United States Department of Agriculture
Natural Resources Conservation Service

CEAP Conservation Insight

July 2008

Estimated CRP Benefits to Mixed-Grass Prairie Birds

Summary Findings

- The 3.4 million acres enrolled in the Conservation Reserve Program (CRP) in the mixed-grass prairie regions of Nebraska, Kansas, Oklahoma, and Texas provide important grassland habitat for priority bird species associated with this landscape.
- Geospatial land cover analysis tools and species-specific habitat models developed by the Playa Lakes Joint Venture provide a means to quantify the contribution of CRP habitats to meeting population goals for important grassland birds.
- Species showing the greatest benefit from CRP were dickcissel, eastern meadowlark, and grasshopper sparrow, where CRP contributes more than 15 percent of the population goal for the mixed-grass prairie portion of at least two of the four states assessed.
- Some species benefit little from CRP (e.g., Swainson's hawk), whereas others benefit substantially. The most extreme example is where CRP habitat supports over 61 percent of the population goal for dickcissel in the mixed-grass prairie region in Texas.
- The occurrence of CRP enrollments in the vicinity of existing grassland improved the quality of these existing grasslands by increasing the size of large blocks of grass. This improvement contributes over 6 percent of the population goal for lesser prairie-chickens in the mixed-grass prairie portion of Kansas.

Recommendation

- Strategically planning CRP enrollments spatially and managing cover on enrolled lands have the potential to improve the ability of conservationists to support priority grassland bird populations in the Great Plains.

Background

The Conservation Reserve Program (CRP) is a USDA program under which private landowners voluntarily establish grass and other conservation vegetation on highly erodible and other environmentally sensitive cropland. Landowners receive annual rental payments on enrolled acreage under 10- to 15-year contracts.

By 2007, nearly 3.4 million acres in the Mixed-Grass Prairie Bird Conservation Region (BCR19) (see figure 1) had been enrolled in CRP and established in grass cover. Due to loss of native grass and documented declines in grassland bird populations in North America (Samson and Knopf 1994), the CRP has great potential to affect mixed-grass prairie birds. Whereas many studies have documented localized benefits of CRP enrollments to grassland birds (King and Savidge 1995, Best et al. 1997, Rodgers 1999, Reynolds et al. 2001), few have quantified the effects of CRP on regional bird populations.

When CRP was developed in 1985, its primary purpose was to reduce soil erosion and surplus commodity production. Many CRP fields in the Great Plains were planted to monocultures or mixtures of introduced grass species and have remained undisturbed. As a result, CRP fields may have dissimilar vegetation composition and structure relative to surrounding native prairie. Wildlife habitat potential varies with CRP stand characteristics.

In recent years, the focus of CRP has expanded to include wildlife habitat as an additional program objective. Beginning in 1996, enrollments in CRP have been selected to maximize erosion control, water quality, *and* wildlife habitat benefits through use of an Environmental Benefits Index (EBI). Addition-

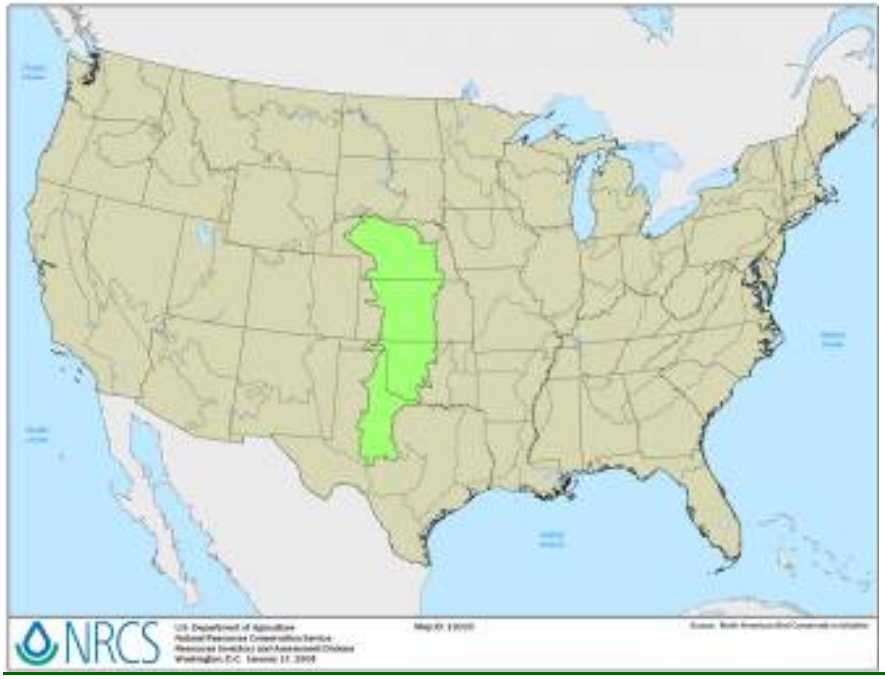


Figure 1. The Central Mixed-Grass Prairie Bird Conservation Region—BCR19.

ally, in recognition of the need for periodic disturbance and management of CRP land, managed haying and grazing have been authorized as tools to improve the quality of CRP lands for wildlife. The 2008 Farm Bill added provisions for routine grazing on CRP lands. Managed haying and grazing that considers wildlife needs are important tools that enable landowners to alter the vegetation structure of existing CRP habitat to suit the requirements of target species. These changes to CRP offer potential benefit to grassland birds, considering the large CRP enrollments in the Great Plains.

