tactical Plans is to provide a cohesive and science-based foundation for conservation actions directed at priority species of concern within the timeline of the Implementation Plan.

## Five-year Goals and Objectives

### HABITAT OBJECTIVES:

Habitat	Perpetual Protection	Term-limited Protection	Restoration	Enhancement
Wetlands	30,600	170,600	1,365	35,850
Grasslands*	184,600	682,600	231,700	195,000

\*Maintain the 800,000 acres of restored grassland under the Conservation Reserve Program (CRP) that exists in the SD PPJV in 2015, in addition to the acres of restored grasslands in the table above.

### Enhance 1,145,000 acres of cropland by using wildlife friendly cropping systems

#### HUNTER RETENTION AND ACCESS:

**The goal for hunter retention for South Dakota is to maintain the 1995–2015 average annual number of waterfowl hunters in South Dakota (19,000 by SDGFP survey estimates). The primary objectives to achieve this goal are:**

- » Increase the area of private land open to public hunting by 69,000 acres
- » Increase/improve hunting access on public lands

#### PRIORITY ACTIONS

##### FOR POLICY AND LEGISLATION:

- » Increase the national CRP acreage cap and/or work to increase SD PPR landowner acceptance rates through national competitive ranking modifications.
- » Implement CRP policy changes and other working lands opportunities.
- » Maintain/strengthen Sodsaver and Swamp-buster provisions in the Farm Bill.
- » Maintain/strengthen the link between Conservation Compliance and Federal Crop Insurance.
- » Explore increased funding and partner opportunities for the Agricultural Conservation Easement Program (ACEP), with a specific focus on increased Wetland Reserve. Easement (WRE) funding. Work to allow the USDA Natural Resource Conservation Service (NRCS) to hold ACEP Agricultural Land Easements (ALE).

- » Work to allow the non-NRCS share of GRE to be entirely landowner-donated value.
- » Work to allow other federal funds (Federal Aid, NAWCA, LWCF, etc.) to be used as match for ALE as it is allowed through the Regional Conservation Partnership Program (RCPP).
- » Maintain the requirement that a minimum of 5% of Environmental Quality Incentive Program general funding is used for wildlife habitat.
- » Foster agricultural land tax protocols that do not unintentionally influence land use decisions, especially regarding the conversion of native prairie to other uses.
- » Foster an agricultural land tax protocol that provides voluntary property tax incentives for perennial vegetation buffers around lakes, river, streams, and wetlands.
- » Support current state law that specifies the term of a conservation easement shall be established by the parties to the easement.
- » Explore and develop new USDA program funding to conserve small “at risk” wetlands;
- » Explore new mechanisms via NRCS/FSA that establish or retain nesting cover (both planted cover as well as cover crops that may aid ground-nesting birds).
- » Reauthorize the Land in Water Conservation Fund (LWCF) and support funding for important programs like the Dakota Grasslands Conservation Area and Tallgrass Prairie Wildlife Management Area.
- » Reauthorize the North American Wetlands Conservation Act (NAWCA) and expand available funding.





Casey Stemler

## INTRODUCTION

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The Prairie Pothole Joint Venture (PPJV) is a voluntary, non-regulatory, self-directed partnership involving federal and state agencies, non-governmental conservation groups, private landowners, scientists, universities, policy makers, and others interested in prairie habitat conservation. PPJV partners realize they can achieve more through collaboration than by acting alone. The PPJV was established in 1987 as one of the original six priority joint ventures under the North American Waterfowl Management Plan (NAWMP 1986). Using rigorous science and robust spatial planning tools, the PPJV partnership strategically conserves, restores and enhances high priority wetland and grassland habitat to help sustain priority bird populations.

The PPJV is committed to addressing the conservation needs of all avian species that use the U.S. portion of the Prairie Pothole Region (PPR). This is a daunting task, because each species occupies a unique ecological niche and may be subject to a unique set of limiting factors. Effective conservation requires a strategic, science-based approach. The 2017 PPJV Implementation Plan addresses the conservation

needs of four species groups: waterfowl, shorebirds, waterbirds, and landbirds. For waterfowl, planning relies on the North American Waterfowl Management Plan, and its various derivatives specific to the PPR. Shorebird conservation plans are derived from the United States Shorebird Conservation Plan. Waterbirds are addressed as a component of the North American Waterbird Conservation Plan, and the associated step-down plan for the PPR, the Northern Prairie and Parkland Waterbird Conservation Plan. Last, the North American Landbird Conservation Plan was the foundation for conservation planning for this diverse group of species.

Each of the bird conservation plans identifies habitat loss in the PPR as a primary cause of population declines for species of concern in that geography. Once a vast grassland ecosystem characterized by millions of wetland depressions, the U.S. PPR is now an agrarian system dominated by cropland across much of the landscape. In general, intensive agricultural land use resulting in wetland drainage and grassland conversion to cropland has been detrimental to the migratory bird populations that use

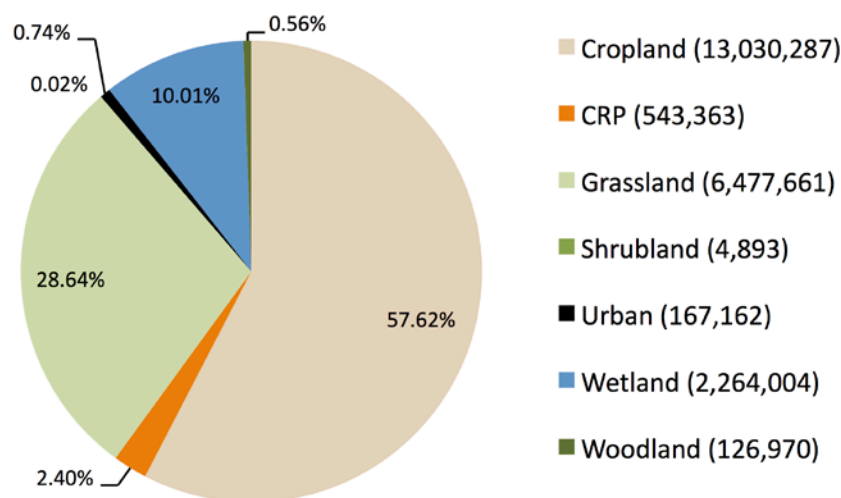
the PPR. In addition to the >50% of grassland habitats converted to cropland in the U.S. PPR, >50% of the total wetland area of the U.S. PPR has been lost to agricultural drainage (Figure 1).

To address the negative effects of habitat loss, the PPJV uses an integrated approach to bird conservation through Strategic Habitat Conservation (SHC). SHC was based on the foundation implemented to conserve continental waterfowl populations using decades of research and planning. The SHC process is an adaptive approach to species conservation characterized by four programmatic elements: biological planning, conservation design, conservation delivery, and research and monitoring. As a whole, the elements are designed to maximize desired biological outcomes resulting from conservation treatments for priority species. The PPJV concept of “separate planning, integrated action” for the different bird groups provides a strategy allowing the best available science to drive habitat and population conservation.

The 2017 PPJV Implementation Plan provides the framework for delivering integrated bird conservation, but it does not provide details such as specific tactics to be employed and associated acreage objectives, costs, and partner responsibilities. Historically, PPJV step-down plans have been developed as tactical plans at various geographic scales for specific bird groups. Although these tactical plans provide guidance for conservation actions according to individual programmatic elements (i.e.

protection, restoration, and enhancement) in specific PPR landscapes, step-down plans do not exist in all PPJV states. The 2017 PPJV Implementation Plan incorporates step-down plans in the form of State Tactical Plans for the PPJV area in each of the states as supplements to the Implementation Plan. The intent of state tactical plans is to provide a cohesive and science-based foundation for conservation actions directed at priority species of concern within the timeline of the Implementation Plan.

In addition to stepping down the conservation framework identified in the 2017 PPJV Implementation Plan, the South Dakota State Tactical Plan concisely describes the resources and the strategies needed to conserve those resources over the next five years. Future conservation needs are also identified in the context of research, funding, and public policy at the state level. Additionally, the plans provide a mechanism to track accomplishments at the state level. Finally, methods for monitoring and evaluating the efficacy of conservation strategies and the resulting effects on priority species are described. This State Tactical Plan will complement the adaptive planning framework the PPJV has embraced since its inception and provide a level of collaboration for leveraging resources to accomplish the overarching PPJV goals at the state level.



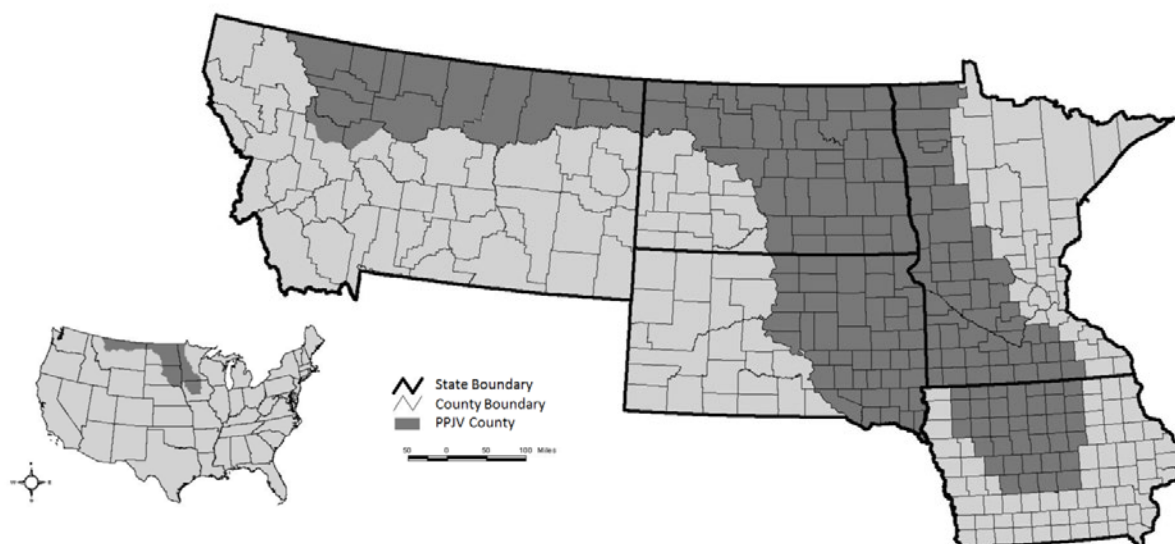
**Figure 1.** Landcover composition of the SD PPJV based on 2011 imagery. Acres are in parentheses.

