PETITION TO LIST THE SPRAGUE'S PIPIT *(Anthus spragueii)* UNDER THE U.S. ENDANGERED SPECIES ACT

In the Office of Endangered Species
U.S. Fish and Wildlife Service
United States Department of Interior

Petitioner:
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WILDEARTH GUARDIANS
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EXECUTIVE SUMMARY

The Sprague's pipit[1] (*Anthus spragueii*) is a native grassland specialist and is one of only 12 birds endemic to the Great Plains grasslands. The bird breeds in the northern prairie regions of the United States and Canada and winters in parts of the U.S. southwest east to Louisiana and south through northern Mexico. Our petition demonstrates that this bird warrants Endangered Species Act (ESA) listing because of its dramatic population declines and the various historic and current threats it faces. Listing is warranted in part because a regulatory safety net at the state or local level does not exist to prevent the bird's extinction.

The Sprague's pipit has experienced a 79% population drop across its range. The population has been declining at an average rate of 4.1% since 1966, when the Breeding Bird Survey (BBS) began monitoring bird population trends.

Habitat destruction, fragmentation, and diminished habitat quality are the primary causes of the bird's imperilment. The pipit depends on large patches of open, native grassland. The Northern Plains have lost up to 99% of native grasslands in the Sprague's pipit's breeding grounds. Drainage of wetlands has resulted in a 50% loss of wetland and wet meadow habitat used by the pipit. In the bird's wintering range, habitat degradation by tree, shrub, and weed encroachment is a particular problem, along with permanent habitat loss to human uses of the land. Agricultural uses of lands within the pipit's range for crops and non-native livestock production have caused most habitat loss and decline. Fire suppression is another cause of habitat degradation. Climate change is and will continue to exacerbate all of these threats to pipit habitat and will also change natural fire cycles to the detriment of the bird.

The Sprague's pipit is particularly sensitive to anthropogenic disturbance. The birds avoid roads, for example. Increased oil and gas exploration and extraction have likely increased disturbances throughout the pipit's range and caused habitat losses as well. Pesticide applications and harassment techniques to prevent crop losses to birds, particularly blackbirds, in the pipit's migratory corridor may be a growing threat to safe stopover points needed during migration.

This petition describes these and other listing factors in more detail. WildEarth Guardians is certain that once the U.S. Fish and Wildlife Service (or "the Service") takes a hard look at the Sprague's pipit's steep population decline, low abundance numbers, and multiple severe threats to its existence, the agency must acknowledge the need for listing the bird as Threatened or Endangered. The Sprague's pipit clearly faces extinction throughout all or a significant portion of its range.

[1] The Sprague's pipit is alternatively described as "pipit" throughout this petition.

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INTRODUCTION

Many grassland birds are experiencing catastrophic declines owing to the cumulative effects of agricultural domination in the Great Plains. Knopf (1994: 296) described the magnitude of avian losses,

> During the last 25 years, grassland species have shown steeper, more consistent, and more geographically widespread declines than any other behavioral or ecological guild of North American birds, including Neotropical migrants.

Brennan and Kuvlesky (2005: 5) root the problem in "a critical mass of negative effects" from a combination of factors including drought, livestock grazing, woody plant encroachment, exotic species invasions, and road-building." They put much of the blame for the decline of grassland birds in the West on the loss of wild bison and historic grazing regimes of native grazers and subsequent shift to cattle ranching on the Great Plains. Based on their analysis of bird population trends as researchers with the BBS, Peterjohn and Sauer (1999: 807) proclaimed, "…the potential for species extinctions in grasslands is relatively high; for example, populations of grassland birds are declining more precipitously than other groups of North American bird species."

The Sprague's pipit is one of these birds at risk. Wells (2007: 296) described the Sprague's pipit as, "one of the fastest declining songbirds of North America." Partners in Flight and the Prairie Pothole Joint Venture consider the Sprague's pipit a prairie pothole focal stewardship[3] species for the grasslands (Casey 2005).

WildEarth Guardians requests that the U.S. Fish and Wildlife Service (FWS or Service) list the Sprague's pipit as Threatened or Endangered throughout the species' range in North America. Additionally, we request that the Service designate critical habitat for the species immediately upon listing. Throughout this petition, we use the best available scientific and commercial information available to support the species' listing.

ENDANGERED SPECIES ACT IMPLEMENTING REGULATIONS

Section 424 of the regulations implementing the Endangered Species Act (50 C.F.R. § 424) is applicable to this petition. Subsections that concern the formal listing of the Sprague's pipit as an Endangered or Threatened species are:

> 424.02 (d) "Critical habitat" means "(1) the specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection..."

[3] "Stewardship species are those species of continental importance with a high percentage (>75%) of their population (breeding or wintering) in this biome"

> 424.02 (e) "Endangered species" means a species that is in danger of extinction throughout all or a significant portion of its range."
>
> "Threatened species" means a species that "is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C § 1532(20)).
>
> 424.11(c) "A species shall be listed…because of any one or a combination of the following factors:
>
> 1. The present or threatened destruction, modification, or curtailment of habitat or range;
> 2. Overutilization for commercial, recreational, scientific, or educational purposes;
> 3. Disease or predation;
> 4. The inadequacy of existing regulatory mechanisms; and
> 5. Other natural or manmade factors affecting its continued existence."

Multiple factors set forth in 424.11(c) and in ESA Section 4 (16 U.S.C. § 1533(a)(1)) have resulted in the continued decline of the Sprague's pipit and are causing the species to face endangerment and extinction. While the Sprague's pipit meets at least four of the five criteria for listing, the primary factor threatening Sprague's pipits is the "present or threatened destruction, modification, or curtailment of habitat or range."

THE SPIRIT OF THE ENDANGERED SPECIES ACT

The purposes of the ESA are two-fold, to conserve threatened and endangered species *and* the ecosystems on which they depend. The Act's Section 2 reads:

> The purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species…

See 16 U.S.C.A. § 1531(b). This is set forth as the very purpose of the ESA and our petition therefore goes to the very heart of this visionary law, because protection for the Sprague's pipit could also provide protection for dwindling native grasslands in both the bird's breeding range in the Northern Plains and wintering range in the southwest and parts of Texas and Louisiana.

CLASSIFICATION AND NOMENCLATURE

Common Name

The common name for *Anthus spragueii* (Audubon 1844) is "Sprague's pipit."

Taxonomy

Sprague's pipits are passerines, or perching birds, within the family of *Motacillidae* that includes pipits and wagtails. The genus *Anthus* (Bechstein 1805) contains over 21 species. The species has no recognized subspecies.

Kingdom: *Animalia* -- animal
Phylum: *Chordata* -- chordates
Subphylum: *Vertebrata* -- vertebrates
Class: *Aves* -- birds
Order: *Passeriformes* -- perching birds
Family: *Motacillidae* -- pipits, wagtails
Genus: *Anthus* (Bechstein 1805) -- pipits
Species: *Anthus spragueii* (Audubon 1844) -- Sprague's Pipit

SPECIES DESCRIPTION

Physical Appearance

The Sprague's pipit's average size is between 10-15cm (4-6in) and weighs 22-26g (0.78-0.92oz) (Robbins and Dale 1999). The Sprague's pipit is plain and light brown with a pale face and darker brown to black stripes running across its crown, nape and back. The upper breast is streaked with dark and light shades of brown. It has white outer tail feathers, wing-bars, and eye-ring. The eyes are dark brown and legs pink or yellow. The bird's cryptic coloring makes it difficult to study.

Range

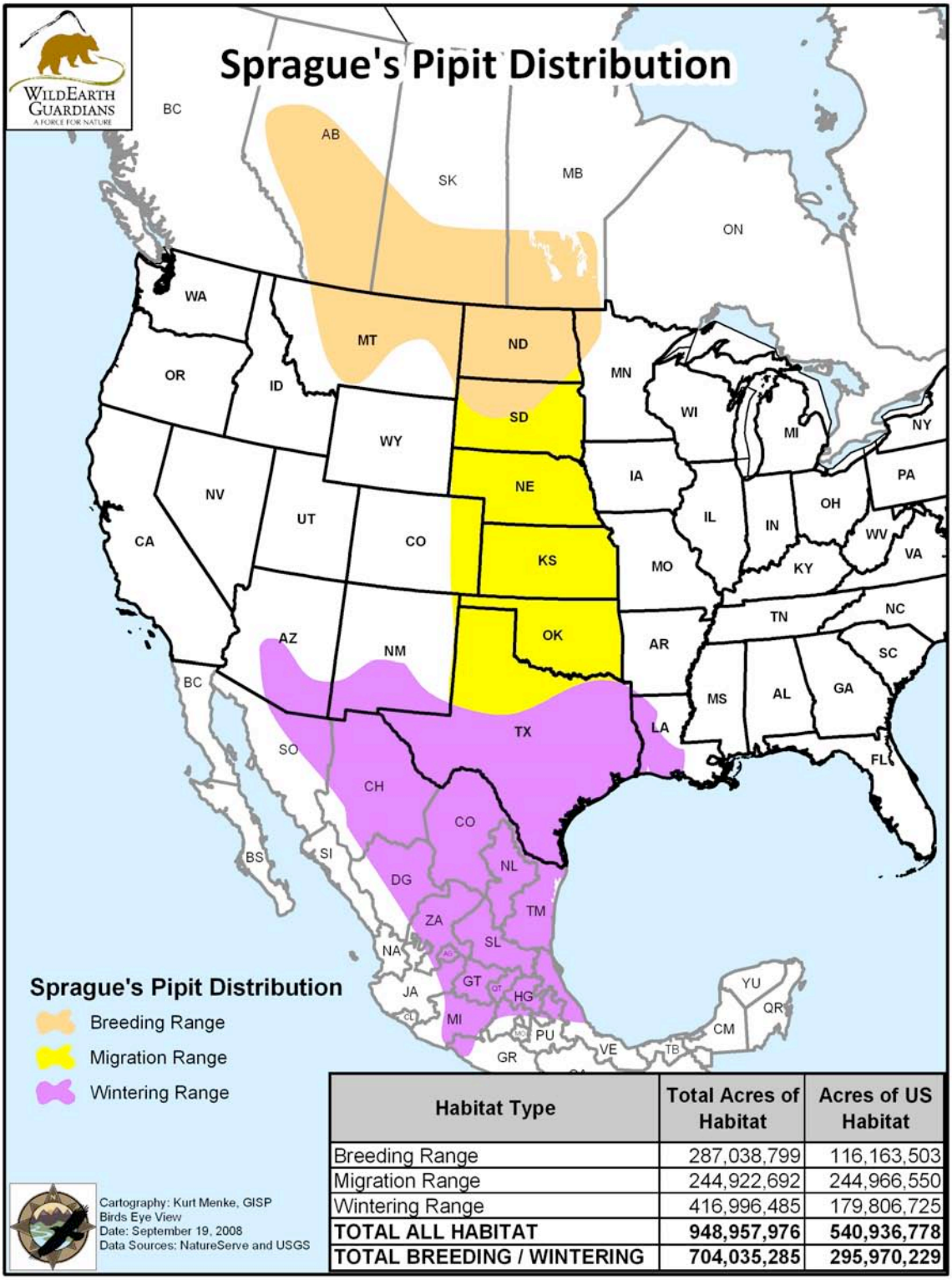
Sprague's pipits breed in the Northern Great Plains and winter within primarily inland areas of the southern U.S., but also some areas along the Gulf of Mexico coast, and down through the Chihuahuan Desert in Mexico. Breeding range includes parts of Minnesota, Montana, North Dakota, and South Dakota in the U.S. and southern regions of Alberta, Manitoba, and Saskatchewan in Canada (Stewart 1975; Godfrey 1986; South Dakota Ornithological Union 1991; Bergeron et al. 1992; Semenchuk 1992; Smith 1996; Peterson 1995).

