



# **Prairie Pothole**

## **JOINT VENTURE**

### **2005 Implementation Plan**

### **Section V – Landbird Plan**

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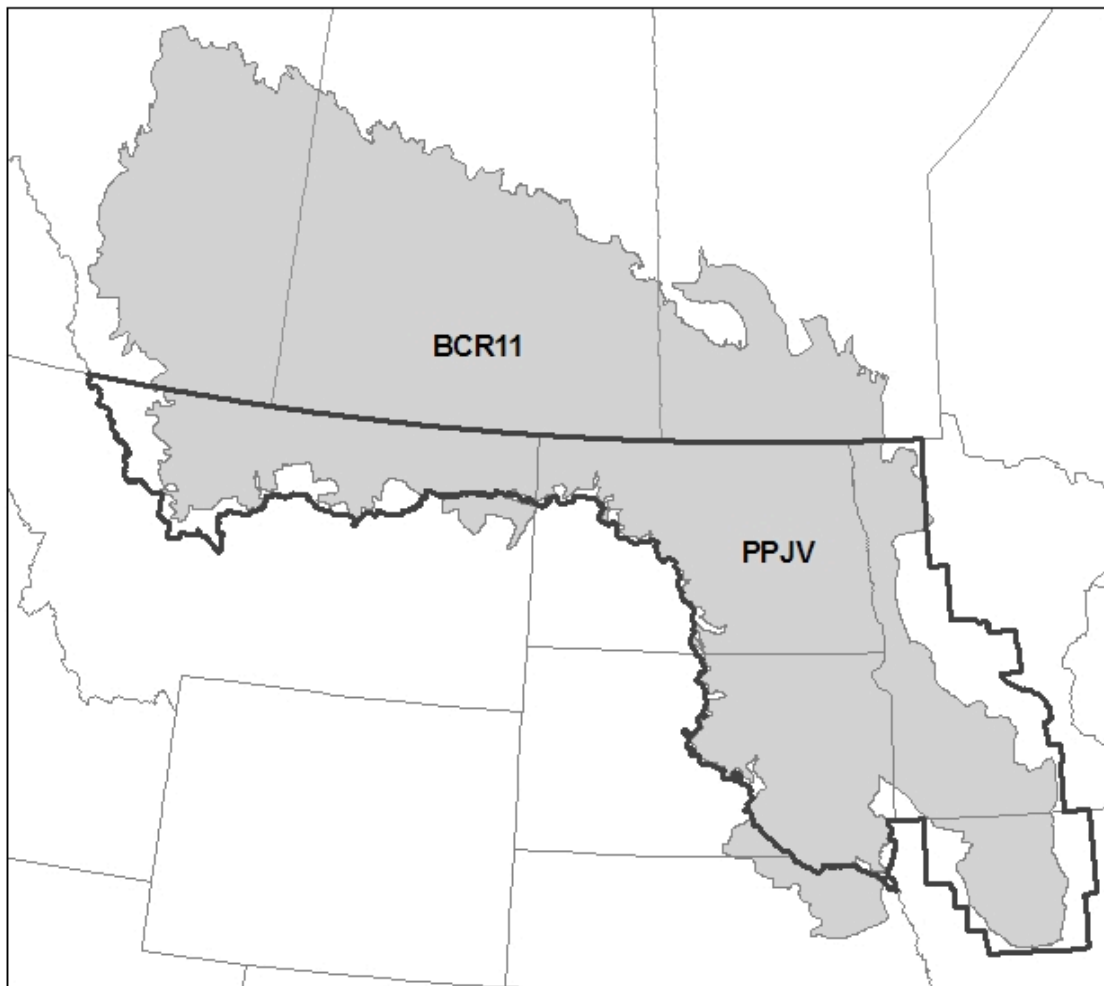
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## Background and Context

Approximately 186 species of birds breed in the Prairie Potholes Bird Conservation Region (BCR 11), which closely approximates the area encompassed by the Prairie Pothole Joint Venture in the United States and the Prairie Habitat Joint Venture in Canada (Figure 1). This BCR forms the core of North America's habitat for a variety of grassland and wetland-dependent species; in fact, 33 bird species have more than 25% of their continental breeding population in BCR 11. At the top of this list are three landbirds considered to be high priorities by Partners In Flight (PIF): 1) the Baird's Sparrow, with >90% of its population in the BCR, and with long-term population declines; 2) the Sprague's Pipit (>86%), also showing significant long-term declines; and 3) the Chestnut-collared Longspur, >75% and stable. All three are dependent on landscapes with intact native grassland blocks, and they are among the logical focal species for conservation in the region.



**Figure 1.** BCR 11 and the Prairie Potholes Joint Venture (with Montana revisions, 2005)

## Population Status and Trends

***Grassland bird declines have been well documented; taken as a whole, there is no group of North American birds that has shown a more downward trend (Rich et al. 2004).***

Since early in the 1990s, PIF has maintained a species prioritization database for landbirds that uses multiple variables to establish priority levels for conservation (Carter et al. 2000). Among those variables are the proportion of the global population within a region of interest, and population trend based on Breeding Bird Survey data. The PPJV has selected as focal species those landbirds highly reliant on the region (>25% of the population) and/or declining, or identified as Watch List Species by PIF (Rich et al. 2004).

Only seven of the 16 native landbird species with 25% or more of their global population in the region (BCR11) show regional and/or range-wide population declines (Table 1), perhaps indicating that there is still good potential to protect and enhance functional habitat in the Prairie Pothole region. But five are grassland-dependent species, and all have been identified as priority species in the PIF plans for the continent (Rich et al. 2004) region (Casey 2000, Fitzgerald et al. 1998, 1999). Grassland bird declines have been well documented; taken as a whole, there is no group of North American birds that has shown a more downward trend in abundance (Rich et al. 2004). Most (12) of the 17 native landbird species declining in BCR 11 are dependent either on grasslands or on grassland/wetland complexes for nesting, and over half of the grassland species in the BCR are showing declines. When we consider that 5 of the other species showing declines in BCR 11 are riparian species (Table 1), it is clear that the joint venture can provide for the needs of a broad spectrum of declining birds by conserving grasslands, wetlands and riparian areas in an appropriate landscape context. Focal species for these habitats are shaded gray in Table 1, and in the other tables in this section.