# THE PRAIRIE POTHOLE REGION OF SOUTH DAKOTA

The Prairie Pothole Region (PPR) encompasses a vast and diverse landscape stretching from the tallgrass prairies of northern Iowa and southwest Minnesota, across the mixed-grass prairies of the Dakotas, and northwest towards the dry mixed-grass prairies of Montana. Its unique mixture of remaining grasslands coupled with millions of depressional wetlands, or “potholes,” left behind by retreating glaciers roughly 10,000 years ago provide critical breeding habitat for a myriad of grassland and wetland dependent birds. Prairie potholes come in all shapes, sizes, and hydrologic regimes ranging from wet meadows to large glacial lakes. It is estimated that nearly 3 million acres of wetlands existed in South Dakota prior to European settlement, primarily within the PPR portion of the state (Dahl 1990). South Dakota lies in the southeastern end of the PPR with roughly 100,000 square kilometers within joint venture boundaries (Figure 2). The portion of South Dakota included within the PPJV administrative area is situated in the eastern half of the state, generally east of the Missouri River, which separates the glaciated prairies from unglaciated grasslands west of the river (Figure 3). Eastern South Dakota is further subdivided into several ecoregions including the Prairie and Missouri Coteaus, James River Lowlands, the lakebed of Glacial Lake Dakota, and Minnesota River Basin (Figure 3). Each ecoregion

has its own unique soils, wetland dynamics, and agricultural suitability leading to different issues, challenges, and opportunities for grassland and wetland conservation.

Grasslands within the James River Lowlands and Missouri Coteau are predominately mixed-grass prairie while moderate amounts of tallgrass prairie occur within the Prairie Coteau and western edge of the Minnesota River Valley (Figure 4). Agricultural intensity increases as you move east and south across eastern South Dakota where important crops are corn, soybeans, wheat, and sunflowers. Ranching activities follow an opposite trend and increase from south to north and from east to west. Nearly 190 species of waterfowl, waterbirds, shorebirds, and land birds depend on PPR landscapes, including eastern South Dakota, for breeding habitat. Many more utilize South Dakota’s glaciated prairies for migration habitat. Some of these bird species are also identified by the State Wildlife Action Plan (SD SWAP 2014) as species of greatest conservation need in South Dakota (Table 1). In addition to habitat for migratory and resident wildlife, grasslands and wetlands provide numerous environmental goods and services to South Dakotans including water quality benefits, flood attenuation, reduced soil erosion, and carbon sequestration (Gleason et al. 2008).



**Figure 2.** Prairie Pothole Joint Venture administrative boundaries.





Figure 3. Prairie Pothole Joint Venture Counties in South Dakota



Figure 4. Major Ecoregions of South Dakota.

**Table 1. South Dakota Birds of Greatest Conservation Need (SD SWAP 2014)**

Common Name	Scientific Name	Federal Status <sup>a</sup>	State Status <sup>a</sup>	2006 SGCN <sup>b</sup>	2006 Eval. <sup>c</sup>	2014 SGCN <sup>b</sup>	2014 Eval. <sup>d</sup>
<b>BIRDS</b>							
American Dipper	<i>Cinclus mexicanus</i>		T	Y	1	Y	1
American Three-toed Woodpecker	<i>Picoides dorsalis</i>			Y	3	Y	3
American White Pelican	<i>Pelecanus erythrorhynchos</i>			Y	2	Y	2b
Baird's Sparrow	<i>Ammodramus bairdii</i>			Y	2	Y	2a
Bald Eagle	<i>Haliaeetus leucocephalus</i>		T	Y	1	Y	1
Black Tern	<i>Chlidonias niger</i>			Y	2	Y	2a
Black-backed Woodpecker	<i>Picoides arcticus</i>			Y	3	Y	3
Burrowing Owl	<i>Athene cunicularia</i>			Y	3	Y	3
Chestnut-collared Longspur	<i>Calcarius ornatus</i>			Y	2	Y	2a
Ferruginous Hawk	<i>Buteo regalis</i>			Y	3	Y	3
Greater Prairie-Chicken	<i>Tympanuchus cupido</i>			Y	2	Y	2a
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	C		Y	3	Y	3
Interior Least Tern	<i>Sternula antillarum athalassos</i>	E	E	Y	1	Y	1
Lark Bunting	<i>Calamospiza melanocorys</i>			Y	2	Y	2a
Le Conte's Sparrow	<i>Ammodramus leconteii</i>			Y	3	Y	3
Lewis's Woodpecker	<i>Melanerpes lewis</i>			Y	3	Y	3
Long-billed Curlew	<i>Numenius americanus</i>			Y	2	Y	2a
Marbled Godwit	<i>Limosa fedoa</i>			Y	2	Y	2a
Northern Goshawk	<i>Accipiter gentilis</i>			Y	3	Y	3
Osprey	<i>Pandion haliaetus</i>		T	Y	1	Y	1
Peregrine Falcon	<i>Falco peregrinus</i>		E	Y	1	Y	1
Piping Plover	<i>Charadrius melodus</i>	T	T	Y	1	Y	1
Ruffed Grouse	<i>Bonasa umbellus</i>			N		Y	3
Sprague's Pipit	<i>Anthus spragueii</i>	C		Y	2	Y	2a
Trumpeter Swan	<i>Cygnus buccinator</i>			Y	2	Y	2b
White-winged Junco	<i>Junco hyemalis aikeni</i>			Y	2	Y	2b
Whooping Crane	<i>Grus americana</i>	E	E	Y	1	Y	1
Willet	<i>Tringa semipalmata</i>			Y	2	Y	2b
Wilson's Phalarope	<i>Phalaropus tricolor</i>			Y	2	Y	2b

a – Federal/State Status - E= Endangered, T = Threatened, C = Candidate for federal/state listing;

b –SGCN selected for the 2006/2014 SDWAP; “Y” = Yes, “N”=No

c - 2006 Evaluation – criteria for selection as SGCN in 2006 SDWAP: 1 = State or Federal listed species for which the State has a mandate for recovery; 2 = Species for which SD represents a significant portion of the species overall range; 3 = Species that are indicative of or depend upon a declining or unique habitat in SD.

d - 2014 Evaluation = Criteria for selection as SGCN in 2014 SDWAP revision: 1 = State or federally listed species for which the state has a mandate for recovery (listed as threatened or endangered);2a = Species that are regionally or globally imperiled and for which South Dakota represents an important portion of their remaining range;2b = Species that are regionally or globally secure and for which South Dakota represents an important portion of their remaining range; or 3 = Species with characteristics that make them vulnerable.



## Habitat Loss

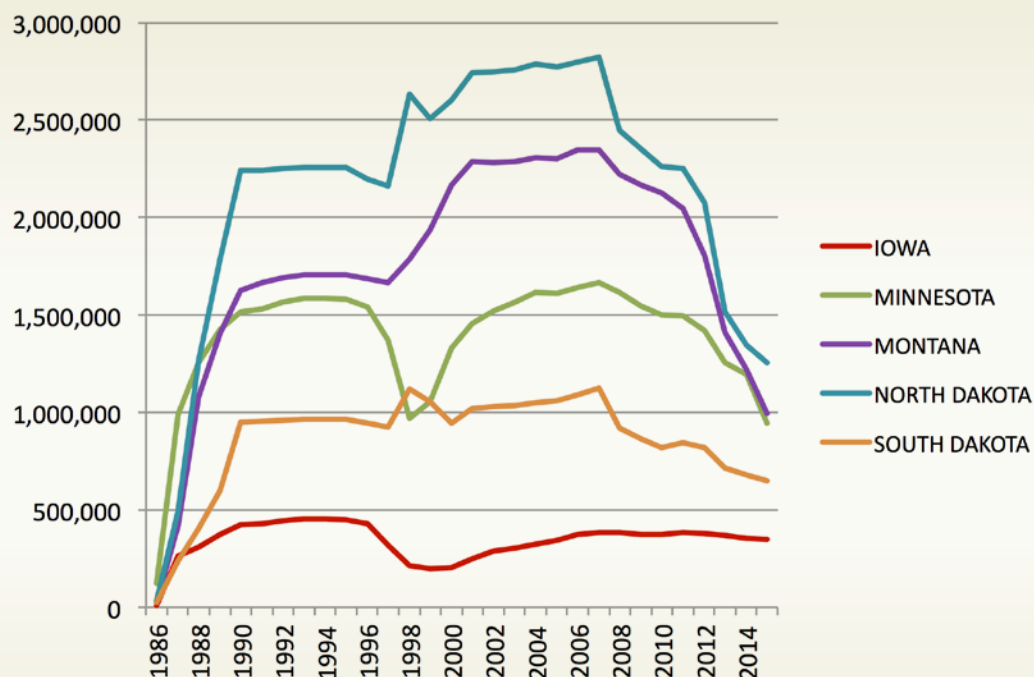
Grassland and wetland loss within the PPJV portion of South Dakota through agricultural conversion has been extensive and is ongoing. Land cover data (circa 2015) indicates 13 million acres of cropland and 6.5 million acres of grasslands exist in the South Dakota PPR (Figure 1). Doherty et al. (2013) estimated that nearly 46% of historic grasslands within South Dakota's PPR had been converted to agricultural production by 2006. A wide variety of agronomic, weather, policy and market factors have interacted to drive the recent surge in additional grassland loss across the PPJV administrative area.

Grassland loss rates across the majority of the PPR have been documented as high as 5.4% annually, a conversion rate not seen since the early part of the 20th century (Wright and Wimberly 2013). Rates of conversion are highest in the eastern North and South Dakota portions of the PPR, overlapping with areas of high duck pair density. Conversion of grass to soybean and corn production from 2006-2011 is estimated to be 671,000 acres across North and South Dakota alone (Wright and Wimberly 2013).