See Figure 1: Sprague's Pipit Distribution map.

Migration

Sprague's pipits are short to medium distance migrants, endemic to North America. Migration normally starts in April from wintering to breeding areas. The birds arrive starting the third week in April to mid-May (Maher 1973; Stewart 1975). Pipits take off from their breeding habitat in late September to early November (Johnsgard 1980; Robbins and Easterla 1992; Thompson and Ely 1992). Migration routes include stopover points in the short- and mixed-grass regions of the Great Plains. Sprague's pipits can be rare fall migrant to California and the east coast of North America (Robbins and Dale 1999).

Figure 1



Habitat Type	Total Acres of Habitat	Acres of US Habitat
Breeding Range	287,038,799	116,163,503
Migration Range	244,922,692	244,966,550
Wintering Range	416,996,485	179,806,725
TOTAL ALL HABITAT	**948,957,976**	**540,936,778**
TOTAL BREEDING / WINTERING	**704,035,285**	**295,970,229**

Habitat

Sprague's pipits prefer native, open grasslands in both their breeding and wintering ranges. Their habitat comprises mixed grass prairies with vegetation of medium height and density with moderate litter thickness (Owens and Myres 1973; Stewart 1975; Dale 1983; Prescott and Wagner 1996; Madden 1996; Sutter 1996; Davis et al. 1996). Optimum vegetation is higher than 14cm and lower than 29cm (Dale 1983, 1990, 1992; Prescott et al. 1993; Prescott and Wagner 1996). They avoid areas with shrubs, even at low densities (Dale 1983; Madden 1996; Sutter 1996). Female pipits nest within short-grass and mixed grass prairie alkaline and wet meadows habitats among taller, denser vegetation stands and avoid locations with prickly pear cactus (Dieni and Jones 2003; Davis 2005).

Sprague's pipits have a strong preference for native grasses over exotic species such as smooth brome (*Bromus inermis*) and crested wheatgrass (*Agropyron cristatum*) (Dale 1990, 1992; Prescott et al. 1993; Prescott and Wagner 1996; Davis et al. 1996; Madden 1996). Some characteristic plant species that comprise Sprague's pipit habitat include: blue grama (*Bouteloua gracilis*), threadleaf sedge (*Carex filifolia*), junegrass (*Koeleria gracilis*) plains muhly (*Muhlenbergia cuspidata*), bluebunch wheatgrass (*Agropyron spicatum*), porcupinegrass (*Stipa spartea*), spreading needle grass (*Stipa richardsonii*), Rocky Mountain fescue (*Festuca saximontana*), northern wheatgrass (*Agropyron dasystachyum*), western wheatgrass (*Agropyron smithii*), green needle grass (*Stipa viridula*), slender wheatgrass (*Agropyron trachycaulum*), and Canby blue (*Poa canbyi*) (Dale 1983; Sutter 1996; Campbell et al. 1997).

Behavior

Sprague's pipits dwell and nest on the ground. They walk or run when foraging and to escape predators. Instead of flying, they run, hide, or stand still when disturbed. During migration and while wintering, they remain solitary but will flock up during the breeding season (Robbins and Dale 1999). Sprague's pipit males are renowned for their unique territorial displays. The displays are the longest of any bird species, lasting from 30 minutes to three hours. *Id*.

Feeding Habits

During the breeding season the Sprague's pipit diet consists primarily of arthropods, particularly grasshoppers (Harris 1933, Maher 1974). In the winter the birds will also incorporate some seeds.

Breeding and Nesting

Scientists believe Sprague's pipits are monogamous (Robbins and Dale 1999). However, only the female builds the nest and incubates the eggs (Sutter 1996).

Nest building generally begins in mid-May, and clutching can start from the second week of May through July (Maher 1973). Sprague's pipits nest in open grasslands where there are patches of tall vegetation, low forb densities, and very little bare ground (Sutter 1997). They situate their

nests at the base of dense grass clumps. Nests take the shape of a cup of woven grasses covered by a dome of long, loose grass (Harris 1933; Bent 1950; Sutter 1997).

Females lay an average of 4.5-4.8 eggs per clutch (Maher 1973; Sutter 1996; Davis 2003). She will flush only when an intruder is very close (Harris 1933). Incubation time averages 14 days, with chicks staying in the nest between 9-14 days (Harris 1933; Bent 1950; Maher 1973; Dickson and Dale 1999; Davis and Sealy 2000). Fledging occurs from around June 13 through the end of August (Maher 1973). Sprague's pipits have a low frequency of re-nesting and high rates of nest abandonment (Sutter et al. 1996).

Several studies have measured nesting success. A Saskatchewan study by Maher (1973) observed 33 nests and found predators claimed 58% of the eggs, and parents abandoned 18% of nests. In a study of 17 nests in Manitoba, 53% of young were lost to predation and 18% were lost to nest parasites (Davis and Sealy 2000). A study by Hammond et al. (1997) in Montana found 1 of 8 nests depredated at the nestling stage.

POPULATION DISTRIBUTION, ABUNDANCE, AND TRENDS

The Sprague's pipit has been declining rapidly since the late 1800s. Early naturalists noted the bird was common and wide-ranging when Europeans first began to settle the Great Plains (Coues 1874, 1878; Allen 1874; Audubon and Coues 1897).

Current Population Estimate

Most recent population estimates put the number of birds remaining at 870,000 as of 2004 (Robbins and Dale 1999; National Audubon Society 2001; Bird Studies Canada 2003; Chipley et al. 2003; Rich et al. 2004; Sauer et al. 2005; Wells 2007).

Population Trends

The best available science on Sprague's pipit population trend comes from the BBS (Sauer et al. 2005). The BBS noted the bird has experienced a 79% rangewide decline, with an annual statistically significant decline of 4.1% between 1966-2005. The steepest declines likely occurred during the late 19th and early 20th centuries (Smith 1996). NatureServe estimated a short term 10-30% rangewide decline. Partners in Flight and the Prairie Pothole Joint Venture believe conservation actions should be taken to double the pipit's population in the next 30 years (Casey 2005).

See Figures 2 & 3: Sprague's pipit population trends.

Figure 2: Sprague's Pipit BBS 2006 Population Trend Graph

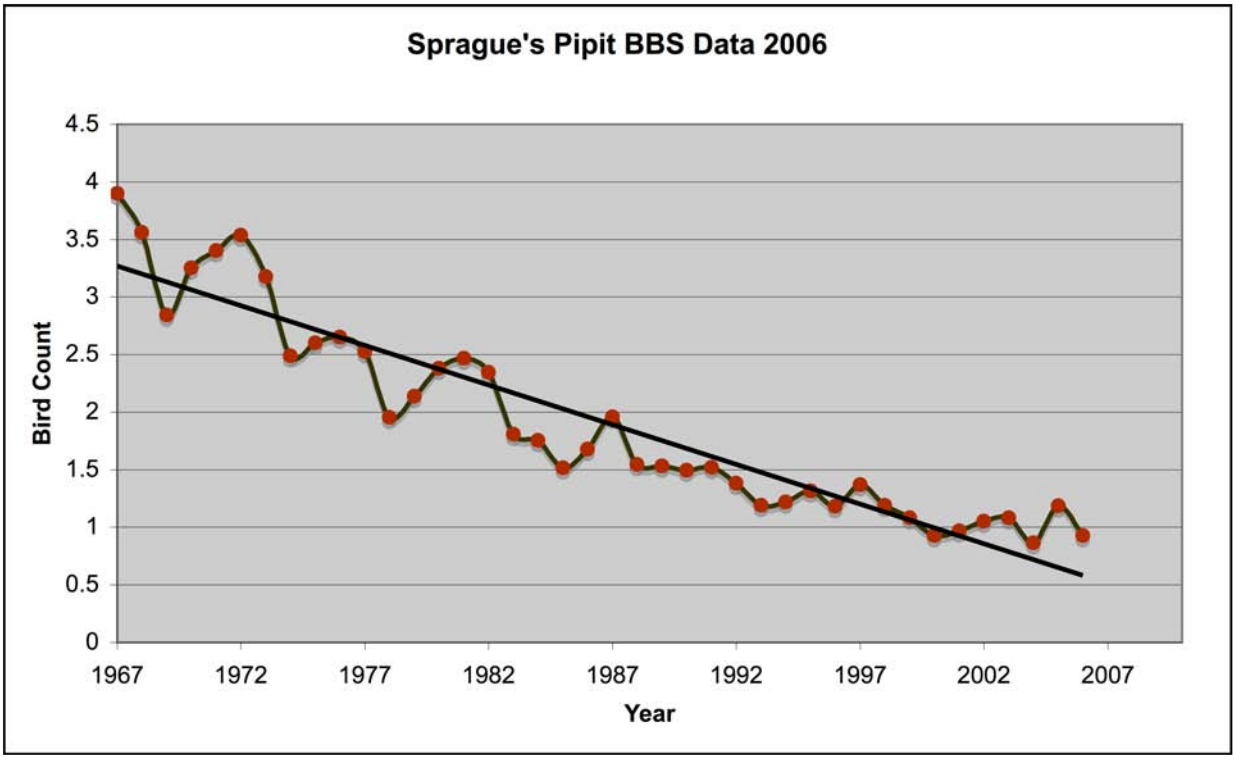


Figure 3: Sprague's Pipit BBS Trend Data

BBS Sprague's Pipit		1966-2005 trends						1966-1979			1980-2005		
Geog Unit	**Data Cred**	**Trend**	**P**	**N**	**95% CI**		**RA**	**Trend**	**P**	**N**	**Trend**	**P**	**N**
Alberta		**-5.6**	**0.01**	**54**	**-9.8**	**-1.5**	**4.75**	**-6.2**	**0.22**	**17**	**-3.0**	**0.14**	**51**
Manitoba		-7.4	0.08	14	-14.9	0.1	0.38	31.0	0.39	3	-14.0	0.07	13
Montana		-0.8	0.82	19	-7.3	5.8	0.68	5.1	0.80	4	-0.6	0.84	18
North Dakota		-1.7	0.70	23	-10.4	7.0	0.96	-7.0	0.09	7	-0.5	0.95	21
Saskatchewan		-3.8	0.06	44	-7.6	0.0	2.30	-5.8	0.34	17	-2.2	0.23	39
South Dakota		-12.7	0.36	3	-34.1	8.7	0.18	--	--	--	-3.5	0.75	2
Aspen Parklands		**-8.1**	**0.00**	**50**	**-13.1**	**3.2**	**0.44**	**-7.3**	**0.31**	**17**	**-4.2**	**0.13**	**45**
Drift Prairie		**-4.9**	**0.00**	**30**	**-5.9**	**-3.9**	**3.87**	**-9.4**	**0.04**	**9**	**-7.3**	**0.00**	**30**
Glaciated Missouri Plat		0.2	0.85	51	-2.1	2.5	4.44	4.2	0.54	15	1.8	0.30	47
Great Plains Roughlands		3.4	0.59	21	-8.7	15.4	0.35	-15.1	0.03	5	7.8	0.49	17
Dissected Rockies		-7.2	0.28	4	-18.0	3.6	0.88	-17.7	0.00	3	-7.4	0.07	4
Central BBS Region		-1.8	0.55	55	-7.7	4.1	0.61	-6.0	0.05	12	-2.0	0.64	50
Western BBS Region		**-4.9**	**0.00**	**102**	**-7.1**	**-2.6**	**3.08**	**-6.4**	**0.07**	**37**	**-2.7**	**0.03**	**94**
FWS Region 6		-2.2	0.39	45	-7.3	2.8	0.68	-7.4	0.04	12	-2.0	0.61	41
United States		-2.3	0.39	45	-7.3	2.8	0.68	-7.3	0.03	12	-2.0	0.62	41
Canada		**-4.8**	**0.00**	**112**	**-7.1**	**-2.5**	**2.96**	**-6.0**	**0.09**	**37**	**-2.8**	**0.03**	**103**
Survey-wide		**-4.1**	**0.00**	**157**	**-5.8**	**-2.4**	**1.84**	**-6.3**	**0.01**	**49**	**-2.8**	**0.04**	**144**