The Partners in Flight continental (U.S. and Canada) landbird conservation plan (Rich et al. 2004) was the first attempt to establish continental landbird population estimates and objectives, and identified 192 “priority species” of continental importance, including a Continental Watch List (with 3 subcategories) and an additional list of “stewardship species” with a high percent of their global or western hemisphere population in a single biome (e.g. Sharp-tailed Grouse in the prairie biome). Watch List species consisted of:

- Species with multiple causes for concern across their entire range (e.g. Lesser Prairie-Chicken; no BCR11 species);
- species moderately abundant or widespread species with declines or high threats (e.g. Baird’s Sparrow); and
- species with restricted distribution or low population size (e.g. McCown’s Longspur).

Priorities were set for avifaunal biomes that consisted of adjoining Bird Conservation Regions (BCRs) with similar avifauna. The Prairie Pothole Joint Venture lies almost entirely within the

**Table 1.** Native landbird species for which more than  $\geq 25\%$  of the continental population occurs in the Prairie Potholes Bird Conservation Region (BCR 11), and/or which are showing moderate to significant continental/regional declines. Those species meeting both criteria, or identified as Continental Watch List Species by PIF for the prairie biome, are shaded gray.

Species	%pop	Regional Trend <sup>a/</sup>	Habitat
Baird's Sparrow	90%	moderate declines	Grassland
Sprague's Pipit	86%	significant declines	Grassland
Chestnut-collared Longspur	75%	stable	Grassland
Yellow-headed Blackbird	58%	significant increases	Wetland
Nelson's Sharp-tailed Sparrow	51%	possible increases	Wetland/Grassland
Sharp-tailed Grouse	49%	significant declines	Grassland
Marsh Wren	41%	significant increases	Wetland
Clay-colored Sparrow	33%	stable	Shrubland/Grassland
McCown's Longspur	31%	possible declines	Grassland
Sedge Wren	31%	significant increases	Wetland/Grassland
Vesper Sparrow	31%	possible increases	Grassland
Bobolink	30%	possible increases	Grassland
Swainson's Hawk	29%	moderate declines	Grassland/Riparian
Ferruginous Hawk	25%	significant increases	Grassland
Northern Harrier	25%	moderate declines	Grassland
Horned Lark	25%	moderate declines	Grassland
Greater Prairie-Chicken	4%	significant declines	Grassland
Black-billed Cuckoo	20%	significant declines	Riparian
Burrowing Owl	1%	significant declines	Grassland
Short-eared Owl	4%	significant declines	Grassland
Northern Flicker	4%	significant declines	Riparian
Loggerhead Shrike	5%	significant declines	Grassland/Shrubsteppe
Lark Bunting	9%	significant declines	Grassland
Grasshopper Sparrow	14%	significant declines	Grassland
Red-headed Woodpecker	12%	moderate declines	Riparian
American Crow	9%	moderate declines	Riparian
Red-winged Blackbird	14%	moderate declines	Riparian
Western Meadowlark	17%	moderate declines	Grassland

<sup>a/</sup> Significant Declines = 50% or more decline over 30 years, with high degree of certainty (annual declines of  $-2.36\%$  or more with  $p < 0.10$ ); Moderate Declines = 15-50% decline over 30 years (annual rates of  $-0.77$  to  $-2.36\%$ ,  $p < 0.10$ ; or annual rate of  $-2.36\%$  or more with  $p > 0.10$  and  $< 0.35$ ); Stable, Possible Declines, Possible Increases = trend indications with no statistical significance; Significant Increases = 50% or more increase over 30 years with high degree of certainty (annual increases of  $> 1.41\%$  with  $p < 0.10$ )

“Prairie Avifaunal Biome”, which included BCR 11 as one of 7 adjoining BCRs. The plan covered primary habitats, priority species, conservation issues and recommended conservation actions for the biome, and forms our foundation for developing conservation objectives for landbirds in the PPJV. The plan categorized species into three “recommended conservation action” categories:

- *Immediate Action:* Immediate action is needed to reverse or stabilize significant, long-term declines of species with small populations, or to protect species with the smallest populations for which trends are poorly known;
- *Management:* Management or other on-the-ground conservation actions are needed to reverse significant, long-term declines or sustain vulnerable populations; or

- *Long-term Planning and Responsibility:* Long-term planning is needed to maintain sustainable populations.

Part of the supporting data for the Partners In Flight continental plan (Rich et al. 2004) were population estimates for each segment of each landbird species' distribution. The basic unit of this database was a portion of a BCR within a state. BCR 11, for example, includes portions of 6 states. Population estimates for the 16 priority landbirds from the prairie avifaunal biome that breed in BCR 11 are shown in Table 2.

**Table 2.** Population estimates for continental priority landbirds within PPJV state portions of BCR 11 (Prairie Potholes). The last column is the percent of the global population that is estimated to breed in the U.S. portion of BCR 11.

<b>Immediate Action:</b>	Global Pop.	IA	MN	ND	SD	MT	<b>TOTAL*</b>	PPJV %
Baird's Sparrow	1,200,000			199,727	4,765	106,159	<b>310,651</b>	25.9%
Greater Sage-Grouse	150,000					4380	<b>4,380</b>	2.9%
Greater Prairie-Chicken	690,000		7,570				<b>20,002</b>	2.9%
Bell's Vireo	1,500,000				1,348		<b>1,829</b>	0.1%
<b>Management:</b>								
Chestnut-collared Longspur	5,600,000			1,196,386	237,989	1,176,694	<b>2,611,069</b>	46.6%
Grasshopper Sparrow	15,000,000	36,478	104,209	775,170	547,017	328,643	<b>2,065,383</b>	13.8%
Lark Bunting	27,000,000		548	828,655	179,921	2,087,185	<b>3,096,310</b>	11.5%
Sprague's Pipit	870,000			40,908		52,891	<b>93,798</b>	10.8%
Red-headed Woodpecker	2,500,000	35,563	48,023	6,554	63,610		<b>261,850</b>	10.5%
Swainson's Hawk	490,000		332	19,873	4,818	24,943	<b>50,990</b>	10.4%
Dickcissel	22,000,000	252,791	87,835	37,921	741,105		<b>1,451,009</b>	6.6%
Willow Flycatcher	3,300,000	1,454	7,703	105,346	50,103	3,666	<b>171,149</b>	5.2%
Short-eared Owl	2,400,000		2,602	5,995	600	30,989	<b>40,383</b>	1.7%
<b>Long-term Planning and Responsibility:</b>								
Sharp-tailed Grouse	1,200,000		20,296	204,302	1,180	62,500	<b>288,278</b>	24.0%
McCown's Longspur	1,100,000					209,659	<b>209,659</b>	19.1%
Nelson's Sharp-t. Sparrow	510,000		618	81,318	9,231		<b>91,167</b>	17.9%

\*Total includes additional acres in Nebraska within the BCR, but not within the PPJV.