Partnership for Evaluation

In 2007, a partnership was formed among the Playa Lakes Joint Venture (PLJV), Natural Resources Conservation Service (NRCS), and Farm Service Agency (FSA) to conduct an evaluation of the effects of lands enrolled in the CRP on priority bird habitats in BCR19. This *Conservation Insight* provides a brief synopsis of the assessment; full details are available from the PLJV final project report posted at http://www.nrcs.usda.gov/technical/nri/ceap/library.html.

The PLJV led the effort, using tools and resources uniquely applicable to this assessment:

- **Species for Management Action (SMA) database.** A tool that compiles and stores conservation status information from multiple sources for all bird species in the region.
- **Hierarchical All Bird System (HABS) database.** A tool developed to calculate a landscape's capacity to achieve species-specific population objectives for priority species, under current land use and alternative future scenarios.
- **A review of distribution, habitat use, and population density data for the HABS Database.** An exhaustive literature review (updated frequently) that serves as a one-stop resource guide for demographic and ecological information on bird species in the central Great Plains (Dobbs 2007).
- **Great Plains GIS Partnership (G^2P^2).** A collaborative group of GIS professionals from the U.S. Fish and Wildlife Service, PLJV, Rainwater Basin Joint Venture, Nebraska Game and Parks Commission, and Central Platte Natural Resources District. The partnership is dedicated to the development, evaluation, and integration of GIS data into biological and landscape level planning models for the central Great Plains.

This project was initiated to answer the question, "How many birds does CRP support in BCR19?" Twelve priority bird species that are known to use CRP or cropland habitat in BCR19 and for which adequate population density data are available were selected for analysis (table 1). The assessment was designed to produce BCR19 estimates of—

- how many birds CRP currently supports during the breeding season,
- how many birds would be supported if CRP acres were converted back to cropland, and
- how those estimates compare to established regional population goals for these species.

Assessment Approach

Effects of CRP on individual priority bird species were assessed by comparing the habitat carrying capacities of the following two land cover scenarios for the mixed-grass prairie BCR:

1. Land cover with current CRP fields included in the landscape.
2. Land cover with all current CRP fields converted to cropland. The amount of each crop type apportioned to these cropland acres was based on 2004 county-level data from the National Agricultural Statistics Service.

The difference in habitat carrying capacity between the two scenarios is therefore a useful measure of the effect of current CRP enrollments on breeding habitat potential in BCR19 for each of the 12 bird species examined.

Four integrated components were used to create and compare the two assessment scenarios:

1. A seamless spatial land cover layer for BCR19 that depicts specific habitat Associations and Conditions.
2. Bird densities.
3. Bird population goals.
4. The HABS database.

These components provided the foundation for the four principal steps in the analysis:

1. Calculate the number of acres of each habitat, including CRP from FSA Common Land Unit data, within each state-level sector of BCR19 and determine the availability and suitability of each habitat to each bird species. CRP habitat condition was derived from the conservation practice used during enrollment of each CRP contract (PLJV 2007).
2. Calculate species-specific carrying capacities for the two landscape scenarios by linking bird species densities to habitat area and condition in each state-level sector of BCR19. To do this, the PLJV Landbird Team and Waterbird Team assigned priority species to habitat Associations (broad landcover classes) and Conditions (landcover characteristics important to birds). Species densities were determined for each habitat Association and Condition based on an exhaustive literature review (Dobbs 2007) and integration of U.S. Geological Sur-

PLAYA LAKES JOINT VENTURE

The PLJV is a non-profit partnership of Federal and state wildlife agencies, conservation groups, private industry, and landowners dedicated to conserving bird habitat in the southern Great Plains. It provides science-based guidance and decision-support tools for all-bird conservation throughout the region, as well as outreach, coordination, and financial support to its partners and local groups to conduct on-the-ground habitat conservation and restoration.

vey Breeding Bird Survey (BBS) relative abundance maps. Densities were stored in HABS and related to the acreage of each habitat Association and Condition to calculate carrying capacities.

3. Step down the national population goals of each species to each state-level sector of BCR19. The PLJV Landbird Team developed breeding population goals for all priority species in BCR 19 following the Partners in Flight objective of returning bird populations to 1970s levels (Rich et al. 2004). Current carrying capacity of each species was determined by multiplying their habitat specific densities (Step 2) by the number of acres of habitat in the land cover (Step 1). Population goals were calculated as follows. If the species' BBS population trend (Sauer et al. 2006) is >0 (a growing population), the population goal equaled the estimated current carrying capacity (a goal of maintaining the population). If the species' population trend is <0 (a declining population), the following formula was applied to determine a population goal:

$$\frac{\text{Current Estimated Carrying Capacity}}{(1\text{-Absolute Value [Trend]})}$$ [29]

4. Determine how much of the population goal is being addressed by CRP enrollments by comparing the carrying capacities of the two landscape scenarios using HABS. Each state within the BCR was analyzed separately because bird population goals and bird-to-habitat links (i.e., densities) are most appropriately related at this spatial scale.