Text in violet means statistically significant decline

Regional Credibility Measures (Copied from BBS webpage)

Although the BBS provides a huge amount of information about regional population change for many species, there are a variety of possible problems with estimates of population change from BBS data. Small sample sizes, low relative abundances on survey routes, imprecise trends, and missing data all can compromise BBS results. Often, users do not take these problems into account when viewing BBS results, and use the results inappropriately. To provide some guidance to interpretation of BBS data, we have implemented a series of checks for some attributes that we view as cause for caution in interpretation of BBS results. We categorize BBS data in 3 credibility categories:

This category reflects data with an important deficiency. In particular:
1. The regional abundance is less than 0.1 birds/route (very low abundance),
2. The sample is based on less than 5 routes for the long term, or is based on less than 3 routes for either subinterval (very small samples), or
3. The results are so imprecise that a 5%/year change would not be detected over the long-term (very imprecise).

This category reflects data with a deficiency. In particular:
1. The regional abundance is less than 1.0 birds/route (low abundance),
2. The sample is based on less than 14 routes for the long term (small sample size),
3. The results are so imprecise that a 3%/year change would not be detected over the long-term (quite imprecise), or
4. The sub-interval trends are significantly different from each other (P less than 0.05, based on a z-test). This suggests inconsistency in trend over time).

This category reflects data with at least 14 samples in the long term, of moderate precision, and of moderate abundance on routes.

Note:

1. Even data falling in the category may not provide valid results. There are many factors that can influence the validity and use of the information, and any analysis of BBS data should carefully consider the possible problems with the data.
2. We are occasionally asked to identify which deficiency is causing the flag. However, the point of the codes is to provide a quick and simple set of cautions to users, and we are resisting the notion of setting up a complicated series of codes. To determine why the code exists, look at the results. All of these deficiencies (abundances, precisions, etc) will be evident from the results we present.

Population Distribution

Breeding Range Distribution

The species has experienced significant range contraction in Minnesota, Alberta, and Manitoba (Prescott and Davis 1998; Wells 2007). Sprague's pipits once inhabited central and northwestern Minnesota but are now perhaps only rare visitors, although they may be completely extirpated from the state; the most recent records of the species' occurrence in the state come from Clay County in 1975 (Green and Janssen 1975). The bird had gone from being abundant in 1882 to nonexistent by 1892 in areas of Manitoba (Thompson 1893). The pipit's current northern range limit in the province has moved south by several hundred kilometers from where Seton documented it as a summer resident in the late 1800s (Seton 1890; Prescott and Davis 1998).

In the breeding range over 75% of the birds can be found in the prairie pothole biome. There are an estimated 40,908 in North Dakota and 52,891 in Montana (Casey 2005).

Wells (2007: 296) listed important breeding areas for the pipit, including:

- Grasslands National Park (Saskatchewan)
- Govenlock-Nashlyn-Battle Creek Grasslands Important Bird Area (Saskatchewan)
- Canadian Forces Base Suffield National Wildlife Area (Alberta)
- Bowdoin National Wildlife Refuge (Montana)
- Medicine Lake National Wildlife Refuge (Montana)
- Lostwood National Wildlife Refuge (North Dakota)
- Upper Souris National Wildlife Refuge (North Dakota)
- Little Missouri National Grassland (North Dakota)

Wintering Range Distribution

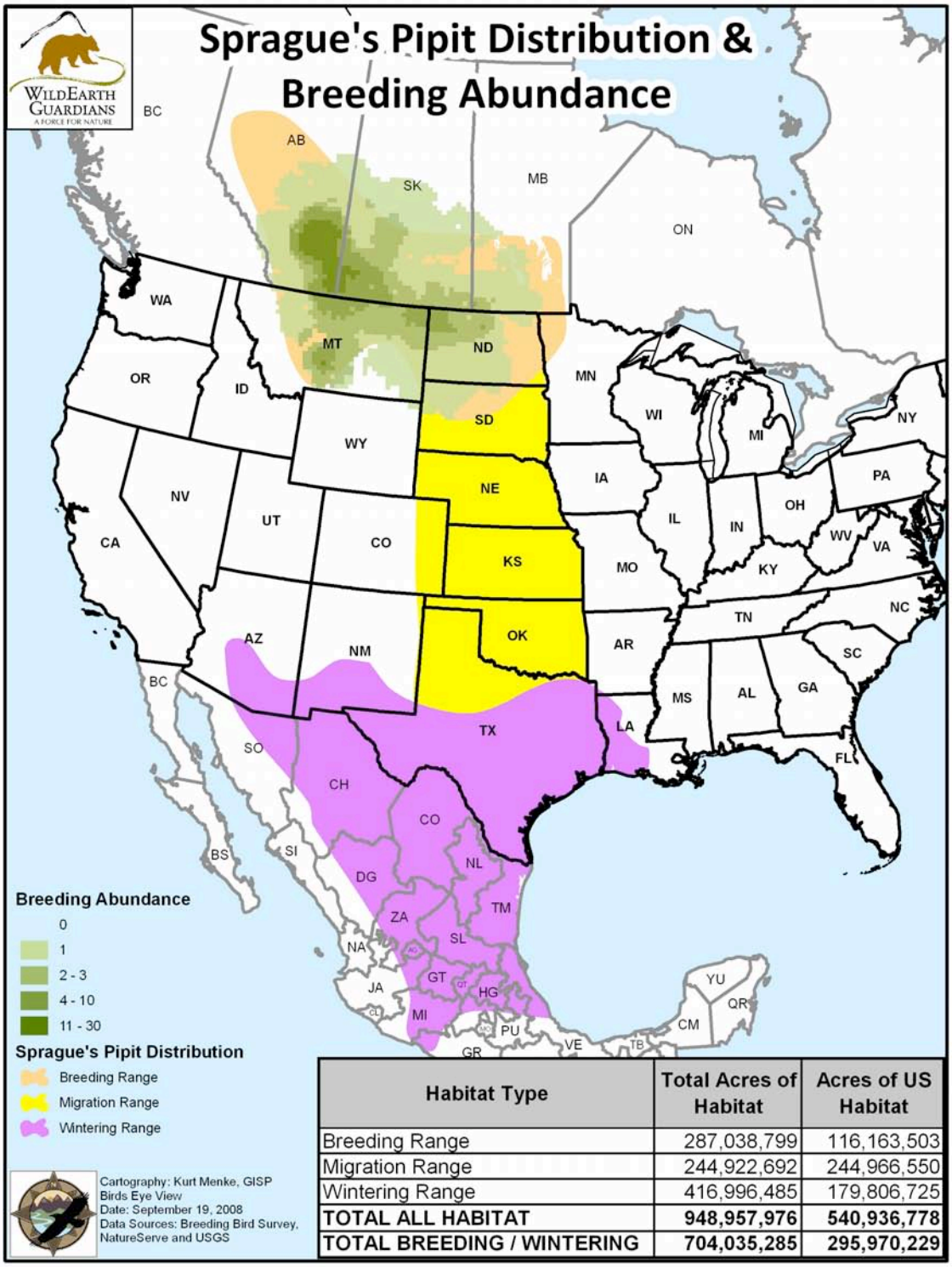
Wintering range includes parts of Alabama, southern Louisiana, northwestern Mississippi, southern Arkansas, most of Texas, southern New Mexico, and southern Arizona in the United States and down through northern Mexico and into Michoacán, Puebla, and Veracruz (Howell and Webb 1995; American Ornithological Union 1998). In the U.S., Sprague's pipit concentrations are highest in southeast Texas during winter (Root 1988).

Important wintering areas include (Wells 2007: 296):

- Attwater Prairie-Chicken National Wildlife Refuge (Texas)
- Anahuac National Wildlife Refuge (Texas)
- Mid-Coast National Wildlife Refuge Complex Important Bird Areas (Texas)
- Saltillo Grasslands Protected Area (Nuevo León, Mexico)
- Janos-Nuevos Casas Grandes Important Bird Area (Chihuahua, Mexico)

See Figure 4: Sprague's Pipit Breeding Abundance & Distribution Map.

Figure 4



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LISTING CRITERIA APPLICABLE TO THE CURRENT STATUS OF SPRAGUE'S PIPIT

1. The Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

Historically, habitat loss has been the most severe threat to Sprague's pipits and the primary cause of their dramatic population decline. The mixed-grass prairies of the Northern Plains—the Sprague's pipit's breeding grounds—have experienced a 72-99% loss of native grasslands (Samson and Knopf 1994; Grant et al. 2004). Additionally, the pipit has lost at least 50% of wetlands habitat due to drainage. Between 1985 and 2002, Montana, North Dakota, and South Dakota lost over 400,000 hectares of native prairie (Higgins et al. 2002). Saskatchewan, a pipit stronghold, retains only 20% of its native prairie lands (Hammermeister et al. 2001). Most of the Sprague's pipit's habitat loss can be attributed to plowing the prairie for crops beginning in the mid-late 1800s. Cropland conversion has slowed, but it remains a threat. More recent threats include livestock grazing; shrub, tree, and weed encroachment; oil and gas development; haying; and urbanization and suburbanization.

As discussed above, Sprague's pipits have a strong preference for native grassland habitat. Plowing up native prairie for cropland constitutes a total loss of habitat for the birds. They do not adapt well to habitat modifications and are particularly sensitive to weed, tree, and shrub encroachment. Sprague's pipits are selective regarding vegetation height, density, and species composition. For example, a North Dakota study by Madden (1996) found that pipits avoid areas with visual obstructions; when vegetation reached 80 cm, pipit densities decreased by 50% and a 95% decrease was observed with vegetation obstructions at 190 cm.

The loss and decrease of natural disturbance regimes, including fire, native ungulate grazing, and keystone rodent colonization, to Sprague's habitat in both the wintering and breeding range is resulting in the decrease of large patches of native grasses. Historic natural disturbances in the Great Plains created a diverse habitat mosaic that supported a range of avian species. In healthy, natural ecosystems, these disturbances renew vegetation, promote resilience, create habitat for wildlife, and maintain patterns of diversity.