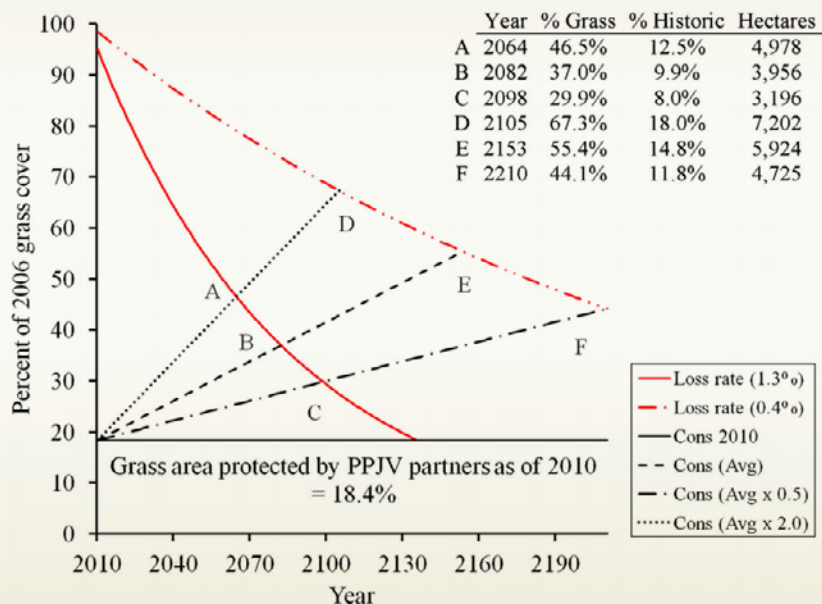
Much of the grassland loss can be attributed to the loss of U.S. Department of Agriculture (USDA)

Conservation Reserve Program (CRP) acres (Figure 5). Farm Bill programs like CRP have proven critical to supplementing duck production in the PPR for over 30 years. Reynolds et al. (2001) estimated that the CRP contributed 2.1 million ducks to the annual fall flight between 1992 and 1997. Additional analysis by the U.S. Fish and Wildlife Service (USFWS) estimated that 25.7 million ducks were produced on CRP acres within the PPJV area from 1992 to 2003 (Reynolds 2006).

Unfortunately, CRP acres are rapidly disappearing from the PPJV landscape. Acreage in the CRP reached its peak within the PPJV in 2007 with 8.35 million acres with a decline to 4.19 million acres in 2015, a reduction of 50%. The percentage of total grasslands comprised of CRP varies by state, and ranges from 11% in South Dakota to over 67% in Minnesota within each state's PPJV regions (Figure 5; Doherty et al 2013). At current rates of grassland loss and grassland conservation, it is estimated that between 30% and 70% of grasslands that existed in 2006 will remain before protection rates and conversion rates intersect, representing 8%-18% of historic grasslands (Figure 6). Under higher conversion rates, this scenario could occur as early as 2064 (48 years).



**Figure 5.** Conservation Reserve Program (CRP) acres for Prairie Pothole Joint Venture counties 1986–2015. Acres include all CRP parcels for all Conservation Practice Types (USDA 2015, FSA unpublished data).



**Figure 6.** Percent of grass cover protected within the Prairie Pothole Joint Venture (PPJV) of the United States, and 200 year projections of grassland protection and grassland loss (Doherty et al. 2013).

In addition to grassland loss, wetland drainage, degradation, and consolidation have escalated across the PPJV. According to Dahl (2011) wetland losses across the PPR can be attributed to “efforts to increase drainage on farm fields as a result of economic and climatic conditions.” It is estimated that by the early 1990’s South Dakota had already lost approximately 35% of its natural wetlands leaving roughly 2.2 million acres of intact prairie wetlands today (Figure 1; Johnson and Higgins 1997). Tile drainage is moving rapidly north and west into areas of South Dakota not historically impacted by this drainage technique. Increased surface ditching activity has also been noted over the last decade. Increased intensity of agricultural drainage activity can also be seen in the thousands of wetland determinations relating to drainage requests made to the USDA Natural Resource Conservation Service (NRCS) in recent years. Johnston (2013) estimated an annual National Wetlands Inventory (NWI) wetland loss of 0.28% / year for the PPJV areas of North and South Dakota. Dahl (2014) estimated that 2.8% of all wetlands in the SD PPR were drained from 1997-2009. Oslund et al. (2010) estimated that 4.3% of remaining wetland habitats disappeared between 1980 and 2007 from the Minnesota PPJV, likely as a result of improved tile drainage. Wright and Wimberly (2013) estimated roughly 247,000 acres of grasslands in South Dakota within 100m of adjacent pothole wetlands were converted to agriculture from 2006-2011.

Over time, these losses and degradations have and will continue to impact the carrying capacity of the PPR to support breeding ducks. Many areas within the PPR experiencing intensification in wetland drainage also undergo significant wetland basin consolidation. Wetland consolidation occurs in closed basin drainage watersheds when small wetlands are drained downstream into typically larger wetland basins. This artificial increase in wetland inflow due to drainage can have impacts on productivity for waterfowl by altering the frequency of drawdowns the basin experiences, reducing invertebrate populations, and impeding nutrient cycling (Anteau 2011).

Increased wetland connectivity through consolidation drainage may also increase sedimentation and favor invasive aquatic species and permanency of fish, further degrading the value of larger wetlands and shallow lakes for waterfowl (Anteau 2011). Recent work by Janke (2016) has documented direct body condition reduction in spring migrating ducks when correlated with fish density in wetlands. Wetland consolidation also has dramatic impacts to water budgets and hydrology within watersheds. Consolidation of water from many basins to few basins increases frequency of basin overflow and decreases evapotranspiration rates within watersheds decreasing overall watershed capacity (Wiltermuth 2014, McCauly 2015, Dumanski 2015).



Waterfowl, waterbirds, and shorebirds breeding in South Dakota all require functioning and productive wetland and grasslands for breeding, raising young, and migration habitat.





# PRIORITY WETLAND AND GRASSLAND HABITAT

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## Waterfowl, Waterbirds, and Shorebirds

**W**aterfowl, waterbirds, and shorebirds breeding in South Dakota all require functioning and productive wetland and grasslands for breeding, raising young, and migration habitat. Different species require different wetland types, grassland vegetative structure, and use intensity necessitating a diversity of wetlands and grasslands on the landscape to fulfill life-cycle requirements for the maximum number of species. As part of North America's "duck factory" eastern South Dakota provides breeding habitat to millions of ducks annually (Figure 7; Table 2). The PPR portion of South Dakota currently has over 2 million acres of priority wetlands and 7 million acres of priority grassland habitat remaining (Table 2).

Given that much of the funding for conservation delivery in the PPJV is derived from hunting license revenues, Migratory Bird Conservation and Hunting stamp (i.e., Federal duck stamp) funds, excise taxes on hunting equipment, and sportsman oriented NGO funding, upland nesting ducks will be used as a guild of surrogate species for prioritization of habitat delivery for wetland dependent species in the PPR of South Dakota. Conserving habitat for upland nesting waterfowl across the PPR region of South Dakota will also benefit all other grassland and wetland obligates.

The productivity of the prairies for wetland dependent species is largely determined by the dynamics of wet and dry cycles, influencing not only wetland abundance, but quality of associated upland nesting cover as well. Hoekman et al. (2002) studied the relationship of variation in vital rate metrics including nest success, brood survival, and hen survival for the mid-continent mallard population. This research concluded that nearly 90% of the variation in population size was attributed to events that occurred on the breeding grounds, highlighting the importance of protection and restoration of waterfowl habitats in South Dakota's PPR.

Several factors are responsible for duck settling, production, and recruitment in the PPR. Wetland habitat availability, upland cover availability and

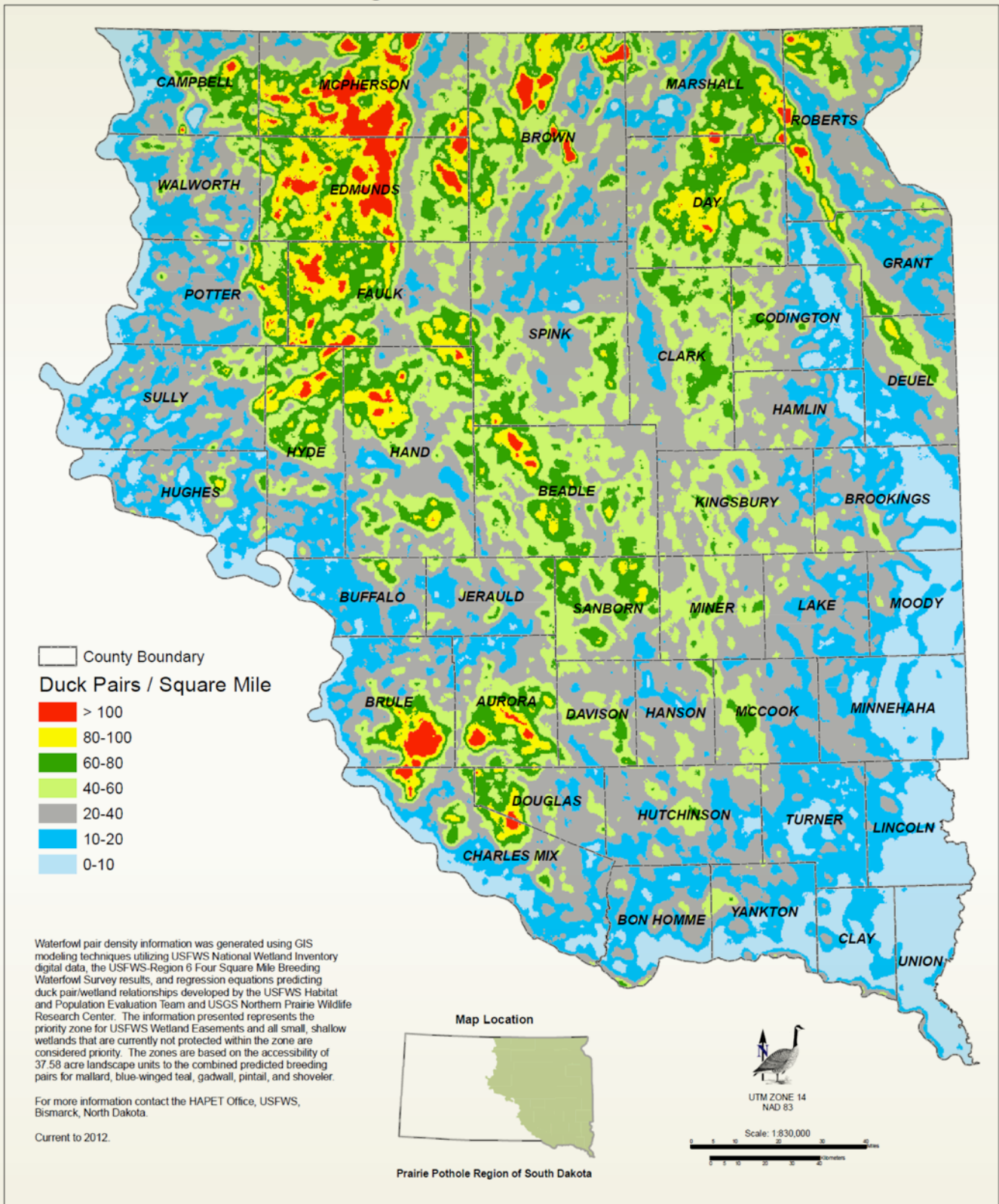
quality, nest success, and duckling survival are the primary variables that affect duck population trajectories in South Dakota. Wetland habitat availability affects attractiveness of landscapes to breeding waterfowl and drives settling patterns (Johnson and Grier 1988). Nest success has been identified as a major factor driving reproductive success and recruitment in the PPR. Hoekman et al. (2002) concluded that nest success was the single most important life cycle factor influencing population change in mid-continent mallards (Figure 8). Hens are vulnerable during incubation and at increased risk to predation and Hoekman et al. (2002) found hen survival to be the second most important factor to mallard production. Other factors such as duckling survival, re-nesting propensity, clutch size, and hen over winter survival were also important factors influencing mallard population trends (Hoekman et al. 2002; Figure 8.). Stephens et al. (2005) and Horn et al. (2005) found that nest success on the Missouri Coteau of North Dakota was positively correlated with patch size and the amount of landscape scale grassland habitat, supporting the continued need for grassland protection and restoration within the PPR to support NAWMP waterfowl population objectives into the future.