As many habitat parameters as possible were included in evaluating the effect of CRP on priority mixed-grass prairie birds, including spatial and landscape characteristics. Since detailed data on vegetation composition and management of individual CRP contracts were not available, assumptions based on expert opinions on the proportion of CRP fields that were planted to native or non-native species were used. For many grassland bird species, the relative importance of specific field characteristics in meeting individual species' habitat requirements is neither well understood nor well documented. Wherever species-specific data were available, they were incorporated into calculations of carrying capacity.

Use of the Hierarchical All Bird System (HABS)

The HABS database is a tool developed by PLJV to store habitat parameters and calculate a landscape's capacity to achieve population objectives for priority species. The carrying capacity can be based on current conditions (i.e., current habitat availability) and/or potential future conditions (i.e., alternative scenarios of future habitat availability resulting from conservation and management work). In HABS, data are stored in a hierarchical manner such that each bird density is specific to not only a species but also a geographic area, a habitat within that area, a condition of that habitat, and a season of the year. For example, lesser prairie-chickens occur at a density of 0.0125 birds/ac during the breeding season on CRP lands planted to native grass in the Kansas portion of BCR19.

To better reflect a species' full range of spatial and temporal distribution and habitat use within the PLJV region, HABS stores data on the availability and suitability of habitat acres. HABS incorporates three factors (Range, Suitability, and Large Block Factors) that reflect a species spatial/temporal variation.

Table 1. Priority bird species analyzed

Species analyzed were those that use CRP and/or cropland habitat within BCR19 during the breeding season, are among the species identified by the PLJV Landbird Team by consolidating regional and continental lists of species of concern, and for which adequate density data are available.

Common name	Description	Conservation notes
Cassin's sparrow	migratory landbird	PIF[1] Stewardship Species
Dickcissel	migratory landbird	PIF Watch List
Eastern meadowlark	resident landbird	
Grasshopper sparrow	migratory landbird	PIF Stewardship Species
Greater prairie-chicken	resident upland game bird	PIF Watch List
Lark bunting	migratory landbird	PIF Stewardship Species
Lesser prairie-chicken	resident upland game bird	PIF Watch List
Northern bobwhite	resident upland game bird	Tier II At-Risk Species[2]
Ring-necked pheasant	resident upland game bird	
Swainson's hawk	migratory raptor	PIF Watch List, Tier II At-Risk Species, Category II Species of Special Concern in Oklahoma
Upland sandpiper	migratory shorebird	Species of Concern[3]
Western kingbird	migratory landbird	

[1] Partners in Flight [2] Nebraska Natural Legacy Plan [3] U.S. Shorebird Conservation Plan

Population goals and carrying capacities presented in this report are estimates and do not reflect a true census of any bird species and thus should be viewed with caution. These estimates reflect the potential capacity of the landscape to support bird populations based on the best available spatial land cover and species-to-habitat densities. Furthermore, the species-to-habitat densities used in this analysis are based on bird count data rather than nesting success/density; therefore, carrying capacity represents species occurrence, not recruitment. For migrant species, the assessment assumes that breeding habitat is the dominant factor affecting population status.

Results

Landscape Features

BCR19 spans almost 98 million acres of gently sloping terrain comprised of prairie, wetlands, croplands, woodlands, urban areas, reservoirs, and streams in portions of four Great Plains states. Historically dominated by mixed-grass prairie, BCR19 is now dominated by cropland, which makes up about 48 percent of its total land cover. Mixed-grass prairie vegetation is a mix of the short-grass species to the west and the tall-grass species to the east.

BCR19 covers 30.2 million acres in Nebraska, 27 million acres in Kansas, 22.1 million acres in Texas, and 18.6 million acres in Oklahoma. Land cover composition of each state is highly variable (figure 2). Kansas and Oklahoma are dominated by cropland; Nebraska, by grasslands; and Texas, by shrubland and woodland. Of the 27.6 million acres of BCR19 grassland, more than 56 percent are in Nebraska; 18 percent in Kansas; 15 percent in Oklahoma; and 10 percent in Texas.

The type of crop cover also varies among states, most notably between Nebraska and the other three states. Cropland in Nebraska is dominated by corn (47 percent of all crop cover), whereas cropland in the other states is dominated by wheat (at least 35 percent of crop cover).

Of the 3.4 million acres of land enrolled in the CRP, 48 percent are in Kansas; 25 percent in Texas; 17 percent in Oklahoma; and 9 percent in Nebraska.

The lesser prairie-chicken is an important resident of the Central Mixed-grass Prairie. NRCS PHOTO: GARY KRAMER

Ninety-nine percent of the BCR19 CRP land is planted to grass (table 2).

Effects of CRP on Priority Mixed-grass Prairie Birds

The contribution of CRP habitats to meeting the population goals for the various priority species ranged from 0 percent to 62 percent (table 3). Species showing the greatest benefit from CRP were dickcissel, eastern meadowlark, and grasshopper sparrow. For these three species, CRP contributed more than 15 percent of the population goal for at least two states in the BCR. Seven of the 12 species analyzed showed an evident benefit from CRP (i.e., CRP contributes at least 10 to 15 percent of the population goal) in at least one of the four states that make up BCR19. These seven species include dickcissel, eastern meadowlark, grasshopper sparrow, greater prairie-chicken, lark bunting, northern bobwhite, and ring-necked pheasant. Several species showed moderate benefit from CRP (i.e., CRP contributes 5 to 10 percent of the population goal) in at least one state (Cassin's sparrow, lesser prairie-chicken, upland sandpiper, and western kingbird). One species, Swainson's hawk, showed no benefit from CRP.