Conversion of Native Prairie for Cropland

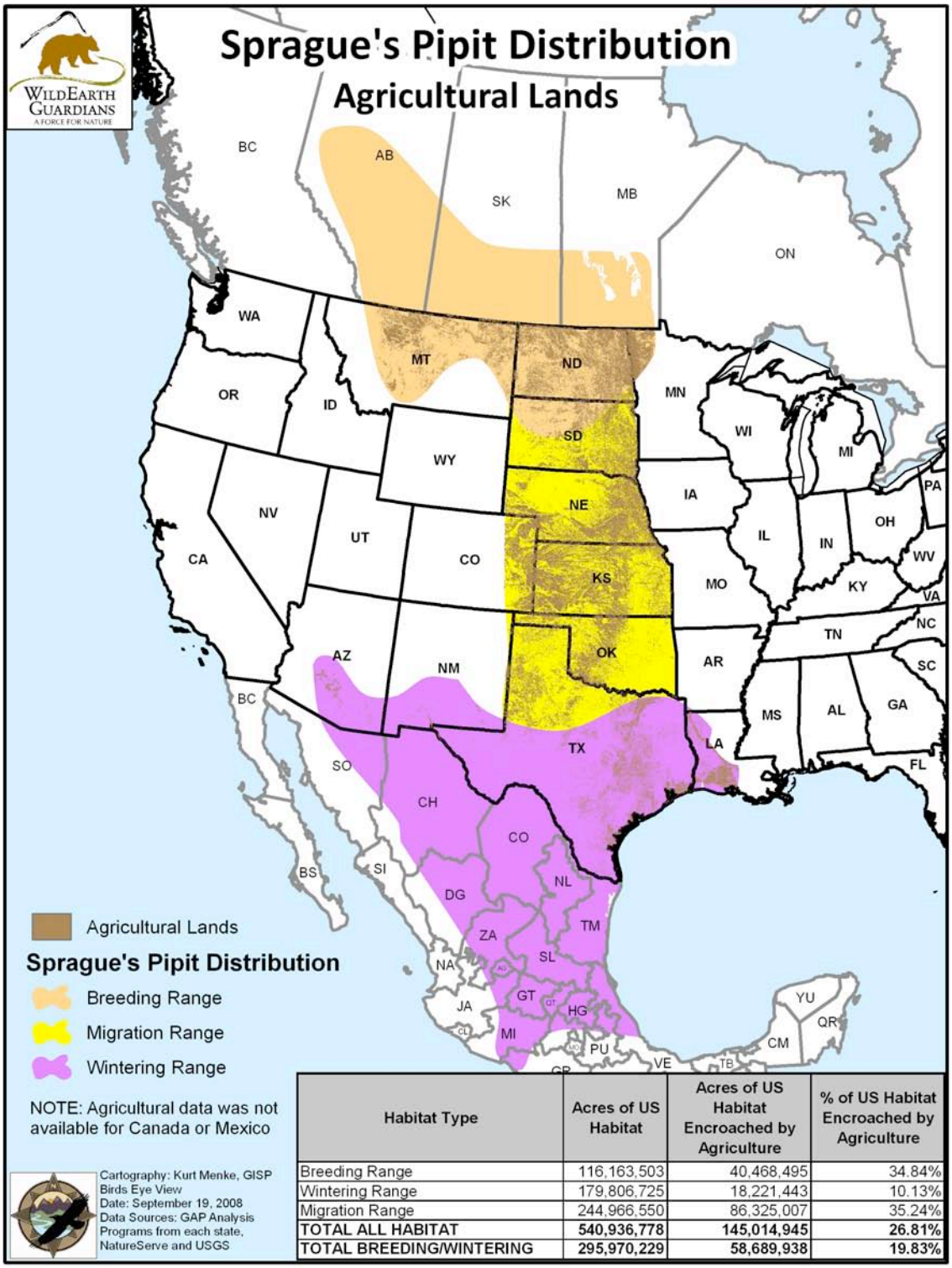
Scientists attribute most of the Sprague's pipit's habitat loss and population declines to historic and current conversion of native prairie grasslands to cropland (Stewart 1975; Prescott and Davis 1998). Finding a Sprague's pipit on cropland would be an extremely rare event (Owens and Myres 1973; DeSmet and Conrad 1991; Dale 1993; Hartley 1994; Prescott and Bilyk 1996).

See Figure 5: Sprague's Pipit Distribution – Agricultural Lands.

Introduction of Exotic Grasses

The introduction of non-native plant species from other continents has decreased Sprague's pipit densities (Wilson and Belchar 1989). Dale (1990; 1992; 1993) found singing males in native prairie were two to three times more abundant than on brome-dominated lands in Saskatchewan.

Figure 5



Habitat Type	Acres of US Habitat	Acres of US Habitat Encroached by Agriculture	% of US Habitat Encroached by Agriculture
Breeding Range	116,163,503	40,468,495	34.84%
Wintering Range	179,806,725	18,221,443	10.13%
Migration Range	244,966,550	86,325,007	35.24%
TOTAL ALL HABITAT	**540,936,778**	**145,014,945**	**26.81%**
TOTAL BREEDING/WINTERING	**295,970,229**	**58,689,938**	**19.83%**

Another Saskatchewan study by Davis et al. (1996) found twice as many singing males on native prairie than lands dominated by crested wheatgrass. Prescott and Wagner's (1996) study in Alberta found males four to 25 times more numerous on native vegetation than crested wheatgrass on one study site and non-existent on another wheatgrass site. Madden (1996) found that increases in Sprague's pipit densities were significantly correlated with the presence of native grasses.

Programs, such as the Conservation Reserve Program, the Dense Nesting cover for waterfowl, and similar program in Canada that use exotic plant mixes are detrimental to Sprague's pipits. Studies by Dale (1993), Hartley (1994), and Prescott and Murphy (1999) found few birds use lands in these programs.

See Figure 6: Sprague's Pipit Distribution – Conservation Reserve Program (CRP) Lands.

Haying

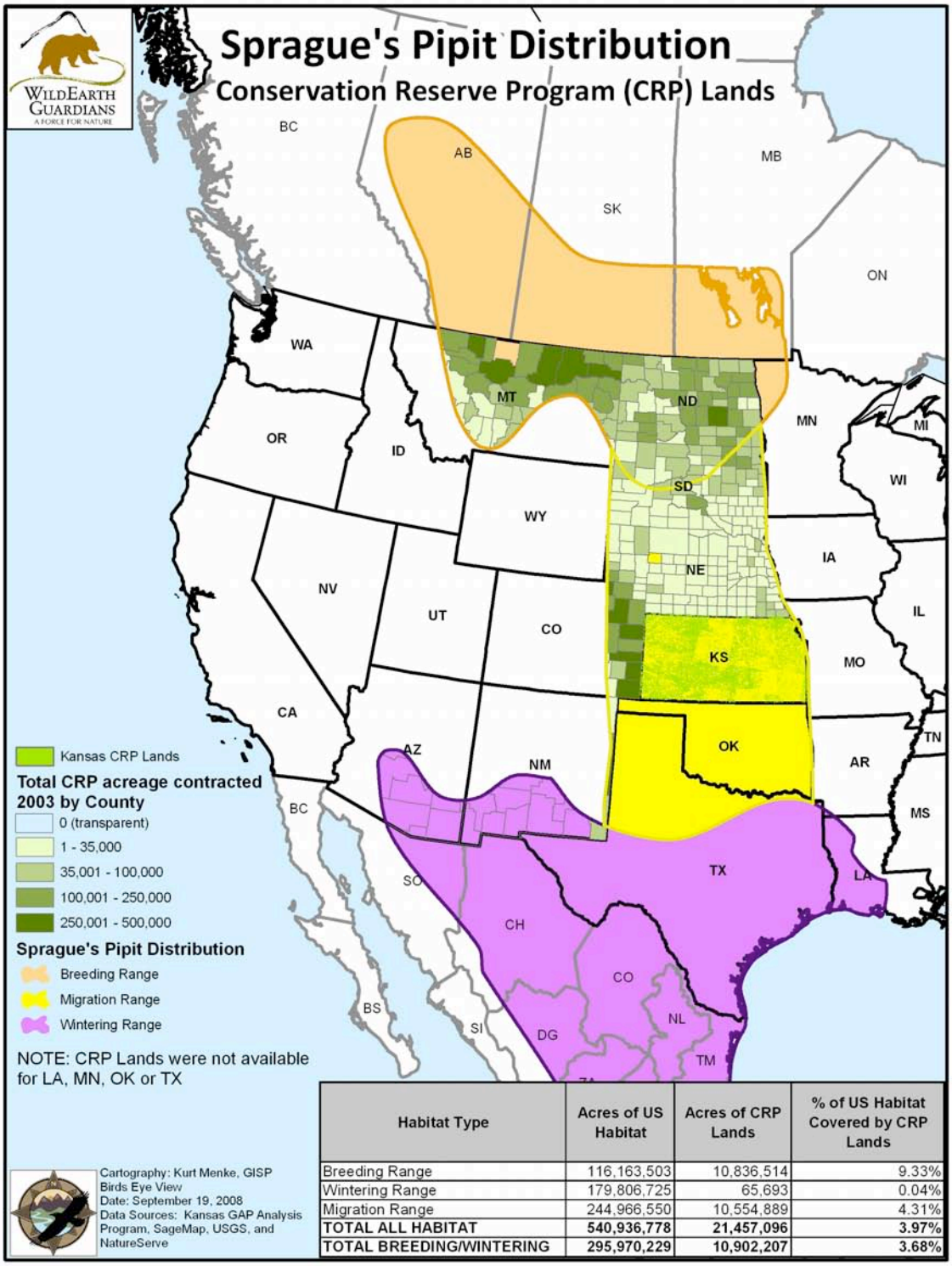
Sprague's pipits tend to avoid hayed field but prefer native over non-native when using hayed fields (Owens and Myres 1973; Kantrud 1981; DeSmet and Conrad 1991; Dale et al. 1997; McMaster and Devries 2005). Where haying is used to control vegetation, the timing of harvesting is critical to nest success. Cutting should be delayed until after the peak nesting period (Dale et al. 1997).

Grazing Regime Change: Replacement of Native Bison with Non-Native Livestock

Livestock grazing harms habitat and contributes to declining populations throughout the bird's range and has a dramatic negative effect in the arid wintering range (Owens and Myers 1973; Kantrud and Kologiski 1982; Renken and Dinsmore 1987; Schneider 1998; Robbins and Dale 1999). Several scientific studies have demonstrated that anything more than light grazing on breeding grounds decreases pipit abundance, although one study by Kantrud and Kologiski (1982) found moderate to heavy grazing in mesic mixed grass and tallgrass prairies characteristic of breeding range areas was tolerated by pipits. However, at least five studies from Saskatchewan and Alberta found less pipit abundance on grazed lands than on ungrazed (Maher 1973; Owens and Myres 1973; Karasiuk et al. 1977; Dale 1984; Anstey et al. 1995). Maher (1973) found twice as many pipit pairs on ungrazed areas than grazed areas, and Dale (1985) found an average of .20 pairs per hectare on grazed plots verses .85 on ungrazed. Anstey et al. (1995) found that Sprague's pipit numbers decrease significantly as grazing intensity increased. A study by Lueders et al. (2006) found that Sprague's pipits do use land grazed lightly by bison (*Bison bison*) in combination with fire.

Livestock grazing by non-native ungulates, such as cattle and sheep, causes vegetational changes not well-tolerated by the Sprague's pipit and reduces viable habitat on a range-wide scale (Brown 1982; Stotz et al. 1996). Impacts on the Sprague's pipit from livestock grazing in its wintering range include decreased forb and grass abundance, less litter cover, and more exposed soil (Muldavin et al. 2001).