At face value, the continental PIF plan allows direct step-down of continental population objectives to regional (BCR, state) objectives by applying the continental objective against the regional population estimate (Table 3). These BCR objectives offer a starting point for the development of regional habitat-based conservation approaches.

But continental objectives might not be appropriate at smaller scales if differences in population trends are occurring at those scales, or if regional habitat trends differ substantially from continental trends. For example, a species might be stable at the continental level, but performing poorly enough in one habitat or physiographic area that declines are evident. Basing objectives on stemming local declines may be necessary to maintain stable populations at the larger scale

over the long term. One way to approach setting regional objectives is to use locally-derived trend data to develop local population (and hence habitat) objectives. Table 4 shows locally-derived trend data for three key grassland species in the PPJV area, the Baird's Sparrow, Sprague's Pipit, and Chestnut-collared Longspur.

**Table 3.** Population objectives for BCR 11 (Prairie Potholes), based on continental objectives for the next 30 years.

<b>PIF Priority Species Matrix, PPJV/BCR11</b>				
				BCR 11
<b>Immediate Action:</b>	Global Pop.	Cont. Pop. Obj.	BCR11 TOTAL	OBJECTIVE
Baird's Sparrow	1,200,000	incr. 100%	310,651	621,301
Greater Sage-Grouse	150,000	incr. 100%	4,380	8,760
Greater Prairie-Chicken	690,000	incr. 100%	20,002	40,004
Bell's Vireo	1,500,000	incr. 100%	1,829	3,658
<b>Management:</b>				
Chestnut-collared Longspur	5,600,000	maintain	2,611,069	2,611,069
Grasshopper Sparrow	15,000,000	maintain	2,065,383	2,065,383
Lark Bunting	27,000,000	maintain	3,096,310	3,096,310
Sprague's Pipit	870,000	incr. 100%	93,798	187,596
Red-headed Woodpecker	2,500,000	incr. 100%	261,850	523,701
Swainson's Hawk	490,000	maintain/incr.	50,990	≥50,990
Dickcissel	22,000,000	incr. 50%	1,451,009	2,176,513
Willow Flycatcher	3,300,000	incr. 50%	171,149	256,724
Short-eared Owl	2,400,000	incr. 100%	40,383	80,767
<b>Long-term Planning and Responsibility:</b>				
Sharp-tailed Grouse	1,200,000	maintain	288,278	288,278
McCown's Longspur	1,100,000	maintain/incr.	209,659	≥209,659
Nelson's Sharp-tailed Sparrow	510,000	maintain	91,167	91,167

Population objectives for both Baird's Sparrow and Sprague's Pipit call for doubling the population over the next 30 years. Both are declining throughout the region, with populations in North Dakota showing the most significant declines (Table 4). These species clearly should provide the impetus for grassland conservation in the region, and we need to develop the necessary biological information to design approaches to double effective (occupied and productive) habitat for these species over the next 30 years, in order to meet continental objectives. This will undoubtedly require protecting and enhancing the best remaining native prairie for these species, but also determining more specifically those landscape and structural features that provide for good recruitment in these populations.

***With the continued loss of grasslands, doubling the populations of some focal landbird species might be unrealistic, unless extensive acreages of remaining native grassland are enhanced through improved management (e.g. revised grazing strategies, removal of woody vegetation).***

The Chestnut-collared Longspur, a stewardship species in the biome with more than 40% of its global population in the U.S. portion of BCR 11, has a continental objective to maintain current populations. But BBS data indicate significant declines in the Dakotas, so it might be appropriate to implement strategies to maintain populations in Montana while designing approaches to reverse declines of this species in the Dakotas. Without doing so, maintaining stable populations at the continental scale may not be possible.

**Table 4.** Population trends for key landbird species in the PPJV, 1966-2003, derived from BBS data, at various scales. Those trends in **bold** are statistically significant.

Species	Baird's Sparrow			Sprague's Pipit			Chestnut-collared Longspur		
	Trend	P-value	N	Trend	P-value	n	Trend	P-value	n
Drift Prairie	-2.96	0.296	34	<b>-4.92</b>	<b>0.000</b>	28	<b>-3.24</b>	<b>0.081</b>	31
Coteau	-1.77	0.224	54	-0.85	0.577	49	-1.45	0.311	59
MT	-1.73	0.641	20	1.01	0.814	19	0.32	0.883	23
ND	<b>-4.35</b>	<b>0.004</b>	26	<b>-2.74</b>	<b>0.043</b>	23	<b>-2.08</b>	<b>0.003</b>	34
SD	-2.36	0.950	6				<b>-6.73</b>	<b>0.006</b>	28

Table 5 presents locally-derived trend data for 3 more grassland species of importance in the PPJV area. These species, the Grasshopper Sparrow, Lark Bunting, and McCown's Longspur, each rely on different grassland types, but all show regional declines.

All three of these species are stewardship species in the PPJV region, and all have continental objectives to maintain populations at current levels (Table 3). The Grasshopper Sparrow, increasing dramatically in other parts of the country in anthropogenic habitats, is nonetheless decreasing dramatically in the Prairie Pothole Region. It seems appropriate, therefore, to adopt a more aggressive local/regional population objective for this species, particularly in the eastern portion of the JV where CRP and other programs may allow for restoration of suitable habitat.

The Lark Bunting and McCown's Longspur are shortgrass prairie birds, and do not typically occur in the same grassland matrices with wetlands that have already received attention in planning efforts of the joint venture. Dramatic declines where the two species occur in the Dakotas contrast with significant Lark Bunting increases in Montana, and indicate that perhaps our planning and implementation efforts for shortgrass birds should focus on the central portion of the JV rather than the west.

The Red-headed Woodpecker and Swainson's Hawk are two regionally-important (Watch List) landbirds dependent on prairie riparian areas (Table 6). Continental objectives for the former are to double populations in 30 years to offset past losses, while the objective for the Swainson's Hawk is to maintain or increase populations (no significant national trend).



**Table 5.** Population trends for key landbird species in the PPJV, 1966-2003, derived from BBS data, at various scales. Those trends in **bold** are statistically significant.

Species	Grasshopper Sparrow			Lark Bunting			McCown's Longspur		
	Trend	P-value	n	Trend	P-value	n	Trend	P-value	n
Drift	<b>-2.85</b>	<b>0.074</b>	42	<b>-17.56</b>	<b>0.000</b>	32	<b>-50.73</b>	<b>0.082</b>	3
Coteau	<b>-4.25</b>	<b>0.014</b>	42	.91	0.786	54	<b>-6.24</b>	<b>0.019</b>	31
Tallgrass	<b>-7.38</b>	<b>0.000</b>	39						
MT	-2.97	0.210	37	<b>3.64</b>	<b>0.051</b>	34	-0.14	0.972	15
NE	-2.75	0.233	45	-2.17	0.267	34	11.96	0.218	2
ND	<b>-4.24</b>	<b>0.009</b>	46	<b>-4.49</b>	<b>0.003</b>	37			
SD	<b>-4.74</b>	<b>0.000</b>	45	<b>-3.35</b>	<b>0.017</b>	38			

**Table 6.** Population trends for key landbird species in the PPJV, 1966-2003, derived from BBS data, at various scales. Those trends in **bold** are statistically significant.