For greater and lesser prairie-chicken, the occurrence of CRP grasslands in the vicinity of non-CRP grasslands has the potential to effectively increase the size of grassland habitat blocks, making areas suitable for these species that would otherwise remain unsuitable isolated habitat patches. The effect of CRP enrollments that are part of large habitat blocks, as well as CRP enrollments that influence adjacent non-CRP grassland habitats to form suitable large habitat blocks, is presented in tables 4 and 5 and illustrated in figure 3.

This analysis indicates that the CRP is contributing significantly to the population goals of several priority mixed-grass prairie birds. The degree of benefit varies by species and geographic area. Several species stand out as benefiting considerably from CRP in at least one area of their range (dickcissel, eastern meadowlark, and grasshopper sparrow). For these species, it appears that CRP is making substantial impacts on their populations. For other species, the benefit of CRP is moderate by comparison but still significant in terms of conservation of these species (lesser prairie-chicken, greater prairie-chicken, lark bunting, northern bobwhite, and ring-necked pheasant).

For Swainson's hawk and upland sandpiper (in all states except Kansas), there

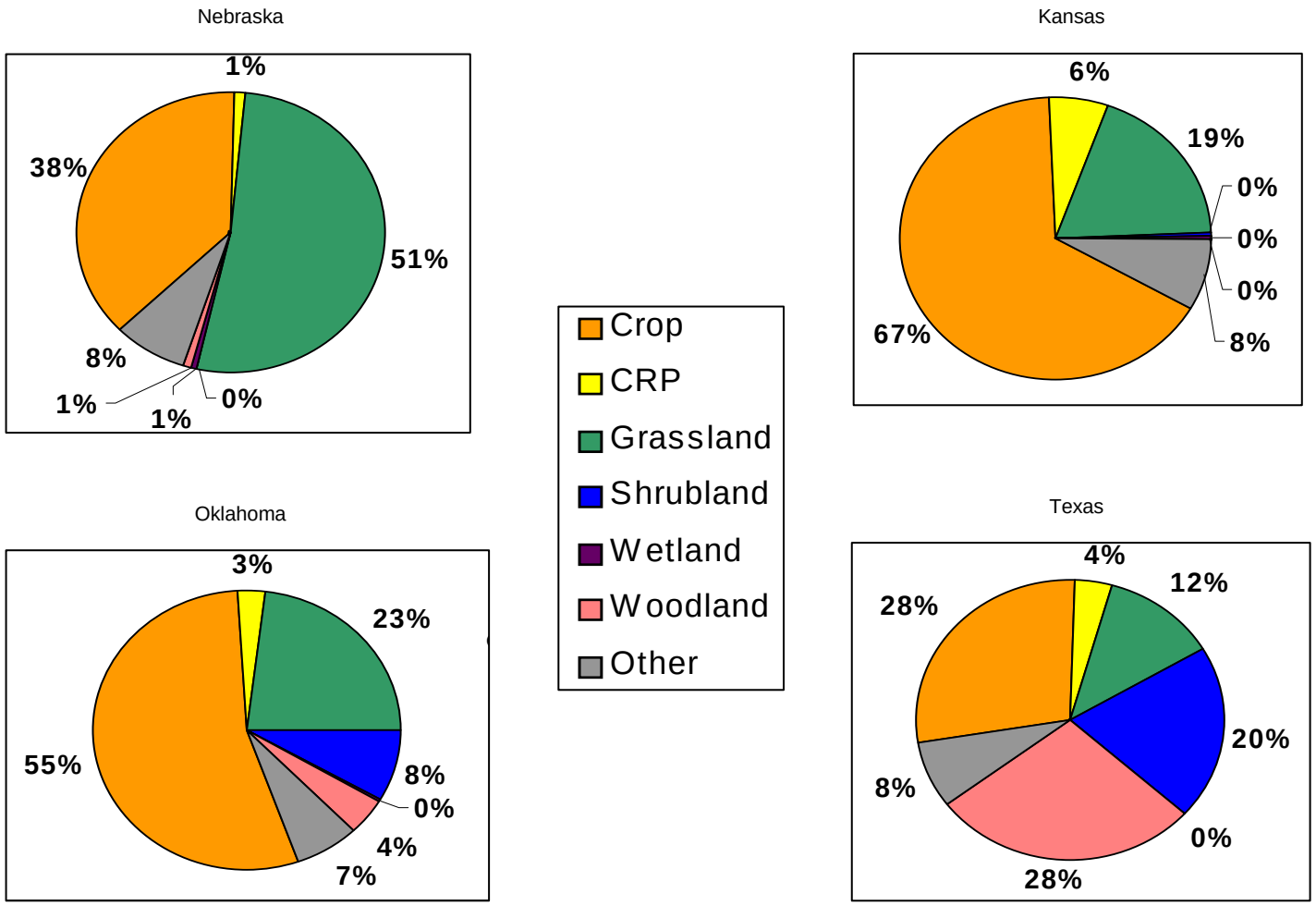


Figure 2. Land cover composition as a percentage of area for each state within BCR19. Source: PLJV BCR19 seamless geo-spatial landcover data layer.