Given current and projected rates of agricultural conversion and wetland drainage and life history requirements for nesting waterfowl in South Dakota, conservation efforts will realize the greatest return on investment focusing on increasing nest success, hen survival, and duckling survival. Efforts to increase duck production and recruitment should prioritize protecting areas of existing wetlands and priority grasslands that are at least 55 acres in size (Johnson et al. 2010) and support at least 25 duck pairs per square mile (Figure 9). These efforts will also limit further habitat declines for waterbirds, shorebirds, and landbirds in South Dakota. Secondly, marginal cropland should be restored to grassland and wetlands currently within cropped fields restored and enhanced to help reduce impacts of continued degradation of these landscapes in South Dakota.



## U.S. Fish & Wildlife Service

### Upland Accessibility of Breeding Duck Pairs in the Prairie Pothole Region of South Dakota



**Figure 7.** Upland accessibility of breeding duck pairs in the SD PPR (a.k.a.thunderstorm map). Mallard, northern pintail, gadwall, blue-winged teal and northern shoveler are included in the model.



Neal & MJ Mishler

**Table 2. PPJV Priority Wetland and Grassland Habitats in South Dakota and in the 5-state administrative area. All numbers are in millions.**

Wetlands		
Analysis Area	PPJV-wide	SD
Total Breeding Pairs	5.00	1.43
Total Wetland Acres	8.74	2.15
Protected <sup>1</sup> Acres	3.61	1.00
Unprotected Acres	5.13	1.15
Total Breeding Pairs on Unprotected Wetlands	3.17	0.88
Unprotected Priority <sup>2</sup> Wetland Acres	1.78	0.64
Grasslands		
Analysis Area	PPJV-wide	ND
Total Grassland <sup>3</sup> Acres	37.89	7.03
Total Priority <sup>4</sup> Grassland Acres	15.54	4.50
Protected <sup>1</sup> Acres	4.74	1.25
Unprotected Acres	10.80	3.25

1 – Protected acres include all federal, state, county and NGO fee lands, FWS perpetual easements, and CRP lands.

2 – Priority wetlands are those small shallow wetlands totally or partially embedded in cropland without protection

3 – Grasslands include grass, shrub, and CRP landcover classes

4 – Priority grasslands are patches of grassland over 55 acres in size that are accessible to over 25 duck pairs per square mile

Recent work by Walker (2011) and Walker et al. (2013a, 2013b) highlights the importance of maintaining functioning wetland complexes within cropland matrices to take advantage of pulse productivity following dry cycles. Once wetlands in an area are drained, duck pair carrying capacity is permanently reduced unless the wetlands are restored. This “keeping the table set” strategy will protect intact grassland and wetland complexes and protect and restore wetlands in areas of higher agricultural intensity.

Wetlands in cropped fields also provide valuable migration habitat to waterbirds, shorebirds, and waterfowl. Janke (2016) concluded that cropped wetlands were equal to non-cropped wetlands in terms of value to migrating waterfowl, likely positively influencing hen survival, clutch size, egg quality, and duckling survival for migrating waterfowl traveling to their breeding grounds.

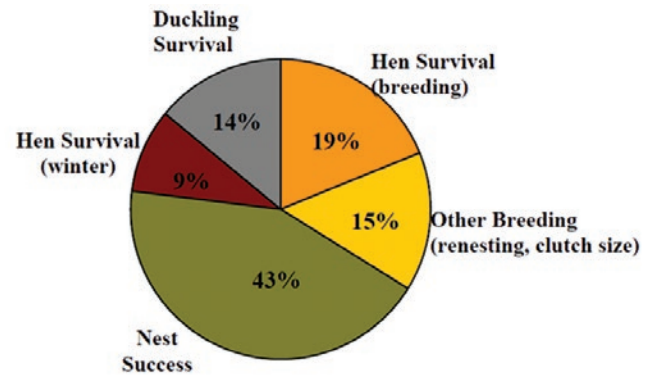
Lastly, existing landscapes should be actively managed where, applicable, to increase nest success, hen survival, and duckling recruitment in degraded landscapes. Intensive management techniques that increase nest success should have the greatest impact on population dynamics of prairie nesting ducks, particularly in areas where nest success is below maintenance levels (Hoekman 2002). Numerous studies have shown predator removal to be effective at increasing nest success on



a local scale (Garrettson and Rohwer 2001, Chodachek and Chamberlain 2006, Perion and Rohwer 2010, Amundson and Arnold 2011, Perion et al. 2012). Priority should be given to creating predator removal areas with adequate wetland densities to support high duckling survival (Amundson and Arnold 2012). Duck nesting structures are also a useful tool to increase local nest success for mallard production in areas with adequate wetland habitat, but where nesting cover is limiting, particularly in large semi-permanent wetlands with an abundance of emergent vegetation (Stafford et al. 2004, Mam-menga et al. 2007).

Given current and projected losses of perennial grassland cover, it is important to mitigate the losses for upland nesting birds through wildlife compatible cropping systems. Recent work by Skone et al. (2016) demonstrates the nesting value of winter cereals to waterfowl across PPJV landscapes with nesting densities in winter wheat of nearly 50% that of perennial cover with similar or improved nest success. Additional conservation practices such as no till cropping systems and cover cropping need

evaluation to determine if beneficial relationships with ground nesting birds exist. Answering these questions may lead to the development of cropland best management practices (BMP's) that benefit waterfowl and other ground nesting birds.



**Figure 8.** Factors influencing mid-continent mallard population trends (Hoekmen et al. 2002).

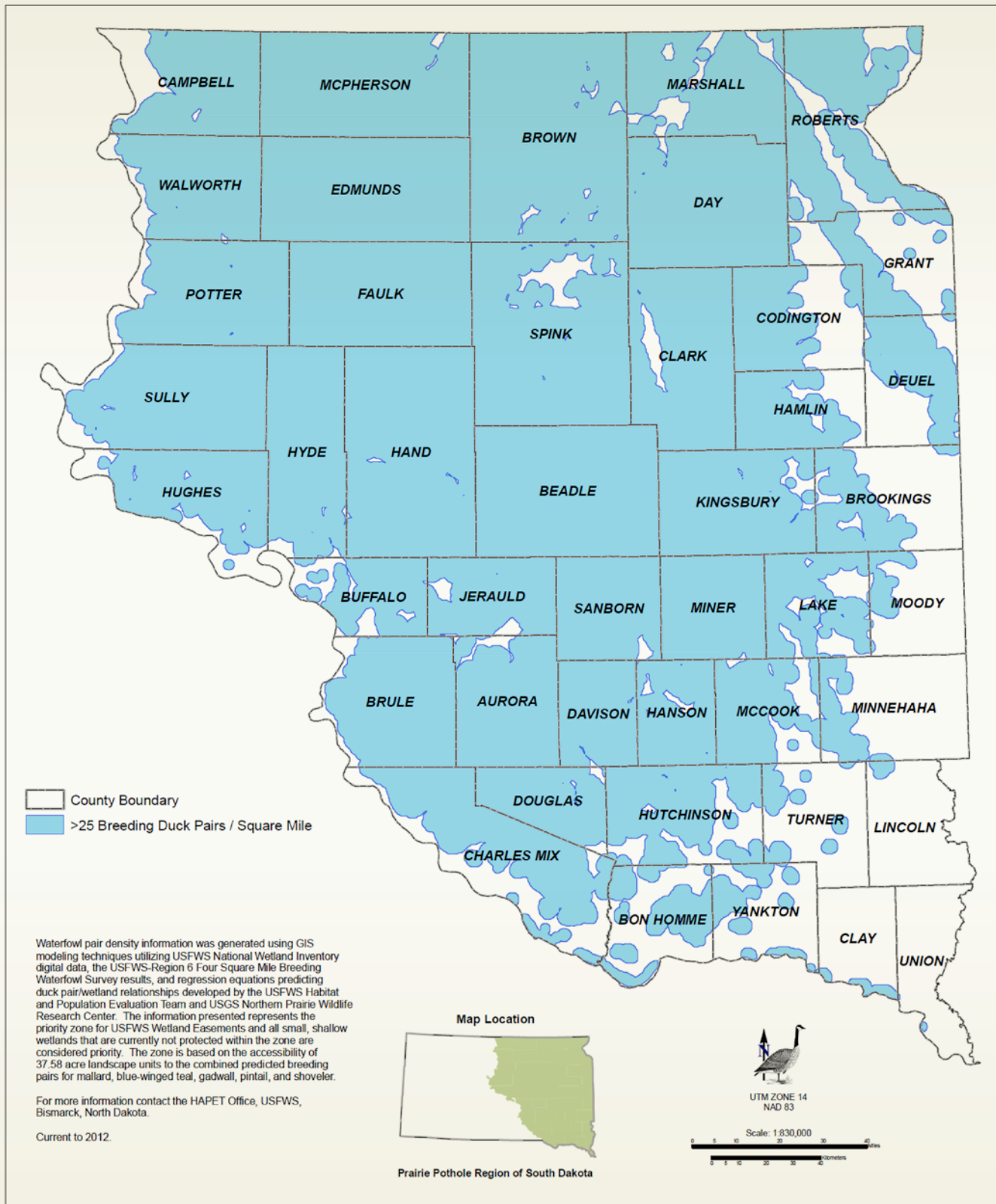


Tina Shaw



## U.S. Fish & Wildlife Service

### Priority Zones for Waterfowl Habitat Conservation South Dakota Portion of the Prairie Pothole Region



**Figure 9.** Areas in the PPR of South Dakota with greater than or equal to 25 predicted duck pairs per square mile.

## Landbirds

Prairie grouse including greater prairie chicken and sharp tailed grouse are important species in South Dakota, both socially and economically, with over 10,000 hunters pursuing prairie grouse annually in recent years (Runia 2011; Figure 10). South Dakota is fortunate to have some of the most robust populations of prairie grouse in the United States. Due to prairie grouse habitat requirements, habitat enhancement for prairie grouse will also improve habitat for other grassland obligates (Baker 2005). In addition, while prairie grouse are not wetland dependent, rangeland protection, restoration, and enhancement will benefit many other grassland and wetland obligates. For these reason targeting conservation efforts for landbirds in South Dakota will focus on protecting and improving habitat for these surrogate species.