Species	Red-headed Woodpecker			Swainson's Hawk		
	Trend	P-value	n	Trend	P-value	n
Drift	-0.23	0.896	19	-1.56	0.157	61
Coteau	-2.98	0.745	4	-0.31	0.821	72
Tallgrass	<b>-5.15</b>	<b>0.000</b>	41	-0.02	0.995	9
MN	<b>-5.22</b>	<b>0.000</b>	45	-35.15	0.277	3
MT	2.39	0.518	4	<b>2.36</b>	<b>0.078</b>	34
NE	-0.96	0.257	41	-2.00	0.502	28
ND	<b>-4.61</b>	<b>0.030</b>	15	0.36	0.640	43
SD	-0.79	0.592	32	2.08	0.231	34

*Riparian habitat must be carefully considered in landscape approaches to conservation where the primary objectives are to protect, restore and enhance grasslands and wetlands. , Limiting efforts to the enhancement of those existing stands that meet the needs of priority birds, may help minimize the potential adverse effects of creating predator habitat in such landscapes.*

Local trends in these two species seem to match national trends, with significant woodpecker declines, particularly in the eastern portion of the JV, and no consistent pattern to hawk population trends. Riparian conservation efforts for Red-headed Woodpeckers should reflect the continental objective, and will require doubling the effective habitat for the species over the next 30 years, but only in those areas where there is extant riparian habitat that is not encroaching on managed grasslands area. This will require maintaining and protecting riparian woodlands where appropriate and providing for snag recruitment and retention.

## Biological Foundation

*The theme of Partners in Flight has always been to  
“keep common birds common.”*

The PIF continental plan identifies 21 priority landbird species of continental importance in the biome, including 5 that are exclusively migrants/winter visitors (Table 7). These species will drive the landbird conservation design efforts in the joint venture, although individual partners and local planning efforts may include other landbirds in project design, such as those additional species identified in the NAWCA criteria as wetland-dependent, and those species identified by previous PIF planning efforts as conservation priorities in physiographic areas or states (i.e. Montana, see below).

The theme of Partners in Flight has always been to “keep common birds common,” As a starting point for Watch List species, the continental plan set population objectives to maintain current populations, or to return declining populations to their numbers in the late 1960s, when the BBS began. Targets for stewardship species are based on maintaining populations at late 1990s levels. The plan established several categories of trend-based objectives:

- double (increase 100%) for those species that have declined 50% or more since 1966;
- increase by 50% those that have declined 15-50% since 1966;
- maintain/increase populations of those species with unknown trend; and
- maintain populations of those species with stable or increasing trends.

### Additional Priorities from Regional Plans

When PIF introduced their continental landbird plan, it was made clear that it did not supplant, but rather built upon, the regional and state PIF plans that had come before. There are three of these previous plans that covered the PPJV area:

- PIF Bird Conservation Plan for the Northern Mixed Grass Prairie (Physiographic Area 37), Fitzgerald et al. 1999;
- PIF Bird Conservation Plan for the Northern Tallgrass Prairie (Physiographic Area 40), Fitzgerald et al. 1998; and
- PIF Draft Bird Conservation Plan for Montana (Casey 2000)

Species identified in the continental plan for this region (Table 7) were included in one or more of these plans. But another 23 species identified in these plans and reliant on grassland, riparian or wetland habitat should be considered of local importance (Table 8), and are likely to be

**Table 7.** Global population estimates and continental population objectives for priority landbirds in BCR 11 (Prairie Potholes) from the Partners in Flight continental conservation plan (Rich et al. 2004), for the prairie avifaunal region.

From Prairie Avifaunal Region, Continental Plan:						
	Watch List <sup>a/</sup> :	Stewardship <sup>b/</sup> :	Winter:	Habitat <sup>c/</sup>	Global Pop <sup>d/</sup> :	Cont. Pop. Obj. <sup>e/</sup>
<b>Immediate Action:</b>						
Greater Prairie-Chicken	x	x	x	G	690,000	increase 100%
Greater Sage-Grouse	x			SS	150,000	increase 100%
Bell's Vireo	x			R	1,500,000	increase 100%
Baird's Sparrow	x	x		G	1,200,000	increase 100%
<b>Management:</b>						
Swainson's Hawk	x			G	490,000	maintain/incr.
Short-eared Owl	x			G	2,400,000	increase 100%
Red-headed Woodpecker	x			R	2,500,000	increase 100%
Willow Flycatcher	x			R	3,300,000	increase 50%
Sprague's Pipit	x	x		G	870,000	increase 100%
Lark Bunting		x		G	27,000,000	maintain
Grasshopper Sparrow		x		G	15,000,000	maintain
Harris's Sparrow (winter)	x		x		3,700,000	increase 100%
Chestnut-collared Longspur		x		G	5,600,000	maintain
Dickcissel	x	x		G	22,000,000	increase 50%
Rusty Blackbird (winter)	x		x	W	2,000,000	increase 100%
<b>Long-term Planning and Responsibility:</b>						
Sharp-tailed Grouse		x	x	G	1,200,000	maintain
American Tree Sparrow (winter)			x		26,000,000	maintain
Nelson's Sharp-tailed Sparrow	x			W	510,000	maintain
McCown's Longspur	x	x		G	1,100,000	maintain/incr.
Lapland Longspur (winter)			x	G	150,000,000	maintain
Smith's Longspur (winter)	x		x	G	75,000	maintain/incr.

<sup>a/</sup> Watch List species are considered to be of continental importance in the U.S. and Canada; they include species with multiple causes for concern across their entire range, moderately abundant or widespread species with declines or high threats, and species with restricted distribution or low population size (Rich et al. 2004).

<sup>b/</sup> Stewardship species are those species of continental importance with a high percentage ( $\geq 75\%$ ) of their population (breeding or wintering) in this biome.