Figure 6



Habitat Type	Acres of US Habitat	Acres of CRP Lands	% of US Habitat Covered by CRP Lands
Breeding Range	116,163,503	10,836,514	9.33%
Wintering Range	179,806,725	65,693	0.04%
Migration Range	244,966,550	10,554,889	4.31%
TOTAL ALL HABITAT	**540,936,778**	**21,457,096**	**3.97%**
TOTAL BREEDING/WINTERING	**295,970,229**	**10,902,207**	**3.68%**

The loss of American bison may represent the greatest ecological damage to the Great Plains. The bison of the plains is ecologically extinct. Before European settlers eradicated wild bison from the Great Plains in the 1800s, huge herds of bison moved around the open Plains to graze where they pleased, leaving some grassland areas ungrazed for years. Bison have made a comeback, but are primarily raised like cattle. Commercial ranching involves confining animals, building roads, suppressing fire, and altering hydrologic systems, resulting in lowering the water table and pushing the land beyond its carrying capacity (Saab et al. 1995; Brennan and Kuvlesky 2005).

Bison disturbance (grazing, trampling, and wallowing) no longer exerts control of native vegetation and species composition over large scales as it once did (Truett et al. 2001). Grazing by native species kept the natural vegetative composition in balance. Bison grazing no longer promotes the mosaic of vegetative structure that provided habitats for many other species. Bison carcasses no longer create rich patches of nutrients for vegetative growth (Freilich 2003).

Despite arguments to the contrary, domestic, non-native cattle are not a sufficient substitute for wild bison. Cattle differ from bison in significant ecological ways; they graze differently and have different water needs, for example. Bison and cattle diverge in the following ways that lead to cattle impacts on Sprague's pipit habitat:

- Bison spend little time in fragile riparian areas, while cattle degrade such areas by defecating and loitering in streams and destroying streambanks, which causes erosion and stream disappearance.
- Cattle dependence on water results in destroyed riparian areas, wholesale transformation of natural hydrological systems due to dams and other technological modifications, and groundwater pumping.
- Bison behavior creates a vegetation mosaic across the landscape. In particular, bison wallows provide a refuge for specialized prairie flora. Cattle grazing creates a more homogenized landscape.
- When free-roaming, bison don't return to grazed areas until the vegetation is rejuvenated, while cattle are more stationary.
- Cattle overgrazing has been linked with brush encroachment, while bison roaming and grazing patterns are a natural part of prairie ecology.
  (Callenbach 1996; Lott 2002; Freilich 2003).

As will be demonstrated in more detail below, the invasion of habitat by non-native vegetation is a major threat to Sprague's pipits. A 2006 study found that the replacement of native herbivores with non-natives in general, and bison with cattle in particular, exacerbates encroachment of weeds. The authors state:

> … plants are especially susceptible to novel, generalist herbivores that they have not been selected to resist. Thus, native herbivores provide biotic resistance to plant invasions, but the widespread replacement of native with exotic herbivores eliminates this ecosystem service, facilitates plant invasions, and triggers an invasional 'meltdown' (Parker et al. 2006: 1456).

The loss of ecological services that bison once provided has negatively affected grassland birds, including the Sprague's pipit. This is especially true in the pipit's breeding range. Large herds of bison are more rare in the pipit's Chihuahuan Desert wintering range. Though less destructive to Sprague's pipit habitat than farming, livestock grazing has also impeded the full recovery of native prairie habitat since the Dust Bowl.

Fire suppression

Fire was once a natural part of the prairie and desert ecosystems that host Sprague's pipits. As Europeans settled the Great Plains and American southwest, they increasingly extinguished fires created by the mix of lightning and dry vegetation. Every few years fires cleared out dead vegetation and burnt off woody shrubs and young trees, keeping grasslands open. Without fire, shrubs and trees were able to gain a foothold in many areas of once open grassland (Vogl 1974; Wright and Bailey 1982). Fire also controls the spread of some weeds.

Now land managers in some areas are trying to bring fire back to the land with periodic prescribed burns. While fire is important to maintain optimum Sprague's pipit habitat, studies indicate that the birds may not return to burned areas for up to seven years after a burn. In many burned areas the pipits returned one to three years after treatment (Maher 1973: Madden 1996). More importantly, Madden (1996) found that Sprague's pipits were absent from native prairie lands where burning had been missing for over eight years. Drier areas can go longer without fire and still maintain pipit abundance sometimes up to 15-32 years (Sutter 1996; Dale et al. 1997).

Oil and Gas Development

Oil and gas exploration and extraction is likely a severe threat to Sprague's pipit habitat. The imposition of infrastructure for oil and gas extraction facilitates the spread of weeds and establishes structures and roads that pipits avoid. Drilling for oil and gas has increased significantly in the past decade.

Migration routes may be disrupted, feeding and nesting sites may be isolated into parcels too small to use, and the general effect of widespread activity creates noise, emits pollutants, and generally disturbs animal behavior. Specifically, mineral extraction development causes habitat fragmentation that perpetuates and exacerbates degradation. According to a U.S. Forest Service technical report,

> The potential effects of petroleum development on wildlife in wildland environments are numerous and varied…The major wildlife groups affected… are ungulates, carnivores, water birds, upland birds and raptors (Bromley 1985: introductory page).

Possible environmental disruption includes, but is not limited to: noise pollution, human intrusion, alteration of vegetation and land and introduction of harmful substances. Habitat alteration, one of the greater threats to Sprague's pipit, is caused by seismic trail clearing, clearing and grading of right of ways, site development, excavation of storage and mud pits, borrow pit excavation, construction of process, treatment and storage facilities, installation of

flow lines, erection of power lines, communication systems development, trenching and pipe installation, pipe burial and backfill, effluent accidents and development of ancillary industry (i.e., boomtowns associated with labor forces) (Bromley 1985: 2). Bromley (1985: 8) states,

> Wildlife habitat alteration or destruction can be considerable due to the increased surface disturbance and vegetation clearing needed for (1) construction activities and (2) placement of permanent operational facilities, well sites, roads, worker accommodations, etc…. The presence of human-associated structures and facilities (buildings, roads, pipelines, transmission lines) will increase…. Effects from secondary activities may be greater in the long term than those from development itself…. It is possible that disrupted ecosystems may never be totally rehabilitated, as human settlement occurring during development and production may persist. Moreover, impacts will have been cumulative over many years during the life of the oil field.

The affected areas can range from several square feet to multiple acre plots, and road and pipeline construction, while only occupying narrow physical spaces, have farther-reaching adverse effects. Mineral developers often claim that their projects are actually relegated to a minimum acreage. For instance, developing one mineral deposit may only require a one to ten acre drill pad. However, what this use of statistics fails to acknowledge is that the vast network of access roads and pipelines impacts surrounding wildland through habitat fragmentation and edge effects. *Id*.

In reaction to other human activities such as aircraft disturbance, birds in Alaska had less nesting success and decreased production of young, abandoned nests, and lost more eggs. With the addition of on-the-ground disturbance by humans, impacts will likely be more severe. *Id*.

In addition to habitat fragmentation caused by human disturbance, the physical materials associated with mineral extraction can be harmful to raptors and other animals. For example, saltwater spills from various pipelines can be more harmful than oil spills and they are relatively unpublicized. *Id*.

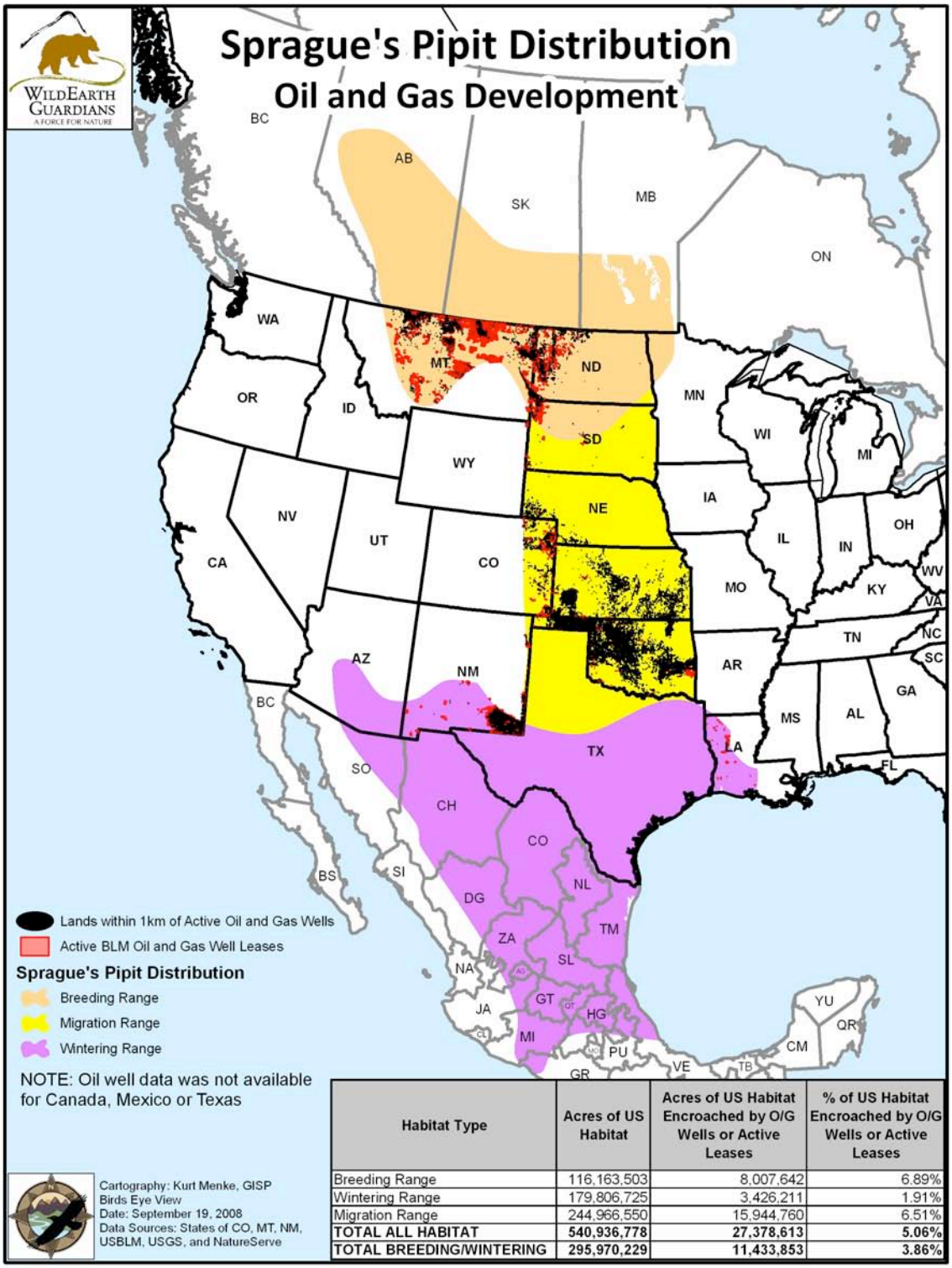
Oil and gas facilities can cause direct mortality as well. There are also reports from several state governments of avian deaths in extraction pits. These were caused when birds 1) were coated with oil from the pit and their flight was thereby impeded; 2) ingested toxic substances when drinking in the pits; and 3) drowned in the pits. *Id*. Avian species are also susceptible to moderate mortality rates from collisions with overhead power lines associated with increased oil and gas and other human activities. *Id*.

