

Sage Sparrow

Amphispiza belli



Photo by Jacque Lowery

Conservation Profile

Priority Status	Conservation Target
Reasons for Priority Status	Declines Threats High Stewardship Responsibility
Other Rankings	Continental PIF: Stewardship Species Audubon Watchlist: Yellow Natural Heritage: G5, S4B, S4N USFWS: Bird of Conservation Concern (Great Basin), Migratory Bird BLM: None NDOW: Conservation Priority
Trends	Historical: Substantial declines [i1] Recent: Stable [i1] or declining moderately [p8]
Population Size and Stewardship %	Nevada (NBC): 2,920,000 Nevada (PIF): 1,824,000 Global (PIF): 3,900,000 Stewardship %: At least 40%
Population Objective	TBD
Monitoring Coverage	Source: Nevada Bird Count Coverage and Adequacy: Excellent
Key Conservation Areas	TBD

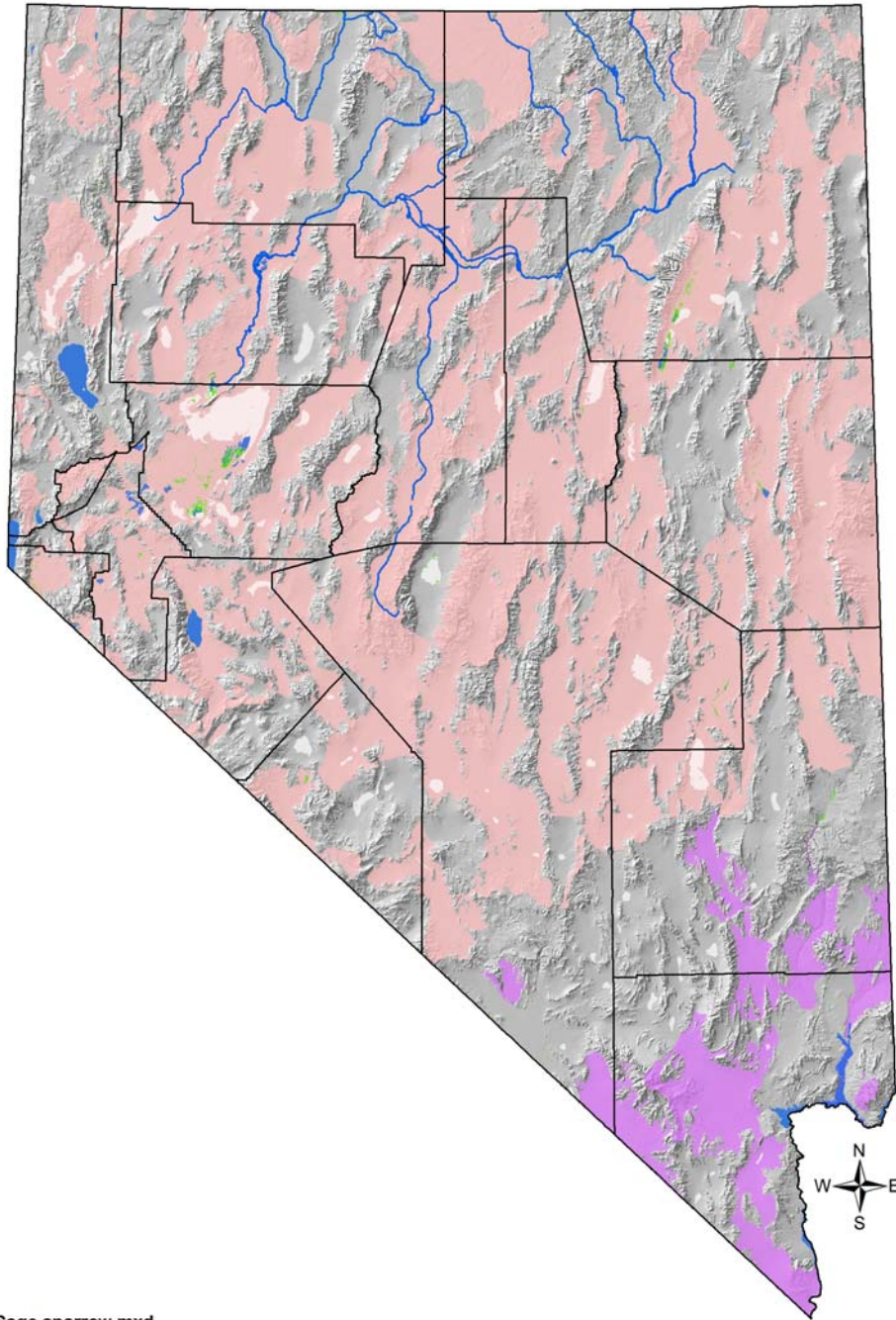
Habitat Use Profile

Main Habitats Used in Nevada	Sagebrush Salt Desert Mojave Scrub for wintering [p1]
Key Habitat Use Parameters	Often associated with Big Sagebrush, but other shrublands also regularly used [p1] Prefers shrub height 1 – 2 m in height [p1] Bare ground preferred over grass cover between shrubs [p3] No known affinity for nearby water sources [p1, s] Tend to abandon sites that lose sagebrush cover, sites with substantial cheatgrass component [p1]
Minimum Patch Size	Typical breeding territory size 0.65 – 5.81 ha [p1]

Natural History Profile

Seasonal Presence in Nevada	Spring – summer in north; year-round in south
Known Breeding Dates in Nevada	Early April – early August [s4]
Nesting Habits	Nest usually placed in shrub taller / denser than surrounding shrubs Nest height usually < 1 m above ground May nest in bunchgrass or on ground beneath good cover [p1] High fidelity to nesting territories [p1]
Food Requirements	Ground forager; wide variety of small insects and plant matter [p1]

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File: Sage sparrow.mxd