South Dakota landbird habitat delivery will help to improve population trends for nearly all grassland bird species negatively impacted from loss and fragmentation of grassland landscapes on the breeding grounds. All grassland bird species will benefit from

protecting, restoring, and enhancing large blocks of grassland habitat. Therefore, grassland bird habitat protection should focus on protecting blocks of intact grasslands and restoring grasslands in less fragmented areas.

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**South Dakota is fortunate to have some of the most robust populations of prairie grouse in the United States.**

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Grassland bird research in South Dakota indicates that grassland blocks should be  $\geq 160$  acres to support the greatest diversity of grassland dependent species (Bakker et al 2002, DeJong et al 2004). Smaller grassland patches can provide acceptable habitat for grassland species if it is surrounded by a matrix of mostly grassland ( $>40\%$  within 1600m; Bakker et al. 2002, Greer et al. 2016). Additionally, grassland bird research conducted in central and western South Dakota by Greer et al. (2016)

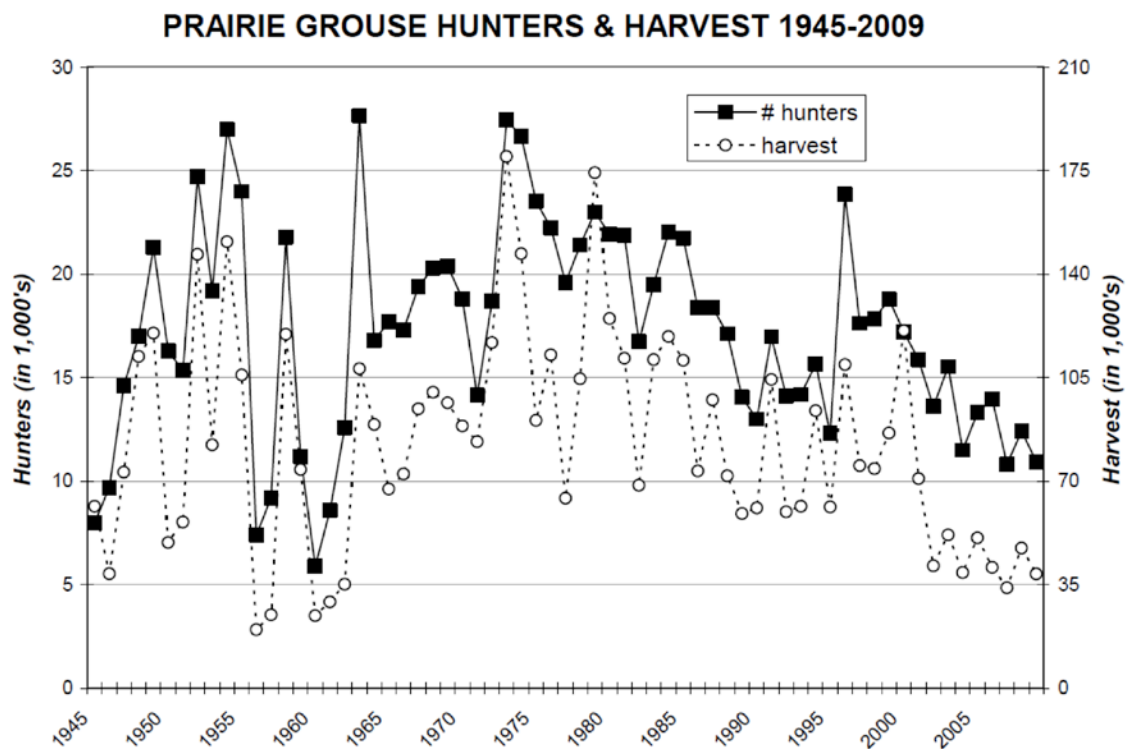


Figure 10. Prairie Grouse Hunter Numbers 1945-2014 (SDGFP)

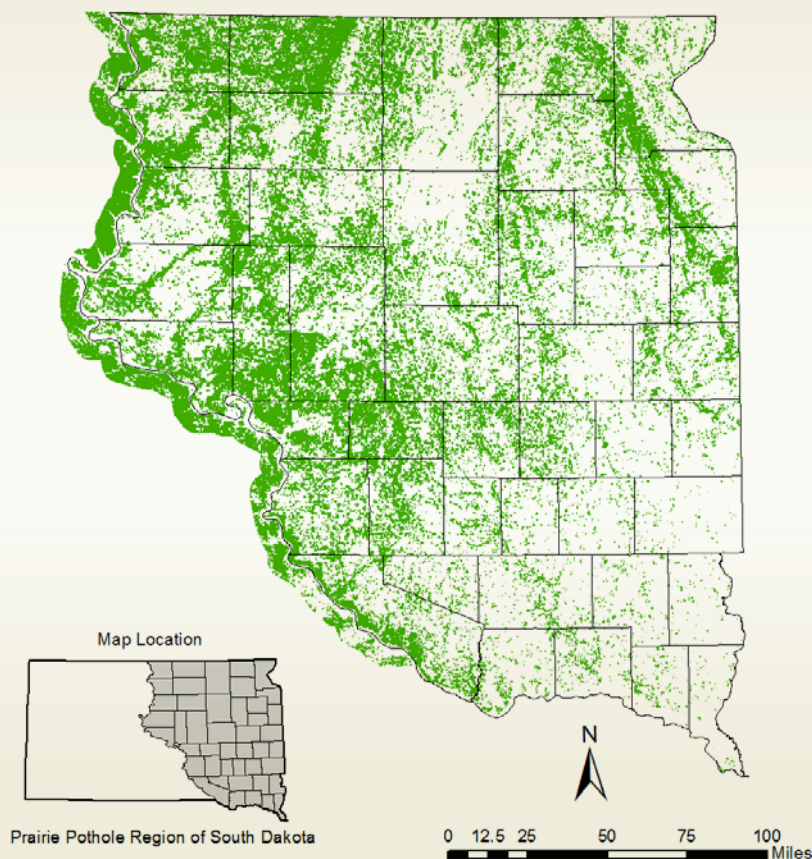


correlated declines in nearly all grassland bird species evaluated with invasion of non-native grass and forb species highlighting the importance of restoration and enhancement practices that decrease introduced grassland species.

Guidelines developed by the USFWS Habitat and Population Evaluation Team (HAPET) suggest prioritizing conservation efforts along a gradient of grassland densities on the landscape maximizes desired biological outcomes of conservation dollars invested (see Niemuth et al. 2005, Johnson et al 2010). These Grassland Bird Conservation Areas (GBCAs; Sample and Mossman 1997) are areas centered on a core of remaining grassland habitat with surrounding nearby grassland taken into consideration. Tier 1 GBCAs contain a core of at least 640 acres at least 1 mile wide with a minimum of 40% grassland habitat

within a 1600 meter buffer. Tier 2 GBCAs contain at least 160 acres of grassland habitat at least ½ mile wide with a matrix of at least 30% grassland within 1600 meters. Tier 3 GBCAs have a core of at least 55 acres and is at least ¼ mile wide with a matrix within 1600 meters of at least 20% grassland (Figure 11).

Conservation delivery including protection, restoration, and enhancement should be prioritized based on protecting and adding to existing GBCAs and potentially shifting lower GBCAs into a higher state. In addition, increased priority should be given to tracts within GBCAs that contain priority wetlands. This synergy in habitat delivery between guilds of grassland birds will increase effectiveness of conservation dollars spent by impacting multiple groups of grassland birds.



**Figure 11.** GBCA Tier 3 core grasslands in South Dakota PPR. Grassland blocks (shown in green) of at least 55 acres, ¼ mile wide and within a matrix of 20% grassland within 1600 meters (Johnson et al. 2010, updated by HAPET Office 2016, unpublished data).

## Hunter Habitat: Hunter Retention and Access

During the most recent NAWMP revision, it was acknowledged that hunters are a critical, co-equal component often referred to as the “third leg of the stool” along with habitat and waterfowl populations. Federal duck stamps are a requirement of waterfowl hunters over the age of 15 in the United States. Sales from duck stamps go directly towards conservation of waterfowl habitats. Ensuring public access to waterfowl hunting opportunities is critical to sustain conservation of the migratory bird public trust.

South Dakota has experienced a decline in duck hunter numbers since the mid 1990’s (Huxoll 2015; Figure 12). Many factors likely contribute to this decline; however, access to hunting spots is often cited as a barrier to participation. Public lands either owned or leased by state and federal agencies in South Dakota are very important to the majority of ducks hunters (61%) who indicate they hunt on public lands the majority of the time (Gigliotti 2009). In addition, greater than 67% of South Dakota duck hunters indicated some level of difficulty finding a place to duck hunt with over 85% indicating hunting locations to be crowded (Gigliotti 2009). To address this issue, South Dakota Game Fish and Parks (SDGFP) has worked cooperatively with private landowners to provide hunting access on privately owned lands via the Walk-In Area Program. This program currently has more than 1.2 million acres enrolled with 112,000 undisturbed habitat acres working in partnership with over 1,300 landowners.

Determining goals to provide habitat to sustain waterfowl hunting can be difficult. Not every location will be a heavily used destination and not every heavily used destination can have public access. Access to lands varies across the PPJV

due to different trespass laws and sentiment among private land owners. However, over the past 20 years, accessibility to private lands has decreased. Areas that once were accessible with landowner permission have now become difficult to access in some locales where hunter competition, leasing of access and commercial hunting has become more prevalent. Waterfowl hunting experiences sought by hunters can also vary considerably in terms of species and habitat type hunted.