Table 2. Estimated acres of cropland and CRP by general vegetation establishment practice in each state within the mixed-grass prairie Bird Conservation Region (BCR19)

Area	Cropland (million acres)	CRP cover establishment practice							
		Native Grass*	Non-native Grass*	Trees (upland)	Trees (riparian)	Wetland	Wetland (non-floodplain)	Other Practices	Total CRP
Nebraska	11.4	30,506	274,492	4,154	1,522	6,089	0	349	**317,112**
Kansas	17.8	1,630,842	0	2,962	987	3,456	329	7,406	**1,645,982**
Oklahoma	10.1	57,347	515,833	749	692	1,095	115	519	**576,350**
Texas	6.4	85,280	767,689	432	5,179	1,726	0	2,762	**863,068**
BCR19	**45.7**	**1,803,975**	**1,558,014**	**8,297**	**8,380**	**12,366**	**444**	**11,036**	**3,402,512**

* Due to ambiguities in the CRP conservation practice “Existing Grass” (CP10), the percentage of acres of native and non-native CRP grass (a condition in HABS) is based on the opinion of CRP experts familiar with enrollment and planting practices within each state.

Table 3. State-level BCR19 sector population goals and existing carrying capacity, modeled contribution of CRP enrollments, and expected loss of carrying capacity by CRP conversion to cropland and its effect on meeting population goals for 10 priority grassland bird species

Species, by State	State Area of BCR19			CRP Contribution		CRP to Cropland	
	Population Goal	Carrying Capacity	Percent of Population Goal	Carrying Capacity	Percent of Population Goal	Carrying Capacity Change	Percent of Population Goal Change
Cassin's sparrow							
Oklahoma	493,607	251,376	51%	13,710	2.8%	-11.321	**-2.3%**
Texas	1,080,852	550,438	51%	102,015	9.4%	-77.185	**-7.1%**
Dickcissel							
Nebraska	1,082,364	1,082,364	100%	207,399	19.2%	-189,928	**-17.6%**
Kansas	6,009,523	6,009,523	100%	2,217,946	36.9%	-2,179,530	**-36.3%**
Oklahoma	894,026	894,026	100%	389,763	43.6%	-381,456	**-42.7%**
Texas	309,634	309,634	100%	193,283	62.4%	-190,994	**-61.7%**
Eastern meadowlark							
Nebraska	91,148	66,136	73%	8,540	9.4%	-7,537	**-8.3%**
Kansas	183,580	133,204	73%	54,209	29.5%	-52,175	**-28.4%**
Oklahoma	577,498	419,028	73%	105,924	18.4%	-98,276	**-17.0%**
Texas	272,813	197,951	73%	71,649	26.3%	-71,649	**-26.3%**
Grasshopper sparrow							
Nebraska	4,305,387	2,860,505	66%	128,709	3.0%	-122,467	**-2.8%**
Kansas	3,063,510	2,035,400	66%	496,265	16.2%	-485,590	**-15.9%**
Oklahoma	1,093,858	726,761	66%	66,088	6.4%	-59,551	**-5.4%**
Texas	318,259	211,452	66%	98,347	30.9%	-98,347	**-30.9%**
Lark bunting							
Nebraska	446,582	227,428	51%	19,832	4.4%	-19,058	**-4.3%**
Kansas	621,062	316,284	51%	106,054	17.1%	-89,022	**-14.3%**
Oklahoma	12,948	6,594	51%	1,765	13.6%	-1,709	**-13.2%**
Texas	38,098	19,402	51%	6,704	17.6%	-6,704	**-17.6%**
Northern bobwhite							
Nebraska	83,847	83,847	100%	9,760	11.6%	-8,182	**-9.8%**
Kansas	684,806	684,806	100%	52,187	7.6%	-27,005	**-4.0%**
Oklahoma	678,183	678,183	100%	55,026	8.1%	-37,462	**-5.5%**
Texas	902,658	902,658	100%	81,885	9.1%	-58,932	**-6.5%**
Ring-necked pheasant							
Nebraska	187,539	187,539	100%	7,043	3.8%	-4,272	**-2.3%**
Kansas	823,084	823,084	100%	49,766	6.1%	-16,971	**-2.1%**
Oklahoma	59,821	59,821	100%	2,855	4.8%	-793	**-1.3%**
Texas	35,123	35,123	100%	4,125	11.7%	-1,229	**-3.5%**
Swainson's hawk							
Nebraska	21,184	10,788	51%	0	0%	17	**0.1%**
Kansas	6,342	3,230	51%	0	0%	124	**2.0%**
Oklahoma	9,211	4,691	51%	0	0%	86	**0.9%**
Texas	21,653	11,027	51%	0	0%	463	**2.1%**
Upland sandpiper							
Nebraska	222,274	222,274	100%	732	0.3%	1,409	**0.6%**
Kansas	74,287	74,287	100%	3,914	5.3%	-3,622	**-4.9%**
Oklahoma	12,264	12,264	100%	37	0.3%	175	**1.4%**
Western kingbird							
Nebraska	750,374	382,138	50%	18,438	2.4%	-17,764	**-2.4%**
Kansas	1,056,762	539,698	50%	98,087	9.3%	-95,339	**-9.0%**
Oklahoma	295,790	150,635	50%	11,492	3.9%	-11,249	**-3.8%**
Texas	819,763	417,475	50%	51,515	6.3%	-51,515	**-6.3%**