See Figure 7: Sprague's Pipit Distribution – Oil and Gas Development map.

Shrub, Tree, and Weed Encroachment

The loss of bison and natural fire has allowed woody shrubs, trees, and weeds to increase across Sprague's pipit habitat (Vogl 1974; Wright and Bailey 1982; Sims 1988; Campbell et al. 1994; West 1999). As stated above, the Sprague's pipit—an open grassland specialist, avoids areas

Figure 7



Habitat Type	Acres of US Habitat	Acres of US Habitat Encroached by O/G Wells or Active Leases	% of US Habitat Encroached by O/G Wells or Active Leases
Breeding Range	116,163,503	8,007,642	6.89%
Wintering Range	179,806,725	3,426,211	1.91%
Migration Range	244,966,550	15,944,760	6.51%
TOTAL ALL HABITAT	**540,936,778**	**27,378,613**	**5.06%**
TOTAL BREEDING/WINTERING	**295,970,229**	**11,433,853**	**3.86%**

with shrubs, trees, and weeds. The birds also avoid areas with dense litter that was decreased by fire and bison. Prior to European settlement, trees were largely limited to riparian and wetland areas.

Grant et al. (2004) found that the spread of woody plants and high litter densities decreased Sprague's pipit abundance in North Dakota. In the region of the study, near the J. Clark Salyer National Wildlife Refuge, the authors found that willow (*Salix spp.*) and aspen (*Populus tremuloides*), and other woody plants were encroaching on pipit habitat.

Encroachment of shrubs, trees, and weeds is a severe problem in the Sprague's pipit's winter range. An extensive body of literature documents fire suppression and/or livestock grazing's causation or facilitation of brush encroachment and consequent desertification of southwestern grasslands (Walker et al. 1981; Brown and Archer 1987; Bahre 1995; McPherson 1995; Le Houérou 1996; Weltzin et al. 1997; Frederickson et al. 1998; Valone and Kelt 1999; Kerley and Whitford 2000; Drewa and Havstad 2001; Pidgeon et al. 2001; Whitford et al. 2001).[4] In addition, livestock grazing causes brush encroachment through diminishing fine fuels and facilitating the spread of some noxious weeds, which disrupts southwestern fire ecology. U.S. southwestern desert grasslands were once characterized by frequent fires (every 7-10 years) that typically ignited in late June-early July, just prior to the summer rainy season from July-September (Drewa and Havstad 2001). With reduced fine fuels due to livestock grazing, fire's role in maintaining grasslands by reducing brush has consequently been compromised (Bahre 1991; 1995; McPherson 1995; Muldavin et al. 1998; Valone and Kelt 1999; Bock and Bock 2000; Drewa and Havstad 2001).

Roads

Pipits avoid roads (Sutter et al. 2000) perhaps due to increased predation risk or vehicle disturbance. Sutter et al. (2000: 114) stated, "Sprague's Pipits were 26% less abundant along roads, which closely matches the 20–30% loss of suitable habitat associated with a road right-of-way."

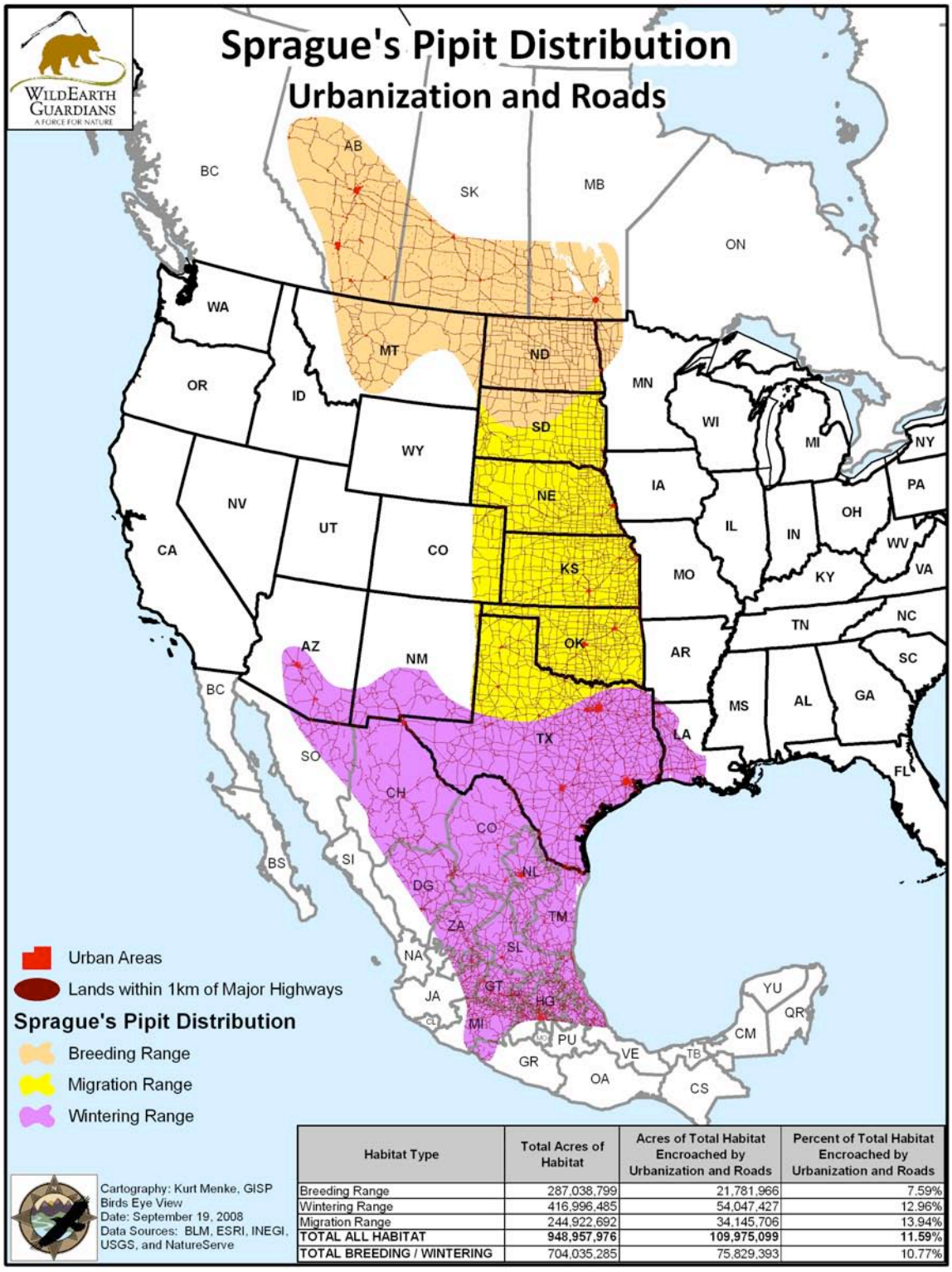
See Figure 8: Sprague's Pipit Distribution – Urbanization & Roads map.

Effects of Habitat Fragmentation

Habitat fragmentation compounds the problems of habitat destruction and modification for Sprague's pipits. As Davis (2004) described, Sprague's pipits are "area sensitive," which means the probability of their occurrence increases with increased suitable habitat patch size. The birds avoid habitat edges, sticking to interior areas of their habitat. This makes otherwise suitable native grassland areas unsuitable by virtue of being too close to unsuitable habitat. If native grassland patches are too small, pipits avoid them altogether. The threats above all cause

[4]Frederickson et al. (1998: 198) note the effects of Don Juan de Onate's expedition up the Camino Real in 1598. They write, "Along the trail cattle ate mesquite (*Prosopis glandulosa*) beans and left a trail of seed-filled dung. The Camino Real would later become readily visible from a distance, marked by dense stands of mesquite that lined the road." These authors similarly note the establishment of dense mesquite stands around old indigenous campsites, where people fed mesquite to their horses.

Figure 8



Habitat Type	Total Acres of Habitat	Acres of Total Habitat Encroached by Urbanization and Roads	Percent of Total Habitat Encroached by Urbanization and Roads
Breeding Range	287,038,799	21,781,966	7.59%
Wintering Range	416,996,485	54,047,427	12.96%
Migration Range	244,922,692	34,145,706	13.94%
TOTAL ALL HABITAT	**948,957,976**	**109,975,099**	**11.59%**
TOTAL BREEDING / WINTERING	704,035,285	75,829,393	10.77%

fragmentation of pipit habitat by limiting the large, uninterrupted native tracks of open grassland that the birds require.

A series of studies has investigated the effects of habitat fragmentation on Sprague's pipit abundance (Prescott and Davis 1998; Davis 2004; Davis et al. 2006). Davis et al. (2006: 807) stated, "Our results indicate that mixed-grass prairie parcels ≥18 ha play a role in the conservation of several grassland passerine species currently in decline, but the conservation of Sprague's Pipit likely depends on maintaining larger tracts of native prairie," and added, "Sprague's Pipit's affinity for native grassland, its steep population decline (Prescott and Davis 1998), and its area-sensitivity (Davis 2004, present study), underscore the urgency in conserving large tracts of native mixed-grass prairie" (p. 819). Davis (2004) found that pipits did not occur in areas with less than 29 hectares of suitable grassland habitat and may need at least 145 hectares. The study found that as the proportion of edge to core interior habitat increased, pipit abundance decreased.

A Summary of Habitat Destruction and Degradation

An estimate of the total acreage of Sprague's pipit habitat that has been destroyed or degraded by some of the threats discussed above is displayed in the map table on the next page. It is important to note that several significant portions of data are missing from this GIS analysis, including Texas oil and gas data.

See Figure 9: Sprague's Pipit Distribution – Major Habitat Encroachments map.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