<sup>c/</sup> Primary habitat association: G = Grassland; SS = Sagebrush Steppe; R = Riparian; W = Wetland

<sup>d/</sup> As estimated from Breeding Bird Survey (BBS) data (Rich 2004)<sup>e/</sup> These objectives are for the next 30 years, and are based on historic trends from BBS data as follows: double (increase 100%) for those species that have significant declines since 1966 of 50% or more; increase by 50% those that have declined 15-50% since 1966; maintain/increase populations of those species with unknown trend; and maintain populations of those species with stable or increasing trends.

targeted by local partnerships in the design of conservation projects. Additional priority landbirds reliant on other upland habitats were identified in Montana (Casey 2000) but are not included here.

The PPJV is committed to participating in the continued refinement of regional population and habitat objectives as partners work to step down continental objectives to explicit action-based objectives by state and BCR. Such refinement will by necessity require continued commitment from partners to collecting the biological information needed to tie measurable habitat objectives to population size and performance. It will also require the development of optimization models which help balance the conflicting habitat/structural needs of priority species in conservation design.

## **Key Planning Assumptions**

- All PIF species assessment scores have a degree of uncertainty in the underlying information, and professional judgments were made in the assessment process (Carter et al. 2000).
- Global and regional population size estimates derived from BBS, which was not designed for this purpose, rely on diverse assumptions (see Rich et al. 2004) and have a level of error that can only be approximated. Estimates will continue to be improved/revised and posted on the PIF website ([www.partnersinflight.org](http://www.partnersinflight.org)).
- Population estimates and objectives from the continental plan are the best current information, but will continue to be revised and refined using local input and direct interaction with joint venture technical committees and partners.
- Quality and quantity of breeding habitat limits the population of declining bird species. If species are limited by migration habitat or wintering habitat elements, maintaining the availability of suitable nesting habitat is still essential to the long-term stability of these populations.
- Population objectives are based on past population trends and are independent of population size estimates. Changes in population size estimates will have no effect on objectives, but improved trend estimates could have large effects.
- Conversion of native grasslands to agriculture and other uses will continue. Maintaining populations of priority birds, or increasing them, will require a combination of protection, restoration, and active management of existing habitat to provide desired conditions for priority bird species.
- It will be possible to continue to build and refine landscape models that can be used in conservation design to identify the best projects for landbirds and other taxa.

## **Limiting Factors**

Surprisingly little is known about what limits populations of prairie-nesting birds, although there is a growing body of knowledge regarding the effects of habitat management practices (Johnson et al. 1998), area requirements (e.g. Naugle 1997) and on Region-wide GBCAs consist of a

grassland core with a surrounding 1-mile wide matrix. Core areas are at least 95% grassland, at least 50 m from woody vegetation, and may contain up to 30% wetland habitat. GBCAs have been defined at 3 levels to address the needs of grassland breeding birds with differing levels of requirements. Each type is differentiated on the basis of size, width, amount of grass in the landscape, and the types of wetlands considered compatible (e.g., temporary wetlands are considered compatible for all GBCA types because they are typically dry for much of the nesting season). For most prairie landbirds, it is assumed that the abundance and distribution of nesting habitat limits populations. Of course, habitat must not only be suitable in terms of vegetative composition and structure, but must be present in block sizes, juxtaposition with other habitats, and sufficient quantity to provide for successful reproduction and recruitment. Much more work is needed to generate these data for priority landbird species, however collaborative conservation efforts in key landscapes must continue despite data gaps.

**Table 8.** Additional priority landbird species identified by regional and state PIF planning efforts prior to the completion of the continental plan. These species should be considered locally important by project partners, but were not identified as priorities in the continental plan for the prairie avifaunal biome.

Priority Species <sup>a/</sup>	Northern Mixed Grass Prairie (PA 37) <sup>b/</sup>	Northern Short Grass Prairie (MT) <sup>b/</sup>	Northern Tall Grass Prairie (PA 40) <sup>b/</sup>
Bald Eagle		R	R
Northern Harrier	G	G	
Ferruginous Hawk		G	
Black-billed Cuckoo	R	R	R
Burrowing Owl		G	
Vaux's Swift		R	
Rufous Hummingbird		R	
Northern Flicker			R
Least Flycatcher		R	
Cordilleran Flycatcher		R	
Western Kingbird			
Eastern Kingbird			
Loggerhead Shrike		G	G
Warbling Vireo	R		
House Wren			R
Sedge Wren	G		G,W
Marsh Wren	W		W
Gray Catbird		R	
Ovenbird		R	
Clay-colored Sparrow	G		G
Vesper Sparrow			G
Le Conte's Sparrow	G	W	
Bobolink	G	G	G

<sup>a/</sup> All species listed were identified as being a conservation priority.

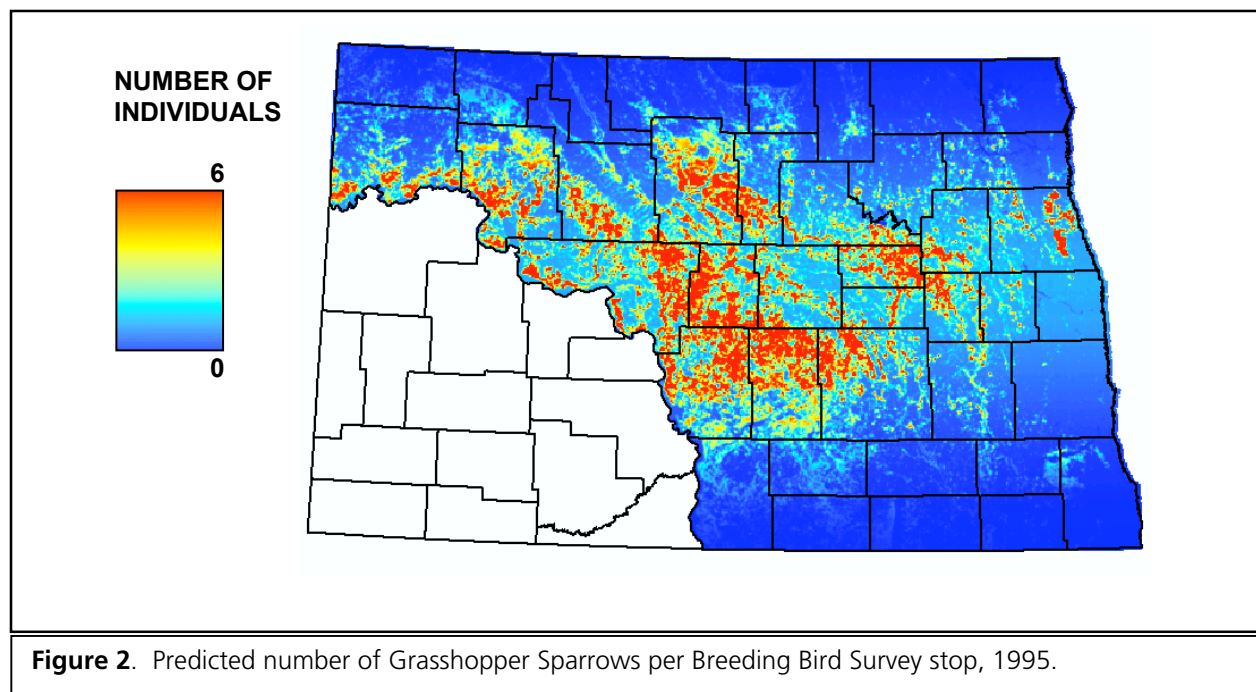
<sup>b/</sup> Primary habitat association: G = Grassland; SS = Sagebrush Steppe; R = Riparian; W = Wetland