Additionally, an important factor to consider is that not all areas should be available for public access. Excess hunting pressure can be detrimental to the overall hunting experience in a given area. Hunting some large ponds is unpopular locally because those wetlands may be roosting areas for waterfowl, and if disturbed too often, birds may leave the area. Therefore, a certain mix of public access and lesser disturbed areas are important for maintaining quality hunting opportunities.

The goal for hunter retention is to maintain the 1995 – 2015 average number of waterfowl hunters in South Dakota. Primary objectives and strategies are to increase the amount of acres open to public hunting via programs such as the Walk in Areas, Conservation Reserve Enhancement Program (CREP), and by purchasing additional conservation fee lands (see detailed objectives below).

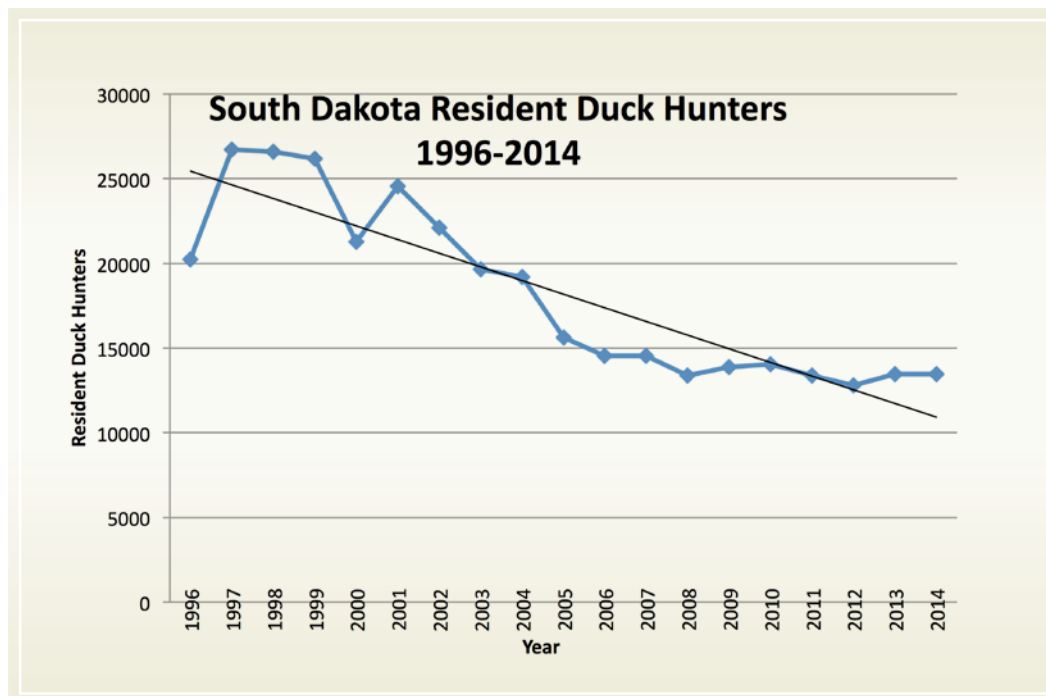


Figure 12. South Dakota Resident Duck Hunter Numbers 1996-2014 (Huxoll 2015).

Ring-necked pheasants provide a major economic stimulus to the state each fall and were designated as the South Dakota state bird by the legislature in 1943.



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# GOALS, OBJECTIVES, AND STRATEGIES

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## Five-year habitat objectives – Protection

To generate wetland and grassland habitat protection objectives for the 5-year implementation plan, we reviewed USFWS fee and habitat easement purchases from 2014 and 2015. These acquisitions represent the majority of land protection efforts in the PPJV administrative area. The two-year total habitat protected by fee and easements in South Dakota was 61,995 acres. The vast majority of South Dakota habitat protection was in perpetual easements and the remainder in fee acquisition. Assuming the budgetary and political climate for conservation remains the same for the next five years, the SD PPJV partners can protect an estimated 1,868,400 acres through fee title acquisitions, easements, and short and midterm protection programs.



The proportional distribution of recent accomplishments (fee vs. easement and wetland vs. grassland vs. short term programs) and averaged cost per habitat acre form the basis for estimating the 5-year wetland and grassland protection objective for the 2017 plan:

### DEFINITIONS:

*High priority wetlands* – unprotected small and shallow wetlands embedded within priority grasslands or cropland that exist in landscapes that support over 25 duck pairs per square mile.

*High priority grasslands* – unprotected grassland patches exceeding 55 acres in landscapes that support over 25 duck pairs per square mile.

### WETLAND PROTECTION

**Protect 201,200 acres of high priority wetlands at risk and wetlands associated with priority grasslands over the next 5 years.**

**Sub objective 1:** Protect 29,400 acres through perpetual easements.

**Strategy A:** Enroll 28,400 wetland acres in USFWS perpetual wetland easements.

**Strategy B:** Enroll 1,000 wetland acres of USDA NRCS perpetual easements.

**Sub objective 2:** Protect 1,200 acres through fee title acquisitions.

**Strategy A:** Purchase 1,100 GPA wetland acres.

**Strategy B:** Purchase 100 WPA wetland acres.

**Sub objective 3:** Protect 170,600 acres through term-limited programs.

**Strategy A:** Maintain 145,000 acres of CRP wetland acres across PPJV counties in South Dakota.

**Strategy B:** Protect 20,000 wetland acres through CRP enrollment.

**Strategy C:** Protect 200 wetland acres through 30 year NRCS easements.

**Strategy D:** Protect 1,800 wetland acres through the Conservation Reserve Enhancement Program (CREP).

**Strategy E:** Enroll 3,600 wetland acres into USDA's Water Bank Program (WPB).



## GRASSLAND PROTECTION

### Protect 1,667,200 acres of priority grassland over the next 5 years.

**Sub objective 1:** Protect 182,400 acres through perpetual easements.

**Strategy A:** Enroll 174,600 grassland acres in USFWS perpetual grassland easements.

**Strategy B:** Enroll 7,800 grassland acres of USDA NRCS perpetual easements.

**Sub objective 2:** Protect 2,200 acres through fee title acquisitions.

**Strategy A:** Purchase 100 WPA grassland acres.

**Strategy B:** Purchase 2,100 GPA grassland acres.

**Sub objective 3:** Protect 1,482,600 acres through term-limited programs.

**Strategy A:** Maintain 800,000 acres of upland CRP in South Dakota PPJV counties

**Strategy B:** Protect 100,000 acres through marginal pasture CRP (CP 29, CP 30) and working lands CRP (CP 87, CP 88).

**Strategy C:** Protect 1,600 number of grassland acres through 30-year ACEP easements.

**Strategy D:** Maintain 81,000 grassland acres currently enrolled through the Conservation Reserve Enhancement Program (CREP).

**Strategy E:** Enroll 500,000 acres in “working lands” USDA programs including the Conservation Stewardship Program (CSP) and Environmental Quality Incentive Program (EQIP).

## Five-year habitat objectives – Restoration and Enhancement

For the purposes of this document, restoration includes all conservation actions that replace herbaceous cover (e.g., replanting cropland to grass) and water (e.g., removing drainage ditches) that have been lost to tillage and drainage. Enhancement includes conservation actions that manage existing herbaceous cover (e.g., grazing, haying, invasive plant control) and wetlands (e.g., water level management, nest structure installation and maintenance) that have been degraded.

To generate wetland and grassland habitat restoration and enhancement objectives for the 5-year implementation plan, USFWS South Dakota Partners for Fish and Wildlife (PFW), South Dakota Department of Game, Fish, and Parks Private Lands Habitat Program, and NRCS/FSA conservation program accomplishments from 2014 and 2015 were reviewed. These projects include several PPJV partners that work with the PFW program (SDGFP, DU, PF, USDA, etc.). Assuming funding and partnerships continue for the next five years, PPJV partners can restore estimated 765 wetland acres and 231,700 grassland acres and enhance an estimated 10,850 wetland acres and 195,000 grassland acres. This analysis forms the basis for the following 5-year wetland and grassland restoration and enhancement objectives for the implementation plan.

**Sub Objective 1:** Enhance 35,850 acres of high priority wetlands (as defined above).

**Strategy A:** Enhance 6,650 wetland acres of high priority wetland acres through cooperative Private Landowner Agreements (PLA) through the USFWS Partners for Fish and Wildlife (PFW) program.

**Strategy B:** Enhance 4,200 of high priority wetland acres through cooperative PLA agreements through the SDFGP Private Lands Program

**Strategy C:** Enhance high priority wetlands with the installation and maintenance of between 700-800 waterfowl nesting structures in eastern South Dakota administered by Delta Waterfowl

**Strategy D:** Enhance 25,000 acres of wetlands associated with CRP contracts.

**Sub Objective 2:** Restore 1,365 acres of priority wetlands.

**Strategy A:** Restore 640 wetland acres through cooperative PLA agreements through the PFW program.

**Strategy B:** Restore 25 wetland acres through cooperative PLA agreements through the SDFGP Private Lands Program.

**Strategy C:** Restore 700 acres of wetlands through NRCS programs.

**Sub Objective 3:** Enhance 195,000 acres of grasslands associated with priority wetland communities.

**Strategy A:** Enhance 95,000 grassland acres of wetland through cooperative PLA agreements through the PFW program.

**Strategy B:** Enhance 100,000 acres of grassland acres through cooperative PLA agreements through the SDFGP Private Lands Program.

**Sub Objective 4:** Restore 231,700 acres of grassland.

**Strategy A:** Restore 4,000 grassland acres through cooperative PLA agreements through the PFW program.

**Strategy B:** Restore 2,700 of grassland acres through cooperative PLA agreements through the SDFGP Private Lands Program.

**Strategy C:** Restore 225,000 grasslands acres associated with CRP and other term-limited conservation programs.

**Sub Objective 5:** Enhance 1,145,000 acres of cropland undertaking wildlife friendly cropping systems.

**Strategy A:** Maintain 1.3 million acres of winter cereals in South Dakota, engage producers to incorporate winter cereals into crop rotations.

**Strategy B:** Engage and encourage producers to adopt precision agricultural systems to best identify under producing acres best left to conservation practices.