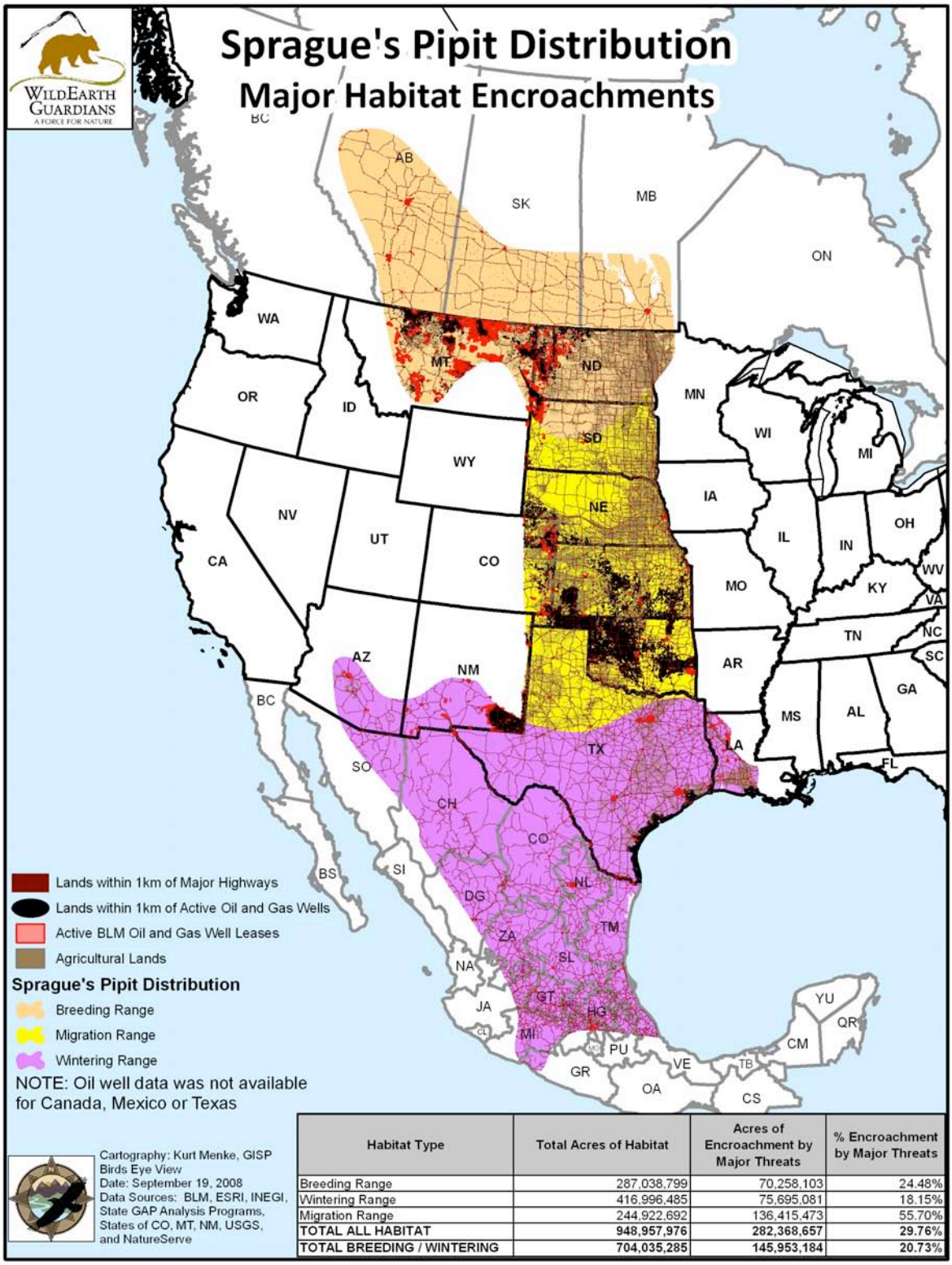
The overutilization of the species for commercial, scientific, or educational purposes does not appear to be a threat to the Sprague's pipit at this time. However, the U.S. Fish and Wildlife Service should explore this factor during its examination of this petition and other relevant data pertaining to the Sprague's pipit listing under the ESA.

C. Disease or Predation

Disease

Though disease is not known to be a significant threat to Sprague's pipits, climate change could facilitate the spread of avian diseases. For example, a report on the Desoto National Wildlife Refuge proposed that shrinking habitat combined with rising temperatures puts birds at risk to epizootics. The report stated, "As more birds are forced to share smaller feeding areas, avian botulism could bring about the extinction of Sprague's pipit and McCown's longspur, among other species" (Bluewater Network 2002: 192). Based on reviews of Centers for Disease Control and Prevention data and the scientific literature, bird diseases such as avian influenza and West Nile virus, do not appear to be major threats to the Sprague's pipit at this time. Potential impacts to the species of these and other diseases should be monitored.

Figure 9



Habitat Type	Total Acres of Habitat	Acres of Encroachment by Major Threats	% Encroachment by Major Threats
Breeding Range	287,038,799	70,258,103	24.48%
Wintering Range	416,996,485	75,695,081	18.15%
Migration Range	244,922,692	136,415,473	55.70%
TOTAL ALL HABITAT	**948,957,976**	**282,368,657**	**29.76%**
TOTAL BREEDING / WINTERING	**704,035,285**	**145,953,184**	**20.73%**

Predation

Predation and nest parasitism causes up to 70% of grassland bird nest failures (Davis 2003). Cornell's Birds of North America database estimates that predation to Sprague's pipits is similar to other ground-nesting/inhabiting birds (Robbins and Dale 1999).

Based on a 1996-2000 study in southern Saskatchewan, Davis (2003) observed a 24% nest success rate for the Sprague's pipit. Davis (2003) noted that Davis and Sealy (2000) found a lower success rate in Manitoba and Jones (unpublished data) found a higher rate in Montana. However, Davis (2004) indicated that 1997 may have been an outlier year due to a meadow vole (*Microtus pennsylvanicus*) irruption, citing Poulin et al. (2001). The voles may have increased pipit mortality by directly preying on nests or luring in more vole predators that also preyed on pipit nests. Removing 1997 from the analysis, Davis (2003) found that of 65 nests observed, 38.8% were successful while 55.4% were depredated.

A few studies have observed nest predation and parasitism in the Sprague's pipit. Though nest parasitism by cowbirds (*Molothrus ater*) is a significant problem for many grassland birds, Sprague's pipit nest parasitism rates may be lower than for other birds (Robbins and Dale 1999). However, it is a greater risk in areas with a high level of fragmentation (Maher 1973; Davis and Sealy 2000).

D. Inadequacy of Existing Regulatory Mechanisms

Currently regulatory mechanisms fail to provide the Sprague's pipit adequate protections for survival. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed the species as Threatened in 2000. In the United States, the bird receives some protection under the Migratory Bird Treaty Act (MBTA). The bird appears on several non-governmental and quasi-governmental organization watch lists. These types of rankings are significant because they often influence federal and state Endangered, Threatened, and Sensitive designations, and thus, species regulations and conservation management.

The various conservation designations provided to the Sprague's pipit give the perception that the U.S. states are offering protection to the bird, but this is merely perceptual. Aside from Canada and Minnesota listing the bird under endangered species statutes, the aggregate set of regulatory mechanisms does not provide prescriptive safeguards needed to protect the Sprague's pipit from extinction. Within the "crazy quilt" of fragmented information, plethora of bird conservation plans, conflicting status designations among and within institutions, actual conservation for the Sprague's pipit to prevent its extinction is likely to fall through the cracks.

Migratory Bird Treaty Act

Sprague's pipits are protected under the MBTA (50 C.F.R. § 10.13). The MBTA prohibits destruction of nests and protects feathers (16 U.S.C. § 703). However, the Act has no provisions to protect bird habitat or allow for citizen enforcement. The Act's original purpose was to protect birds from over-hunting. The Sprague's pipit is considered a non-game species throughout its range, and the MBTA therefore may have little practical effect in protecting this bird.

Science-based Rankings

International Union for the Conservation of Nature (IUCN) = Red List: Vulnerable

The Sprague's pipit appears on the IUCN Red List as a Vulnerable species, which means:

> A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable …, and it is therefore considered to be facing a **high risk of extinction** in the wild. (IUCN 2008)

NatureServe = Global Rank: G4

The FWS regards NatureServe as an authoritative source for conservation ranks for species in the U.S. NatureServe presents information developed by biologists in state and provincial natural heritage programs and conservation data centers and by staff of The Nature Conservancy and NatureServe. These programs rely on collaboration with, and contributions of data from, scientists at universities, conservation organizations, natural history museums, botanical gardens, and state and federal agencies (NatureServe 2007).

The conservation status of a species or community is designated by a number from 1 (Critically imperiled) to 5 (Demonstrably widespread, abundant, and secure), preceded by a letter reflecting the appropriate geographic scale of the assessment (G = Global, N = National, and S = Subnational).

We hereby incorporate all analysis, references, and documentation provided by NatureServe in its on-line database at: http://www.natureserve.org/explorer into this Petition by reference, including all data and analysis underlying its conservation status classification scheme.

Global Status: G4 – (last reviewed 1996)

Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

United States Status: N4B, N4N- (last reviewed 2000)

Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **Breeding**—Conservation status refers to the breeding population of the species in the nation or state/province.

Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.

U.S. States:

Alabama: SNA

Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Arizona: S2N
Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

Arkansas: SNA
Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Colorado: SNA
Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Georgia: S3
Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

Kansas: SNA
Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Louisiana: S3S4N
Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.

Minnesota: S1B
Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province. **Breeding**—Conservation status refers to the breeding population of the species in the nation or state/province.

Mississippi: SNA
Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Missouri: SNA
Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Montana: S2B
Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province. **Breeding**—Conservation status refers to the breeding population of the species in the nation or state/province.

Nebraska: SNRN
Unranked—Nation or state/province conservation status not yet assessed. **Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.

New Mexico: S2N
Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province. **Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.

North Dakota: S3
Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

Oklahoma: SNRN
Unranked—Nation or state/province conservation status not yet assessed. **Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.

South Dakota: S2B
Breeding—Conservation status refers to the breeding population of the species in the nation or state/province. **Imperiled**—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

Texas: S3N
Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation. **Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.

Wyoming: S4N
Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **Nonbreeding**—Conservation status refers to the

non-breeding population of the species in the nation or state/province.

Canada Status: N4B, N4N- (last reviewed 2000)

Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **Breeding**—Conservation status refers to the breeding population of the species in the nation or state/province. **Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.

Canadian Provinces:

Alberta: S4

Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

Manitoba: S2B

Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

Saskatchewan: S4B

Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **Breeding**—Conservation status refers to the breeding population of the species in the nation or state/province.

NatureServe rankings do not provide any regulatory or policy mechanisms to protect the species *Anthus spragueii*. We believe some NatureServe Sprague's pipit rankings need to be updated. The system ranks the Sprague's pipit as Apparently Secure in the United States. However, NatureServe ranks the species as Vulnerable, Imperiled, or Critically Imperiled for each state within the breeding and wintering ranges. The species ranking in Wyoming is Apparently Secure, but NatureServe ranks no other states within the migratory range. This should be reexamined. NatureServe ranks the bird Vulnerable in Georgia. Except for Louisiana, Sprague's pipits are known to be only rare visitors or accidentals in southern states that are east of the Mississippi River. The FWS should consider all of the information presented in this petition alongside NatureServe, IUCN, and other non-profit rankings.

Audubon = 2007 Watch List: Yellow

A yellow ranking on the Audubon bird Watch List means the species is: "either declining or rare. These typically are species of national conservation concern" (Audubon 2007).

Partners in Flight = Watch list: Yellow, Management Action

Partners in Flight designated the Sprague's pipit Yellow on its watch list (2004) but also a 1 (a species of conservation concern at the global scale), a species In Need of Management Action, and 1 for Stewardship (a high priority candidate for rapid status assessment). (Rich et al. 2004).

United States Government Agency Designations and Regulations

Fish and Wildlife Service = Bird of Conservation Concern, Bird of Management Concern

Though this designation indicates the imperilment of the Sprague's pipit, the designation, Bird of Management Concern, provides no prescriptive safeguards for the bird. According to the FWS, birds of management concern include, "a subset of the species protected b the Migratory Bird Treaty Act that pose special management challenges due to a variety of factors" (FWS 2005: 1). Birds of Management Concern meet at least one of five criteria:

> 1) high conservation need,
> 2) representative of a broader group of species sharing the same or similar conservation needs,
> 3) high level of current Program effort,
> 4) potential to stimulate partnerships, and
> 5) high likelihood that factors affecting status can realistically be addressed. (FWS 2005: 1)

The FWS has a confusing array of reports and other documents pertaining to migratory bird management and conservation. In its report, *A Blueprint for the Future of Migratory Birds: Migratory Bird Program Strategic Plan 2004-2014*, the FWS laid out a set of priorities and management objectives (FWS undated). Some of these included objectives for bird population monitoring, coordination among state and non-governmental agencies, research, and habitat protection. The plan is comprehensive. However, meeting objectives, particularly habitat protection objectives, requires action on the part of the states and other federal agencies. The Service has no control over these actions without the force of the ESA. The FWS only has authority to manage Sprague's pipit habitat on its set of small wildlife refuges within the bird's breeding, wintering, and migratory ranges. Moreover, given the Service's miniscule budget for protecting Endangered and Threatened species, it is difficult to conceive that sufficient funds exist to accomplish the lower tier goals in the migratory bird blueprint.