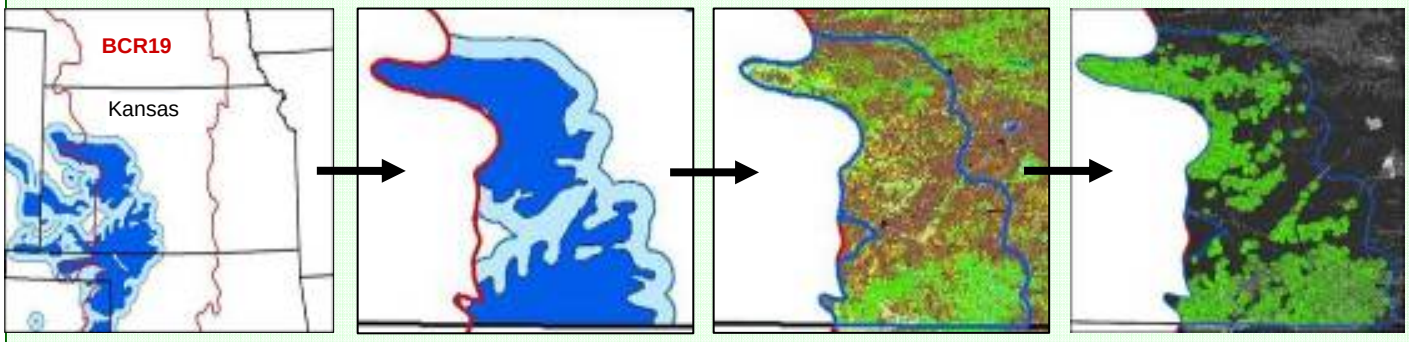
is no apparent benefit from CRP. For upland sandpiper, this lack of benefit is related to the type of species planted in CRP fields (i.e., native vs. non-native). Upland sandpipers benefit from CRP in Kansas because native grasses were planted there, unlike the majority of CRP land in the other three states. The tall, dense vegetation structure relative to shortgrass prairie may limit the benefit of CRP for Swainson's hawk, which requires relatively short stature grasses that make prey more visible.

CRP in Kansas and Texas produced the most benefit for priority mixed-grass prairie birds. CRP is most abundant in Kansas (48 percent of all CRP in BCR19) and Texas (25 percent of all CRP in BCR19), and these two states have the fewest number of grassland acres available to birds. Furthermore, Kansas showed greater benefit to four species (Cassin's sparrow, greater prairie-chicken, lesser prairie-chicken, and upland sandpiper) that prefer native over non-native CRP plantings.

CRP also proved beneficial to both prairie-chicken species in providing large blocks of suitable habitat. Spatial models showed that CRP contributed to and connected large blocks of suitable habitat for both species (tables 4 and 5, figure 3). Consequently, when CRP was reclassified to cropland, it resulted in fragmentation of previously suitable habitat. Other priority birds in this study are area- and/or disturbance-sensitive (grasshopper sparrow and upland sandpiper). However, since the area requirements (i.e., size of habitat block) are

"Range" and "Large Block" Factors

In order to prevent overestimation of habitat quantity and quality for lesser and greater prairie-chickens, habitat acreage and condition were modified to account for these species' limited range within the BCR and their need for large blocks of grassland habitat. A Large Block Factor was derived by developing and running a spatial model, specific to the species' habitat needs, on the land cover. Below is an illustration of the process used to identify large blocks of suitable habitat for the lesser prairie-chicken in the BCR19 portion of Kansas. Habitats outside the species' range in the BCR and outside large blocks were considered unsuitable for the lesser prairie-chicken and excluded from the total habitat available for this species, regardless of local habitat quality.