**Strategy C:** Maintain 150,000 acres of soil health practices in South Dakota.



## Hunter Retention and Access

The goal for hunter retention is to **maintain the 1994 –2015 average annual number of waterfowl hunters in South Dakota.**

**Objective 1:** Increase the area of private land open to public hunting by 69,000 acres

**Strategy A:** Lease an additional 50,000 acres of private land for public hunting through the Walk-In Area Program.

**Strategy B:** Fully enroll the remaining 19,000 acres of James River Watershed CREP.

**Objective 2:** Increase/improve hunting access on public lands

**Strategy A:** Purchase 3,400 acres of public land as game production areas or waterfowl production areas

**Strategy B:** Support the SD Office of School and Public Lands policy to maintain public access to all School and Public Lands for hunting and other recreational uses.

**Strategy C:** Provide improved access for waterfowl hunters to existing public lands (access trails, boat access, etc.)





Casey Stemler

## FUNDING

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The majority of funding to accomplish the 5-year protection, restoration, and enhancement of priority habitats outlined in this plan will originate from the following sources:

- » **Migratory Bird Conservation Fund (MBCF)**
  - » USFWS Small Wetlands Program
  - » Dakota Grasslands Conservation Area
- » **Land and Water Conservation Fund (LWCF)**
  - » Dakota Grassland Conservation Area
  - » Dakota Tallgrass Prairie Wildlife Management Area
- » **North American Wetlands Conservation Act grant program**
  - » Standard grants ( $\leq$  \$1,000,000)
  - » Small grants ( $\leq$  \$100,000)
- » **USDA Farm Bill conservation program funding**
- » **Operational funding from respective conservation partner programs (e.g., USFWS Partners for Fish and Wildlife program)**
- » **Pittman-Robertson Federal Aid in Wildlife Restoration funding**
- » **South Dakota hunter license sales revenue**

The annual funding necessary to accomplish the 5 year wetland and grassland perpetual protection objectives in South Dakota is estimated to be approximately \$25,900,000. The restoration and enhancement objectives will require an estimated additional \$10,000,000 annually. Objectives for public policy, outreach, and monitoring will incur additional costs to PPJV partners. Maintaining and advocating for increased funding for conservation actions will be paramount to accomplishing this plan. The following recent conservation successes clearly show the strength of the South Dakota PPJV partnership.

- » From 2011-2015, MBCF funding for the perpetual easement and fee land acquisition authorized by the USFWS Small Wetlands Program and Dakota Grassland Conservation Area totaled \$82,067,874. Those funds perpetually protected 106,958 acres of wetland and grassland habitats. Maintaining the current annual MBCF allocation for South Dakota at approximately \$20,000,000 will be necessary to accomplish the habitat objectives outlined in this plan.
- » From 2011-2015, NAWCA standard grant funding for South Dakota totals \$13,873,545 leveraging \$14,911,733 of partner matching funds. Maintaining a minimum of \$2,000,000 annually for the next 5 years will be required for partners to accomplish the habitat objectives outlined in this plan.
- » From 2011-2015, LWCF funding for perpetual easements authorized by the USFWS Dakota Tallgrass Prairie Wildlife Management Area totaled \$3,845,014 invested to protect 5,151 acres of wetland and grassland habitats.

# FUTURE NEEDS

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## Research and Data Needs

### AN UPDATED NATIONAL WETLAND INVENTORY FOR SOUTH DAKOTA

The U.S. Fish and Wildlife Service completed a comprehensive map of remaining wetland basins in South Dakota as of 1985 through the National Wetlands Inventory (NWI). This baseline survey was an important first step in quantifying wetland resources across the PPJV area, however, dynamic prairie hydrology, and wetland restoration and drainage necessitate periodic updates to maintain spatial accuracy of the data. Understanding the spatial extent and distribution of extant wetland basins through an updated wetland inventory in South Dakota is critical for both determining carrying capacity for breeding waterfowl and documenting changes in wetland trends through time. Given changes to precipitation regimes, drainage pressures and wetland consolidation, an updated NWI is warranted. A current inventory of wetland basins across the PPJV areas of South Dakota will help to inform hydrological and biological models, evaluate restoration potential, and help to prioritize conservation work in South Dakota.

### A RESTORABLE BASINS INVENTORY FOR SOUTH DAKOTA

Understanding the spatial extent and distribution of drained wetland in the PPJV is critical for both understanding landscape level effects of wetland drainage and locating sites for future restoration work. Current information about drained basins is limited to the National Wetland Inventory which mapped intact and visibly drained basins using 1980 to 1985 photography. A current inventory of drained basins across the PPJV administrative area will help to inform hydrological and biological models, evaluate restoration potential, and help to prioritize conservation work in South Dakota.



### EVALUATING HOW WETLAND CONTAMINANTS MAY BE IMPACTING PPJV BIRD REPRODUCTION AND SURVIVAL.

Wetland contamination is a potential limiting factor for waterfowl and wetland dependent bird reproduction and recruitment in South Dakota. New classes of pesticides including neonicotinoids are known to be toxic to both vertebrates and invertebrates and have become ubiquitous across farmed areas of South Dakota. Main et al. (2014) estimated that by 2012, neonicotinoids applications covered an estimated 44% of cropland in the Canadian PPR and pesticides were detected in 91% of sampled wetlands the following spring after ice-off. Understanding both the direct impacts to birds as well as potential bottom up trophic interactions will help determine potential harm waterfowl and water bird populations in South Dakota.





Casey Stemler

#### QUANTIFYING ECOSYSTEM SERVICES AND ECONOMIC BENEFITS GENERATED BY WETLANDS AND GRASSLANDS WITHIN PPJV.

The benefits of functioning wetlands and grasslands in South Dakota go far beyond direct habitat benefits to wetland and grassland dependent bird species. Increasing understanding of societal benefits of wetlands and grasslands including carbon sequestration, increased water quality, flood abatement should be further investigated. In addition, the economic impact wetlands and grasslands provide to the citizens of South Dakota should be documented.

#### UNDERSTANDING WHAT MOTIVATES THE PUBLIC AND LANDOWNERS TO SUPPORT WETLAND AND GRASSLAND CONSERVATION WITHIN THE PPJV.

The vast majority of habitat available to wetland and grassland dependent bird species in South Dakota occurs on private lands. It is critical for future program development and delivery that managers and policy makers understand what motivates private landowners to enroll property into conservation programs. We must also investigate what issues resonate with the general public and lead to support for bird habitat conservation delivery in South Dakota.

#### EVALUATING HOW WETLAND DRAINAGE, BASIN CONSOLIDATION, AND CONNECTIVITY MAY BE IMPACTING WETLAND DEPENDENT SPECIES IN SOUTH DAKOTA.

Wetland drainage directly reduces habitat for all migratory and resident wildlife in South Dakota. Many migratory bird species in South Dakota rely on South Dakota prairie potholes for breeding, brood rearing, and migration habitat. Emergent cover also serves as vital winter cover for prairies grouse, ring-necked pheasants, and whitetail deer. While direct habitat loss may be more apparent, impacts downstream in the form of wetland consolidation may have significant impacts to wetland basins receiving drainage inputs. Glaciated wetlands in South Dakota historically exhibited a closed drainage pattern, receiving runoff from a discrete watershed. Surface ditching and subsurface drain tile have dramatically increased the effective watershed size for many prairie wetlands. Increasing wetland hydrology periods through basin consolidation can reduce basin productivity and allow fish to become established, directly competing with waterfowl and water birds for resources.



## EVALUATING HOW SOIL HEALTH PRACTICES BENEFIT GROUND NESTING BIRDS.

While protecting intact grassland ecosystems and promoting grass based agriculture is a primary focus of the PPJV in South Dakota, the reality is that large areas of the state are currently dedicated to row crop agriculture. Farming practices that promote soil health including reduced tillage cropping systems, cover crops, and diverse crop rotations realize a number of societal and ecological benefits including reduced erosion and improved water quality. Many questions still exist regarding the potential for ground nesting bird production within these cropping systems. A comprehensive evaluation of soil health practices with regards to ground nesting bird production would increase understanding of potential “win-win” scenarios between production agriculture and the conservation community.

## CANADA GOOSE ABUNDANCE MODEL

Sound management decisions regarding giant Canada geese (*Branta canadensis*) require precise and accurate estimates of the breeding population size and distribution. Currently, South Dakota Department of Game, Fish, and Parks use breeding population estimates provided by the USFWS generated from the annual Waterfowl Breeding Population and Habitat Survey conducted in May. However, seasonal variation, migration chronology, and the presence of non-breeding individuals during the May survey may bias current estimates. Development of a statistical model predicting breeding Canada goose occupancy and density would greatly aid the understanding and management of South Dakota’s giant Canada goose population. Further, development of a habitat-based occupancy and density model will allow for prediction of regional and statewide breeding populations. This approach

A comprehensive evaluation of soil health practices with regards to ground nesting bird production would increase understanding of potential “win-win” scenarios between production agriculture and the conservation community.

## EVALUATION OF TILE SETBACKS FOR IMPACTS TO WETLANDS.

In order to maintain compliance with federal Farm Bill programs, landowners wishing to install drain tile must consult with NRCS to review the project affected fields and determine setback distances to any wetlands embedded within the project area. NRCS offices within the PPJV area receive hundreds of these requests annually impacting thousands of acres. The intent of these “minimal effect” determinations is to allow the drainage improvements on uplands to proceed while minimizing potential impacts on wetlands. Questions remain over potential effects lowering water tables surrounding wetland basins may have on pothole wetlands. A complete evaluation of current setback distances would elevate these concerns and reduce any unintended drainage that may be occurring.

will also allow understanding of future population potential for resident Canada geese in South Dakota under current and projected habitat scenarios. Habitat-based population estimates will promote efficient management decisions and resource-allocation, and will improve the ability to develop and refine population objectives for giant Canada geese in South Dakota.

## Future Funding Needs

### DEDICATED CONSERVATION FUNDING FOR SOUTH DAKOTA

A dedicated fund similar to the Outdoor Heritage Funds in Minnesota and North Dakota would provide greatly needed revenues that can be used to accomplish conservation actions in the PPR of South Dakota while balancing the needs of working landscapes.

# POLICY AND LEGISLATION IN SOUTH DAKOTA AND THE PPJV

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Public policy and state and federal legislation play an important role in how much habitat is on the landscape in South Dakota's PPR. Policies and legislation provide critical funding support, control how certain conservation programs are implemented and have landscape level impacts on habitat. Simply put, the PPJV partners will not achieve the habitat conservation goals outlined in this plan without achieving favorable policies and legislation.