Forest Service = Region 2: Sensitive, Region 1: Sensitive in North Dakota and South Dakota

The Sprague's pipit range falls across five Forest Service Regions: Region 1, the Northern Region; Region 2, the Rocky Mountain Region; Region 3, the Southwestern Region; Region 8, the Southern Region; and Region 9, the Eastern Region. The pipit is designated as a Sensitive Species in only two of the five regions, the Rocky Mountain and Northern Region (USFS 2005; USFS 2008). However, in the Northern Region, it is only designated as Sensitive in North Dakota and South Dakota but not Montana, and North Dakota's designation is being revisited (USFS 2005).

This status requires that the species be considered in biological and environmental evaluations but does not require any protection or mitigation for populations or habitat.

U.S. State Government Designations and Regulations

We included information for states within only the current breeding and wintering ranges of the species.

Arizona = Species of Greatest Conservation Need

This is not a statutory or regulatory designation.

Louisiana = no regulatory or statutory designation

Louisiana protects only species listed under the federal ESA under its own endangered species statute. Louisiana has no other management status designation for the Sprague's pipit.

Minnesota = Endangered

The State of Minnesota lists the Sprague's pipit as Endangered under the state's Endangered Species Statute (Minnesota Statutes, Section 84.0895). Minnesota's definition of Endangered follows the federal ESA: "a species is considered endangered if the species is threatened with extinction throughout all or a significant portion of its range within Minnesota." Under that statute, Minnesota's Department of Natural Resources is charged with developing rules and regulations that govern the treatment of listed species, which are codified in Minnesota Rules, Parts 6212.1800 to 6212.2300. Under the regulations, a person "may not take, import, transport, or sell any portion of an endangered or threatened species." The Department also has the authority to issue permits for take at its discretion. Despite a designation with some prescriptive teeth, the Sprague's pipit may be extinct in Minnesota and, at best, a rare visitor to the state.

Montana = Species of Concern

This is not a statutory or regulatory designation.

New Mexico = Species of Greatest Conservation Need, Vulnerable

This is not a statutory or regulatory designation.

North Dakota = Level I Species in Greatest Need of Conservation

This is not a statutory or regulatory designation.

South Dakota = Level III

According to the South Dakota All Bird Conservation Plan Level III species are,

> Species with a moderate conservation priority but have low abundance scores in South Dakota or South Dakota is on the periphery of the species' range, species unique to some habitats (Black Hills) in South Dakota which may not be

> declining nationally but are considered important to the biodiversity in the state, and wintering species. (Bakker 2005: 14).

This is not a statutory or regulatory designation.

Texas = no regulatory or statutory designation

Our research found no other management status designation for the Sprague's pipit in Texas.

5. Other Natural or Man-Made Factors Affecting the Species' Continued Existence

Several other natural and man-made factors affect the Sprague's pipit's continued existence. They include, but are not necessarily limited to, drought, climate change, and bird harassment and eradication measures to protect croplands.

Drought

Pipits are sensitive to drought in both their breeding and wintering ranges. Less vegetative cover and lower vegetation heights harms the birds, which avoid bare ground and sparse plant cover. During the 1988 drought, Sprague's pipits could not be found in areas of western North Dakota (George et al. 1992). Only one pipit was observed in Chihuahua, Mexico in 1996 at the end of a drought that lasted five years (Robbins and Dale 1999).

Climate Change

Climate change poses a fundamental challenge for species survival in coming years and decades. During the past century, global surface temperatures have increased by 1.1°F, but this trend has dramatically increased to a rate approaching 3.6°F/century during the past 25 years, the fastest rate of warming in the past 1000 years (IPCC 2001). Temperatures during the latter period of warming have increased at a rate comparable to the rates of warming that conservative projections predict will occur during the next century with continued increases of greenhouse gases. As climate change progresses, maximum high and minimum low temperatures are expected to increase, as are the magnitude and duration of regional droughts (IPCC 2001).

Climate change is likely to first affect Sprague's pipits in their wintering range, particularly in the desert grasslands of Arizona, New Mexico, and Mexico. Climate change may be negatively impacting the species already. Climate change impacts in the southwest included extended droughts, which may facilitate shrub encroachment. Drought and climate change has been implicated as influencing shrub encroachment into grasslands (Buffington and Herbel 1965; Van Devender 1995). "The likely synergistic impacts of climate change and land-use change on endemic species have been widely confirmed" (Fischlin et al. 2007: 241). During the past 45 years the Southwest has been drier and had more droughts than any other region in the United States (NSC 2000). The Environmental Protection Agency estimates average temperature in New Mexico could rise about 4 degrees Fahrenheit by 2100 (NWF 2007).

These changes may pose threats to native species, including:

- rates of climate change may exceed the migration capabilities of species,
- losses of existing habitat will occur during vegetation shifts,
- reductions in habitat patch size support fewer species, and,
- in semi-arid landscapes, the quality and quantity of aquatic, riparian, and mesic upland ecosystems decline with decreased water availability.

Schneider and Root (2002: 29) specifically identified the Sprague's pipit as a species particularly vulnerable to extinction from the effects of climate change:

> The anticipated changes in plant ranges will probably have dramatic effects on animals, both on the large biogeographic scale and on the local scale. The ranges of many animals are strongly linked to vegetation. For example, red-cockaded woodpeckers are endemic to mature longleaf pine and pine-oak forests (Mengel and Jackson 1977) and the winter range of the Sprague's pipit is coincident with bluestem, a grass (Root 1988a). Consequently, the ranges of various animals that rely on specific vegetation will change as the ranges of these plants shift, assuming that some other factor is not limiting these animals. If the climate changes more rapidly than the dispersal rates of the plants, it could result is extensive plant die-offs in the south or downslope before individuals can disperse and become established in the north and upslope. Thus the ranges of animals relying on these plants could become compressed, and in some instances, both the plants and the animals could become extinct.

Allen and Breshears (1998) also predicted that climate change would cause unprecedented rates of vegetation shifts due to die off, especially along boundaries of semi-arid ecosystems. The entire Sprague's pipit range is within semi-arid and arid ecosystems. The IPCC (2001) predicts the upward elevation and latitudinal migration of individual species' distributions. Many species respond to warming by shifting their ranges to the north or to higher elevations (Field et al. 2007: 622). However, this adaptation is not possible for all species. For some species, human development and other habitat changes have cut off natural migration routes, while others will become extinct if they cannot find suitable habitat (NSC 2000). This would likely be the case for the Sprague's pipit, which now exists in habitat that has been increasingly fragmented due to habitat degradation.

Climate change will constrict the already very contracted pipit range. The decrease in water availability (IPCC 2001) as climate change continues to take hold will further remove and diminished wetlands and wet meadows needed by the species. Climate change is decreasing productivity and cover of herbaceous vegetation and increasing soil erosion (Davenport et al. 1998, Wilcox et al. 2003). Sprague's pipits require stands of tall structure grasses for nesting and avoid areas with bare ground. Climate change will continue to increase fire activity (McKenzie et al. 2004). Though Sprague's pipits evolved with fire, and fire suppression continues to be a threat to pipit habitat, increasing fire frequency that exceeds historic fire regimes will be detrimental. Sprague's pipits may wait to reoccupied fire treated areas for up to seven years.

Climate change will present a significant challenge and threat to the long-term survival of the Sprague's pipit. Global warming can only make this bird's current range more unsuitable as temperatures increase and conditions shift further away from those amenable to development of the plains grassland biotic community.

Eradication and Harassment of Birds in Croplands

Sprague's pipits use sunflower fields in the Great Plains as stop-over points during their fall migration (Hagy et al. 2007). In areas where little prairie exists, birds are attracted by the seeds and use the fields to hide from predators *Id*. Other plants within sunflower fields may be important to migrating birds, though they are considered weeds by farmers. In fact, migrating birds likely use sunflower croplands more than any other agricultural land cover because of their multiple benefits.

Farmers use hazing techniques in attempt to keep blackbirds away from sunflower crops. Producers and researchers, with the help of the government, have used airplanes, guns, propane cannons, and other devices to frighten birds (Linz et al. 1992, 2003). They have tried to manage roost habitat to lure birds away from croplands *Id*. Hagy et al. (2007: 69) state,

> Ironically, 82 million Americans fed wild birds using at least $1 billion in bird seed in 1985. Today, estimates have been as high as $10 billion in bird seed purchases, a major constituent of which is oilseed sunflower (O'Brien et al. 2001). Thus, sunflower producers and researchers are faced with the dilemma of keeping bird food away from birds.

Any efforts to prevent migrating birds, including Sprague's pipits, from using the needed stopover sunflower fields detrimentally affect the birds. Being forced to relocate from selected sunflower sights depletes precious energy needed to complete migration. The birds need to fly more, are prevented from resting, and lose intermittent food sources. Hagy et al. (2007: 69) add,

> Harassing migratory birds increases grain wasting and may have negative effects on the birds themselves (Gustad 1979). Reduced hazing and other repulsion methods could save farmers time and money while improving sunflower habitat quality for migratory birds.

Harassment techniques are not the only methods used to keep birds away from sunflower fields. The U.S. Government Wildlife Services branch applies grain bait poison to sunflower fields in order to kill birds. The program targets blackbirds. But, non-target species, likely Sprague's pipits, are also victims.

In 2007, Wildlife Services issued an Environmental Assessment that include some information about pesticide use and harassment techniques used in North and South Dakota to prevent bird use of sunflower fields. Since at least 1993, Wildlife Services has used DRC-1339 poisoned grain bait program to benefit the sunflower industry. The program has caused the deaths of millions of blackbirds and unknown numbers of non-target species. Wildlife Services poisons species directly when birds ingest tainted grain.

The Wildlife Services pesticides program is likely to continue because farmers are resistant to using non-lethal methods. As part of its technical assistance program in 2007, Wildlife Services loaned 279 propane cannons and distributed 16,000 pyrotechnics to 158 individuals in 2007 for dispersing birds from crop areas (Wildlife Services 2007). Agency biologists have suggested that sunflower growers have "rejected" non-lethal techniques to protect their sunflower crops "because of poor efficacy, negative cost-benefit ratios, and difficult logistics" (Linz et al. 2002). The Agency conceded that, "despite extensive research, the efficacy of most non-lethal techniques remains unproven or inconsistent" (USDA-APHIS-WS 2006).

REQUESTED DESIGNATION

WildEarth Guardians hereby petitions the U.S. Fish and Wildlife Service under the Department of Interior to list the full species, the Sprague's pipit (*Anthus spragueii*), as an Endangered or Threatened species pursuant to the Endangered Species Act. This listing action is warranted, given the declines in distribution, drastic declines in abundance, and multiple range-wide threats to the species and its habitat. Adequate regulatory mechanisms do not exist to protect this species from further population declines.

CRITICAL HABITAT

Habitat degradation and loss is a leading threat to the Petitioned species. This petition therefore requests that critical habitat be designated for *Anthus spragueii* concurrent with ESA listing.

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