## Actions and Treatments

Habitat problems affecting priority landbirds in the region include fragmentation of native cover, loss of wetlands and associated nesting cover, mismanagement of grazing, invasive species (e.g. crested wheatgrass) and the conversion of native prairie to cropland. Populations of predators and nest parasites such as cowbirds have changed dramatically in response to man's activities. Habitat conservation strategies for other prairie wildlife, including the migratory birds addressed by the other bird initiatives, will generally not differ substantially from those strategies implemented to meet the needs of waterfowl. Implementation strategies will focus on the protection, restoration, and enhancement of prairie wetland, riparian, and grassland communities.

Actions and treatments associated with livestock production on privately-owned, native prairie should also be addressed. Emphasis must be placed on maintaining livestock production. Strategies should include a wide array of incentive-based management tools to encourage appropriate livestock grazing that maintains appropriate structure to support nesting birds, which in turn will prevent the conversion of native prairie to cropland. Where cropland conversion has already taken place, the PPJV must work to continue Farm Bill programs such as the Conservation Reserve Program (CRP) to provide permanent (preferably native) cover.

The Joint Venture will capitalize on those opportunities where modifications to habitat programs designed for waterfowl will provide key habitat elements for other species. The primary approach to grassland conservation throughout the majority of the joint venture will be the Grassland Bird Conservation Area (GBCA), with continued development and refinement of Breeding Bird Survey-driven models (Neimuth et al. 2004) to identify the highest priority areas for conservation efforts based on the known distribution, density, and/or abundance of priority bird species (Figure 2). Riparian conservation throughout the JV will take a similar approach.



## Habitat Objectives for the PPJV

Priority landbirds for the prairie avifaunal biome rely on three primary habitats: grassland, wetland, and riparian woodland. All three habitats allow for the design and implementation of projects that are jointly beneficial to waterfowl, shorebirds, waterbirds, and/or landbirds. But because almost 40% of the imperiled species on the continental Watch List breed in this biome and are associated with grasslands, grassland habitat conservation is the focus of the PIF plan for this biome, and for the joint venture's landbird conservation efforts as well. Meeting trend-based population objectives for priority species requires maintaining or increasing the amount of suitable habitat where breeding can successfully occur. Much work remains to be done to translate population objectives into meaningful, quantitative habitat objectives.

### Grasslands

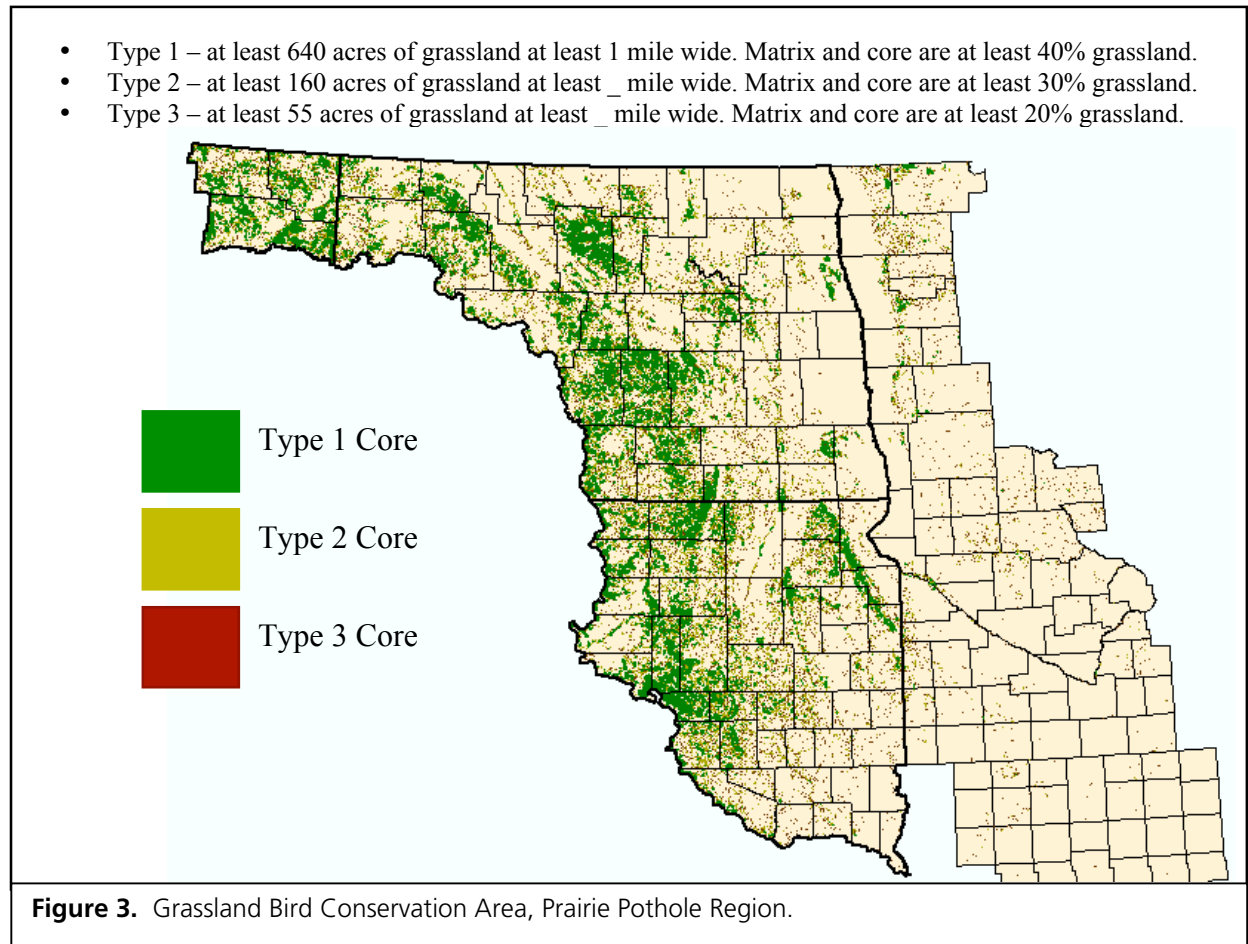
Stemming the tide of grassland conversion and fragmentation is perhaps the single most important habitat objective for native landbirds in the Prairie Pothole Region. Many grassland birds are nomadic by nature, perhaps as an inherent response to historic wet and dry cycles and the effects of bison on range conditions. This provides some resiliency in these populations, but because of the geographic expanse of the joint venture, suitable habitat must be present throughout the distribution of the species in order to reach population objectives. A number of organizations have recently undertaken comprehensive planning efforts, and these documents will help target specific actions in suitable habitat for priority species. In Montana, for example, The Nature Conservancy has completed a conservation planning initiative for multiple sites within the Northern Mixed Grass system, and the U.S. Fish and Wildlife Service has identified important Conservation Focus Areas of the Great Divide. These plans will help field biologists identify threats, set priorities, and select appropriate habitat tools.