Policy priorities for the next five years include:

1. Increase the national CRP acreage cap and/or work to increase SD PPR landowner acceptance rates through national competitive ranking modifications.
2. CRP Policy Changes and other Working Land Opportunities

The CRP represents one the most successful conservation programs ever implemented in the United States. The success of the program in the Midwest stems from the landscape-level implementation of grassland establishment, popularity among landowners and partnership efforts in delivery. Pheasant and other upland nesting bird populations have thrived in response to the CRP; however, the PPR has seen a dramatic decrease in acreage enrollment over the past decade. Acreage cap limitations enacted in the 2014 Farm Bill have posed enrollment challenges and competitive disadvantage for PPR private landowners. Since authorized in 1985, the CRP has undergone many policy changes and modifications to address specific resource needs and program limitations. While we still recognize the CRP as the most important conservation program for pheasants in SD, we believe further changes could strengthen this popular program. PPJV partners participate in state and national technical committees related to CRP policy. Listed below are specific recommended changes to policy that are best for the resource and increases management options for program participants in South Dakota. We acknowledge that some of these recommendations would not work in other Joint Venture areas.

- A. Allow producers to graze all CRP grassland and wetland practices while forgoing the midterm management cost share. A producer would work with NRCS to establish stocking rates that will adequately manage these tracts. We recommend that inter-seeding of forbs be a cost share option in combination with grazing to increase forb abundance post-management. These proposed changes would:
  - 1) Provide the producer with another option rather than destruction of the residue.
  - 2) Provide grazing benefits for several wildlife species by encouraging early successional habitat, especially if forbs are inter-seeded.
- B. Allow producers to keep the residue from the management practice of clipping or mowing while taking a 25% reduction in that years payment. On fields 40 acres (16 ha) or larger the activity would be limited to 50% of the field over a 2-year period.
  - 1) This allows the residue to be used in a more economical way rather than destroying it.
- C. Allow producers to graze during the primary nesting season. Producer will work with NRCS to set a stocking rate that will adequately manage the vegetative cover.
  - 1) Grazing is often the best way to control undesirable grass species such as encroaching smooth brome or Kentucky bluegrass within warm-season grass stands.
  - 2) Grazing at prescribed stocking rates during the nesting season is not expected to have a detrimental impact on ground nesting birds.
- D. Extend the dates for prescribed burning from April 30–May 30.
  - 1) Extending the date for prescribed burning allows the producer to manage for invasive species (smooth brome and Kentucky bluegrass) that would otherwise benefit from an early burn.
  - 2) Some nests will be destroyed, but the productivity of the habitat will be improved thus providing a net gain in long-term nesting and brood rearing cover.



Chuck Loesch

- E. Exempt producers from midterm management practices on CP22, CP29, and CP30 if midterm management is not feasible on those acres.
  - 1) Riparian forested buffers (CP22) that do not have a grass buffer would only be trees and there is no CRP midterm management practice for trees.
  - 2) Some CP29's and CP30's will be in areas that are too steep to clip, mow/disk, or harrow, might not have the resources for grazing (water and fence), and are not in areas that could be reasonably safe for prescribed burning.
3. Maintain/strengthen a Sodsaver provision in the Farm Bill. Opportunities to achieve this include, but are not limited to:
  - 1) Close potential perennial crop loopholes
  - 2) Provide better publicly available data to track new breakings information and assess the effectiveness of this policy on native grassland retention.
  - 3) Explore other reforms to the federal crop insurance program, like scaling premium supports on land capability classes, to conserve native prairie habitat
4. Maintain/strengthen the link between Conservation Compliance and Federal Crop Insurance
5. Ensure adequate resources and staffing for implementation, monitoring and enforcement of Swampbuster and Sodsaver provisions in the Farm Bill.
6. Explore increased funding and partner opportunities for the Agricultural Conservation Easement Program (ACEP), with a specific focus on increased Wetland Reserve Easement (WRE) funding. Work to allow the USDA Natural Resource Conservation Service (NRCS) to hold ACEP Agricultural Land Easements (ALE)
  7. Work to allow the non-NRCS share of GRE to be entirely landowner donated value.
  8. Work to allow other federal funds (Federal Aid, NAWCA, LWCF, etc.) to be used as match for ALE as it is allowed through the Regional Conservation Partnership Program (RCPP).
  9. Maintain the requirement that a minimum of 5% of Environmental Quality Incentive Program general funding is used for wildlife habitat.
  10. Foster agricultural land tax protocols that do not unintentionally influence land use decisions, especially regarding the conversion of native prairie to other uses.
  11. Foster an agricultural land tax protocol that provides voluntary property tax incentives for perennial vegetation buffers around lakes, river, streams, and wetlands.
  12. Support current state law that specifies the term of a conservation easement shall be established by the parties to the easement.
  13. Explore new USDA program funding to conserve small "at risk" wetlands;
  14. Explore new mechanisms via NRCS/FSA that establish or retain nesting cover (both planted cover as well as cover crops which may aid ground nesting birds);
  15. Reauthorize the Land in Water Conservation Fund (LWCF) and support funding for important programs like the Dakota Grasslands Conservation Area and Tallgrass Prairie Wildlife Management Area
  16. Reauthorize the North American Wetlands Conservation Act (NAWCA) and expand available funding.



# EVALUATION AND MONITORING

PPJV Conservation programs will follow the Strategic Habitat Conservation (SHC) described in Section I of the PPJV Implementation Plan. Monitoring for priority species across the PPJV is a fundamental element of SHC that informs the iterative process whereby conservation partners learn and improve conservation outcomes (i.e., population responses). Through targeted and purposeful monitoring partners evaluate the effectiveness of conservation delivery, gauge progress toward stated objectives, validate assumptions used in conservation design, and incorporate learning into future conservation planning and decision making. South Dakota partners have identified appropriate monitoring activities to help determine the effectiveness of conservation delivery and whether refinements need to be made.

Monitoring is clearly an important aspect to informing conservation in South Dakota. The South Dakota State Wildlife Action Plan (SDGFP 2014) lists 38 different avian monitoring programs currently ongoing in the PPJV area of the state. A subset of the ongoing monitoring programs is considered to be the most important for PPJV priority species (Table 3). PPJV partners are continuing to invest resources

to improve our monitoring capacity to help prioritize efforts that are most likely to give partners the greatest returns on our conservation investments.

In addition to priority bird population monitoring, PPJV partners invest resources to monitor landscape habitat features. Upland and wetland habitats are monitored periodically through programs such as the Four Mile Square Survey (FSMS) and Waterfowl Breeding Population and Habitat Survey (WBPHS) and through research studies (see Loesch et al 2014, Dahl 2014, Niemuth et al. 2014, Lark et al. 2015) to understand how changes relate to anthropogenic impacts (e.g., pattern tile drainage, grassland conversion) and climatic changes (e.g., wetland hydro-period). These monitoring efforts provide the foundation to inform and adapt management and conservation activities accordingly as spatial and temporal changes in priority habitats occur in the future. Considering the great amount of uncertainty associated with anthropogenic impacts and climate change, continuing to intensively monitor habitat and populations to detect changes through time appears to be a reasonable approach for PPJV partners.

**Table 3. Priority bird monitoring programs in South Dakota.**

Bird Group	Monitoring Programs	Primary Agency
Waterfowl	Waterfowl Breeding Population and Habitat Survey	USFWS DMBM <sup>1</sup>
	Four Square Mile Survey	USFWS HAPET <sup>2</sup>
	Waterfowl Management Surveys	SDGFP
	Duck Banding	SDGFP, NWRS <sup>3</sup>
	Gooses Banding	SDGFP
Landbird	North American Breeding Bird Survey	USGS
	Lek surveys (sharp-tailed grouse, greater prairie-chicken, greater sage-grouse)	SDGFP
	Pheasant Management Surveys	SDGFP
Shorebird	Breeding Shorebird Surveys	USFWS HAPET
	North American Breeding Bird Survey	USGS
Waterbirds	Colonial Waterbird Inventory and Monitoring Program	SDGFP, BCOR <sup>4</sup>
	Whooping Crane Migration Monitoring	SDGFP, USFWS
	North American Breeding Bird Survey	USGS

1 – Division of Migratory Bird Management

2 – Habitat and Population Evaluation Team Office

3 – National Wildlife Refuge System

4 – Bird Conservancy of the Rockies

# EDUCATION AND OUTREACH

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The five-year PPJV Strategic Communications Plan (Dayer 2013) was designed to help promote, coordinate and deliver bird habitat conservation. The plan advances the PPJV's efforts to build public and private partnerships for bird conservation by outlining the core components of effective communications campaigns and providing a path for implementation. The plan identified private landowners as being critical to conservation, with 85% of the land privately owned in the U.S. PPR. Indeed, private landowners who engage in conservation programs (e.g., sell perpetual easements, participate in Farm Bill programs or USFWS and SDGFP private lands programs) are a primary constituency supporting PPJV goals and objectives. However, recent analysis by Doherty et al. (2013) suggests the need to increase this group's interest and acceptance of conservation programs to bridge the gap between habitat loss rates and conservation gains. The communications plan provides a framework to engage diverse supporters, including private landowners. A range of tactics are outlined in the plan, including educational (e.g., workshops, tours, demonstrations) and informational (e.g., newsletters, factsheets, popular magazine articles) product delivery. To increase private landowner participation in conservation programs, PPJV partners must continue to engage this group using all of these tactics. For example, grassland conservation tours have been held with the South Dakota Grassland Coalition in recent years to educate and inform landowners and supporters of sustainable grass-based agriculture.



South Dakota conservation partners continue to support an array of education and outreach tools to increase interest in conservation activities in the state, from sponsoring outdoor education programs (e.g., youth conservation programs) to publishing popular magazines (e.g., South Dakota Conservation Digest). Additionally, technical assistance targeted to agricultural producers through PPJV partners (e.g., FSA, NRCS, South Dakota State University Extension) provides opportunities to support various conservation initiatives and community development. Other tactics and tools employed by South Dakota partners to maintain and improve communication and outreach include brochures, factsheets, websites, E-newsletters, and year-end reports.

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The **mission** of the Prairie Pothole Joint Venture is to implement conservation programs that sustain populations of waterfowl, shorebirds, other waterbirds and prairie landbirds at objective levels through targeted wetland and grassland protection, restoration, and enhancement programs. These activities are based on science and implemented in collaboration with multiple stakeholders.

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The **vision** of the Prairie Pothole Joint Venture is to have abundant populations of wetland and grassland birds that can be sustained in perpetuity for the benefit of all people who enjoy these species.

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