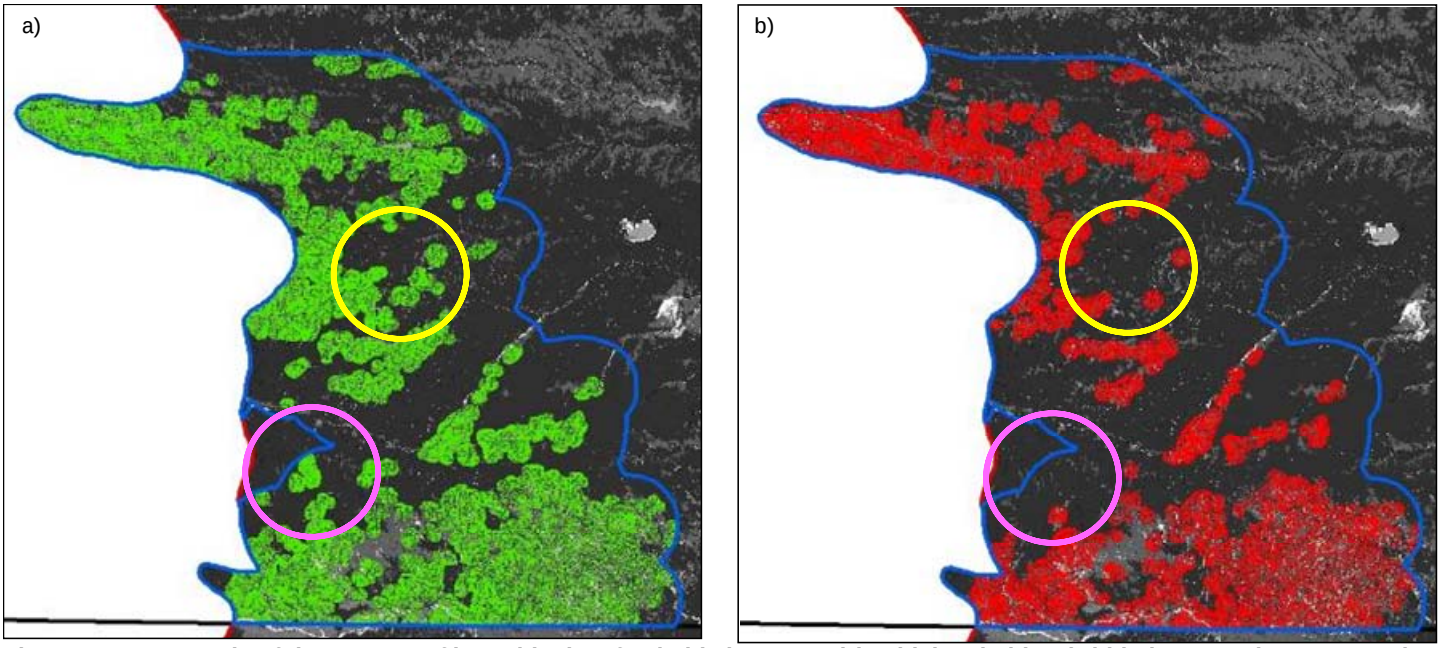


Figure 3. An example of the amount of large blocks of suitable lesser prairie-chicken habitat (within its range in BCR19-KS) when: a) CRP is included in the land cover (large block acres are green), and (b) CRP is reclassified to cropland (large block acres are red). Notice the change in large block acres inside the yellow and pink circles.

much smaller for grasshopper sparrow (20-30 acres in Nebraska; Helzer 1996, Helzer and Jelinski 1999) relative to the average size of CRP fields in BCR19 125 acres), no spatial models involving large block factors for this species were developed. For upland sandpiper, research suggests an area requirement of about 125–150 acres in Nebraska (Helzer 1996, Helzer and Jelinski 1999). Again, since CRP enrollment sizes were similar to upland sandpiper area requirements, no spatial model was developed for this species.

Overall, CRP is positively affecting a variety of priority mixed-grass prairie bird species. Although some species benefit more than others, in general CRP is providing most of these species with an alternative suitable habitat typically preferred over cropland. CRP is particularly important in connecting and enlarging existing blocks of fragmented prairie habitat. This is a critical landscape component (i.e., habitat corridors and buffers) for both area-sensitive and ground birds such as the lesser and greater prairie-chicken.

Putting Findings into Practice

Insights from this assessment can be used to increase the benefits of CRP to grassland birds. Managing vegetation on existing enrollments and affecting the configuration of new enrollments are essential elements of this process.

Focus on species of concern

CRP delivery can be aimed at benefiting species or species groups that are of highest conservation concern. In this assessment, priority species were identi-

Table 4. State-level BCR19 sector population goals and existing carrying capacity, contribution of CRP enrollments, and expected loss of carrying capacity by CRP conversion to cropland and its effect on meeting population goals for *greater prairie-chicken*, a species reliant on large blocks of grassland habitat.

	State Area of BCR19			CRP in Large Blocks		CRP to Cropland	
State	Population Goal	Carrying Capacity	Percentage of Population Goal	Carrying Capacity	Percentage of Population Goal	Carrying Capacity Lost/ Gained	Percentage of Population Goal Lost/ Gained
Nebraska	355,602	355,602	100%	5,549	2%	-5,549	**-2%**
Kansas	87,583	87,538	100%	10,766	12%	-10,766	**-12%**

	Non-CRP Habitat In Large Block Acres		CRP to Cropland Effect on Non-CRP Large Blocks	
	Carrying Capacity	Percentage of Population Goal	Carrying Capacity Lost/ Gained	Percentage of Population Goal Lost/ Gained
Nebraska	288	0%	-288	**0%**
Kansas	3,900	4%	-3,900	**-4%**

Table 5. State-level BCR19 sector population goals and existing carrying capacity, contribution of CRP enrollments, and expected loss of carrying capacity by CRP conversion to cropland and its effect on meeting population goals for *lesser prairie-chicken*, a species reliant on large blocks of grassland habitat.

	State Area of BCR19			CRP in Large Blocks		CRP to Cropland	
State	Population Goal	Carrying Capacity	Percentage of Population Goal	Carrying Capacity	Percentage of Population Goal	Carrying Capacity Lost/ Gained	Percentage of Population Goal Lost/ Gained
Kansas	42,976	21,886	50%	2,822	6.6%	-2,822	**-6.6%**
Oklahoma	24,801	8,064	33%	103	0.4%	-103	**-0.4%**
Texas	240	78	33%	1	0.4%	-1	**-0.4%**

	Non-CRP Habitat in Large Blocks		CRP to Cropland Effect on Non-CRP Large Blocks	
	Carrying Capacity	Percentage of Population Goal	Carrying Capacity Lost/ Gained	Percentage of Population Goal Lost/ Gained
Kansas	19,064	44%	-1,005	**-2%**
Oklahoma	7,961	32%	-1,544	**-6%**
Texas	77	32%	-4	**-2%**

fied by consolidating Federal, regional, and state species conservation lists and determining which species occur in the planning area. It is also important to determine if CRP is an appropriate tool for conserving each priority species. Wildlife habitat is only one of several goals of the CRP, and management required to benefit a particular species may conflict with other natural resource conservation goals. For example, the mountain plover is a high-priority species of the shortgrass prairie that requires bare ground and very short stature grassland vegetation. Managing CRP for such conditions may increase erosion. Therefore, it is necessary to determine and consider the habitat requirements of identified priority species.