The PPJV has been a leader in applying the Grassland Bird Conservation Area model (Fitzgerald et al. 1998) to identify blocks of suitable habitat for species such as the Baird's Sparrow in the Missouri Coteau. More work is needed to identify and prioritize conservation areas for grassland birds further west in Montana, and in the Drift Prairie in North Dakota. While general approaches to grassland conservation for landbirds can be consistent across the JV, each of the primary grassland types will require a different emphasis to meet the need of priority species. In true Mixed Grass Prairie:

- Create and protect blocks (>250 acres) of appropriate habitat in a diverse matrix distributed throughout the joint venture;
- Protect existing blocks of native habitat from loss to cultivation;
- Restore highly erodible lands to grassland using appropriate grass and forb seed mixtures that mimic the structure and composition of unbroken native mixed-grass prairie;
- Manage grasslands to maintain required cover conditions for priority species (Baird's Sparrow, Sprague's Pipit, Chestnut-collared Longspur).
- Use scale-appropriate GBCAs in these areas to achieve conservation objectives, while supporting the continued refinement of these models through local data collection, monitoring, and adaptive management approaches; and
- Utilize incentive-based conservation tools to enhance landbird habitat and support long-term livestock production as an alternative to sod-busting.

Both on the Missouri Coteau and in the Drift Prairie, Fitzgerald et al. (1999) recommended GBCAs of 2000 acres of high quality grassland, in a matrix of non-hostile habitats that includes another 2500 acres or more of additional grassland types (e.g. CRP lands). The PPJV and North Dakota HAPET office have developed and continue to refine GBCA models for this region.

In the tall grass portion of the PPJV, restoration of grassland is nearly the only conservation option, since more than 95% of the native grassland has been lost to agricultural conversion and other uses. Clearly, the Greater Prairie Chicken should be focal species for conservation efforts in that portion of the JV, with Grasshopper Sparrow as a secondary focal species. Biological planning here includes lek-focused, population connectivity-driven models for Greater Prairie-Chicken. Fitzgerald et al. (1998) proposed GBCAs of 2000 acres grassland cores, preferably centered on leks, within a 10,000 acres matrix also containing 2000 additional suitable grassland acres. They also recommended a minimum of 2 GBCAs per 100,000-acre landscape unit. The Minnesota HAPET office continues to work to refine GBCA models for the eastern portion of the Prairie Potholes Region.



Region-wide GBCAs consist of a grassland core with a surrounding 1-mile wide matrix. Core areas are at least 95% grassland, at least 50 m from woody vegetation, and may contain up to 30% wetland habitat. GBCAs have been defined at 3 levels to address the needs of grassland



breeding birds with differing levels of requirements. Each type is differentiated on the basis of size, width, amount of grass in the landscape, and the types of wetlands considered compatible (e.g., temporary wetlands are considered compatible for all GBCA types because they are typically dry for much of the nesting season).

Short grass habitat conservation (for Lark Buntings and McCown's Longspurs in particular) opportunities might be somewhat limited in the JV, but the focus should be on those areas in the Dakotas where any remains, as that is where the most notable declines of these species have occurred. In these habitats, the use of fire and grazing to create a heterogeneous mixture of grassland conditions should meet the need of these species. The re-establishment and protection of prairie-dog colonies can also be a strategy for the conservation of McCown's Longspurs.

- Provide and protect large blocks (>250 acres) of short grass prairie in a diverse mosaic across the joint venture;
- Restore highly erodible lands to grassland habitat using appropriate grass and forb seed mixtures that mimic the structure and composition of native unbroken short grass prairie;
- Manage grasslands to maintain suitable cover conditions for priority species (e.g. grazing systems, fire);
- Support management of prairie-dog dominated ecosystems where appropriate;
- Control the spread of noxious weeds; and
- Utilize incentive-based conservation tools to enhance landbird habitat and support long-term livestock production as an alternative to sod-busting.

In all grassland areas, increase the percentage of locally-appropriate native grasses and forbs in acreages planted under the Conservation Reserve Program. Support continuation of the program as a way to engage and maintain a commitment to grassland conservation from private landowners.

## Riparian Woodland

Riparian woodlands are clearly valuable to a wide variety of birds and other taxa. Among the priority birds identified in the continental PIF plan, the Bell's Vireo, Red-headed Woodpecker, Swainson's Hawk, and Willow Flycatcher should drive the design and selection of projects for riparian landbirds. With objectives to double their populations, aggressive riparian conservation efforts will be needed to meet the needs of the woodpecker and vireo; objectives for Willow Flycatcher are to increase populations by 50% over 30 years. However, in the eastern portion of the joint venture riparian woodlands are clearly not as scarce as in the West, because of greater rainfall and the greater amount of woodlots and shelterbelts where the human population is higher. In MN and IA, the amount of riparian woodland has likely increased since settlement, and woody encroachment into grassland areas is a conservation issue.

Because trees can be viewed as a negative component in landscapes managed for grassland and wetland birds, the Joint Venture needs to work with partners to identify riparian woodland conservation areas that are appropriate at all scales. This is especially true in those portions of the JV where woody draws are also considered to be a conservation priority (e.g. eastern Montana). Riparian conservation efforts will need to combine protection of suitable habitat for these species with restoration and enhancement efforts where habitat is not currently suitable.

Livestock management through fencing may be the primary tool to manage for a healthy shrub layer for these species. Reducing or modifying irrigation water withdrawals from riparian systems may be another way to restore or enhance these habitats. Finally, water level manipulations and plantings will be needed in many cases to provide for recruitment of nesting strata for woodpeckers, hawks, and other canopy-strata species.

## Wetlands

The PPJV has a strong track record of developing tools and implementing action to protect complexes of wetlands and grasslands for waterfowl, shorebirds, waterbirds, and associated landbirds. There are just two Watch List landbirds in the prairie biome that are highly reliant on wetlands: the Nelson's Sharp-tailed Sparrow and the Rusty Blackbird. The latter is a migrant/wintering bird only, and there are no habitat elements for this species that might logically drive conservation design in the region, other than providing a diverse wetland component wherever possible. Sharp-tailed Sparrows, though, do prefer wet meadow/sedge habitats, and this wetland type should be incorporated into conservation design where possible. This species, the Sedge Wren, and the Le Conte's Sparrow (all identified as local priorities in PIF plans) may occur in the swales considered for wetland/stock tank creation, and we recommend that partners consider this and monitor for these species before final design when building prairie wetlands.

## Sagebrush Steppe

Some opportunity exists within the PPJV in Montana to help partners with sagebrush conservation. These habitats will not typically offer joint opportunities for wetland conservation, and only 3% or so of the continental population of Greater Sage-Grouse occurs in the BCR, so conservation of this habitat is not a priority for the joint venture. We should, however, work closely with the Northern Great Plains JV, where this species and its habitat are a conservation focal point, to identify partnership opportunities where the joint ventures adjoin each other.

## BCR 10 and the Montana Bird Conservation Partnership

The western portion of the PPJV overlaps BCR10 along the Rocky Mountain Front in Montana. The Montana Bird Conservation Partnership, formed in 2000 to facilitate the design and delivery of bird conservation across the entire state, recently completed a process to select and identify Bird Habitat Conservation Areas (BHCAs) in the BCR10 portion of Montana. This selection process differed from the modeling effort characteristic of the GBCA selection process in North Dakota, but resulted in the identification of 25 priority landscapes for integrated bird conservation, including two that are within PPJV portion of the BCR as it was defined in 2004. A brief description of these BHCAs, and the priority species and habitats they were selected to represent, follows. These grassland/wetland BHCAs were selected for priority species from each of the bird initiatives; some examples of waterfowl, shorebird and waterbirds in the BHCAs are included. It is assumed that the PPJV will support projects in these BHCAs, as local partners identified them as among the highest priority areas for bird conservation in western Montana for the next 10 years (Casey 2003). As part of the continued preparation of joint venture implementation plans for the state, the Northern Rockies BCR Coordinator of the American Bird Conservancy has calculated acreages of general habitat types by ownership within the BHCAs as

a starting point for BHCA objectives, to delineate priorities, partners, and opportunities. The Montana Bird Conservation Partnership will continue to refine baseline data and planning tools for these areas for use in project development.

#### Western Montana BHCA Summaries:

- **East Front Grassland:** At more than 2 million acres, this is the largest BHCA identified by the Montana partnership. It includes some of the largest intact areas of native prairie in the state, with 1,381,108 acres of grassland in the BHCA (Prairie Falcon, Upland Sandpiper, McCown's Longspur), and also includes >20,000 acres of wetlands (American Wigeon, American Avocet). The Nature Conservancy, Montana Land Reliance, and USFWS Partners for Fish and Wildlife Program are all working toward the conservation of private lands along the front, which comprise more than 1.4 million acres of this BHCA. The BHCA also includes >400,000 acres of tribal land (Blackfeet Reservation).
- **East Front Prairie Pothole:** North and west but contiguous with the above, this 680,267-acre BHCA includes more glaciated features, with profuse potholes in the area near Browning. There are at least 10,000 acres of wetlands (Trumpeter Swan, Black Tern) and >277,000 acres of grassland (Marbled Godwit, Ferruginous Hawk, Loggerhead Shrike) in the BHCA, which is mostly tribal (412,822 acres) and private (186,316 acres) land.

## Monitoring and Evaluation

Progress toward landbird objectives will be monitored in part through the Breeding Bird Survey (BBS), and through regional integrated monitoring strategies being developed through the 4 bird initiatives, and through specific monitoring and research projects designed to measure response by these species as conservation measures are implemented. The latter will be supported by the PPJV to the extent possible where a better understanding of how declining migratory birds respond to management actions is needed.

The USGS is currently working on a continental Coordinated Bird Monitoring (CBM) protocol standardization, which originated within the Western Working Group of Partners in Flight (Bart 2005). The CBM process is designed to provide centralization and standardization where possible across initiatives, with habitat- and site-specific elements designed in conjunction with local partners. In Montana, for example, the Montana Bird Conservation Partnership has been working on an integrated monitoring system built upon the successful Landbird Monitoring Program of Region 1 of the USFS, with added riparian, grassland, wetland, and habitat specialist elements. Demographic monitoring is still not a major element of this effort. There is still a need to apply demographic monitoring at a meaningful scale (project, local, regional) to assess the function of habitats targeted for conservation, and the effects of JV-supported projects on the reproductive performance of priority bird species. Adaptive management in the design, selection, and management of GBCAs will require such data.

## **Lead Partners**

Successful conservation of landbirds requires a wide array of government and non-governmental partners. In addition to the partners currently active in wetland and waterfowl conservation in the region, the following partners are among those who will play a leadership role:

Montana Bird Conservation Partnership  
State Wildlife Agencies (specifically through their Wildlife Action Plans)  
Western Working Group: Partners in Flight  
Audubon (National and states)  
American Bird Conservancy  
The Nature Conservancy  
Land Trusts  
Native American Tribes  
State Livestock and Stockgrower Associations

## **Timetable for Accomplishing Objectives**

All population (and therefore habitat) objectives driven by the continental PIF landbird plan are set for a 30-year horizon. This was determined based on the historic period of the Breeding Bird Survey, begun in 1966, from which all population size and trend estimates were derived. The objectives are to maintain populations, or to return (declining) populations to their late 1960s level. This was seen as an achievable and realistic target for most Watch List species (Rich et al. 2004). For stewardship species (e.g., Grasshopper Sparrow), the target population level is maintaining levels of the late 1990s, which is seen as a reasonable baseline for species that are stable, not as vulnerable, but still need a measurable objective.

The PPJV Technical Committee and its partners will continue to work with national and regional experts to provide and gather input to the process of meaningful step-down and accounting for progress toward continental objectives. This should include analysis of whether 30-year objectives are reasonable, and at what pace they can be achieved. Doubling a population over 30 years would require an annual increase of >2%, but steady rates of improvement might not be possible. At this point in time, it is not possible to determine with any certainty what appropriate shorter-term objectives should be.

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