Spatial targeting

Enrollment or re-enrollment of CRP contracts can be spatially targeted according to surrounding land use and landscape context and according to the spatial habitat requirements of priority species. Spatial targeting can locate and rank existing CRP fields and qualified crop fields based on their potential benefit to priority species. This process answers the question, "Where is CRP needed to benefit a species?"

Decision support tools (DST) that evaluate CRP fields, crop fields, and the habitat requirements of bird species (including spatial parameters) against the landscape through a Geographic Information System (GIS) are particularly useful for this purpose. PLJV developed and used a DST for this assessment to identify suitable habitat for lesser prairie-chickens. The DST evaluated CRP location, acres, and conservation practice within the context of surrounding habitat. Other species requirements and priorities can be layered to maximize benefits for a suite of target species.

Figure 4 shows how this DST was used to rank crop fields into tiers of potential benefit to lesser prairie-chickens considering adjacency to large blocks of native habitat, existing CRP fields, and major roads. Ranking CRP and crop fields according to potential benefit to birds allows strategic enrollment and re-enrollment of fields, creating more and higher quality habitat. Various incentives and outreach measures can be employed to encourage enrollment or re-enrollment of high-priority habitats.

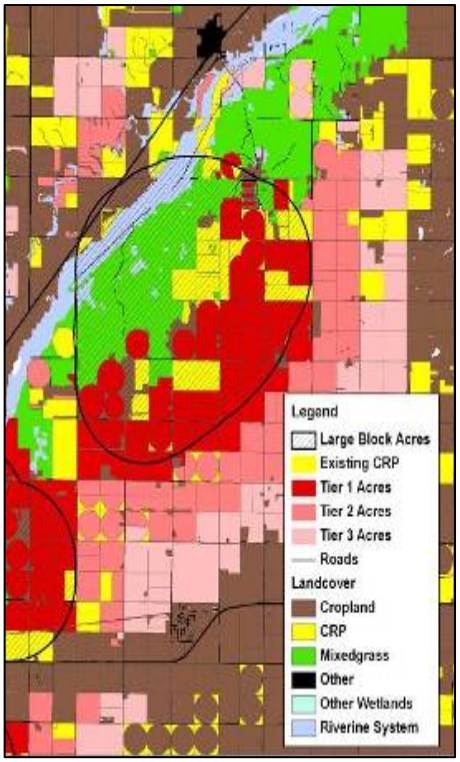


Figure 4. Map produced by a Decision Support Tool showing the rank (Tier 1 = highest priority (red), Tier 2 = medium priority (dark pink), Tier 3 = low priority (light pink)) of crop fields near existing large blocks of suitable lesser prairie-chicken habitat.

Vegetation management

Habitat condition of CRP lands is just as important as location. If the vegetation composition or structure is unsuitable, location is moot. CRP plantings should resemble the native plant communities in which they are embedded and managed according to the habitat needs of the priority species. This means planting diverse mixtures of native plants, including grasses, forbs, and shrubs that are adapted to particular soil types within the region. Proper stand development may require application of specific maintenance activities such as weed control or re-seeding to encourage full emergence of the planting. It may also require management actions such as prescribed grazing, haying, or burning to achieve specific desired vegetation structure and composition.

Strategic CRP delivery will increase conservation benefits to the species that need them the most and will save substantial conservation dollars by using them more effectively. The current opportunistic approach of CRP delivery has certainly provided considerable benefit to many wildlife species, including grassland birds; however, the potential impact of a more targeted approach to CRP and wildlife conservation is tremendous. This assessment quantifies the substantial habitat benefits that the CRP is providing to priority mixed-grass prairie bird species in BCR19. Benefits would likely be even greater with more strategic approaches to enrollment and habitat management in the future.

Prairie species seeded under the Conservation Reserve Program in Kansas.
NRCS PHOTO, JEFF VANUGA

The Conservation Effects Assessment Project: Building the Science Base

The Conservation Effects Assessment Project (CEAP) is a multi-agency effort to build the science base for conservation. Project findings will help to guide USDA conservation policy and program development and help farmers and ranchers make informed conservation choices.

One of CEAP's objectives is to quantify the environmental benefits of conservation practices for reporting at the national and regional levels. Because fish and wildlife are affected by conservation actions taken on a variety of landscapes, the wildlife national assessment draws on and complements the national assessments for cropland, wetlands, and grazing lands. The wildlife national assessment works through numerous partnerships to capitalize on relevant studies already underway, and it focuses on regional scientific priorities.

This effort to analyze the benefits of CRP in grassland areas of the Great Plains, funded by the CEAP wildlife component, is an important contribution to building the science base for understanding and quantifying how conservation practices affect wildlife habitats on agricultural landscapes.

Primary investigators on this project were Megan McLachlan, Mike Carter, and Christopher Rustay of the Playa Lakes Joint Venture.

For more information:
www.nrcs.usda.gov/technical/NRI/ceap/

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