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OVERVIEW

The Sage Sparrow presents a somewhat curious situation in which one of our most numerous birds also elicits a great deal of conservation concern because of its declining trend. Nevada has among the highest known breeding densities for the Sage Sparrow, and consequently also has significant stewardship responsibility for this species. Although highest densities are observed in Sagebrush habitat, this species also breeds in Salt Desert, especially where it contains a substantial greasewood component. Maintaining large patches of intact sagebrush habitat is the key conservation strategy for this bird.

ABUNDANCE AND OCCUPANCY BY HABITAT TYPE

- NBC data

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	Primary Habitat Type Present at Transect	No. Transects with Sightings	Nevada Bird Count Sightings per 40 ha			
			average	95% confidence interval**	% transects occupied	
Great Basin	Aspen	n/a	n/a	n/a	0.6 (1/18)	
	Coniferous Forest	2	4.3	-5.6 - 14.2	0.11 (2/19)	
	Joshua Tree	1	10.2	n/a	1.0 (1/1)	
	Lowland Riparian	2	6.4	-26.0 - 38.7	0.08 (5/66)	
	Montane Riparian	9	2.5	0.8 - 4.2	0.15 (13/88)	
	Montane Sagebrush	4	8.1	-4.1 - 20.3	0.36 (4/11)	
	Montane Shrub	4	2.5	-0.4 - 5.4	0.33 (3/9)	
	Mountain Mahogany	1	1.3	n/a	0.11 (1/9)	
	Pinyon-Juniper	5	2.8	-1.5 - 7.1	0.15 (9/61)	
	Sagebrush	33	15.5	11.2 - 19.9	0.76 (25/33)	
	Salt Desert	17	8.0	5.2 - 10.9	0.7 (16/23)	
	Wetland	5	6.5	-0.3 - 13.2	0.33 (10/30)	
	Mojave	Mesquite-Catclaw	2	11.8	-57.0 - 80.5	0.14 (2/14)
Mojave Scrub		1	3.8	n/a	0.05 (1/22)	
Montane Riparian		1	1.6	n/a	0.22 (2/9)	
Sagebrush		n/a	n/a	n/a	0.46 (12/26)	
Pinyon-Juniper		1	26.7	n/a	0.17 (2/12)	
Salt Desert		1	0.4	n/a	0.2 (2/10)	

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NEVADA-SPECIFIC STUDIES AND ANALYSES

- Habitat Requirements (NBC data)

- Multivariate p-values:

Vegetation layer	# Surveys	Sage Sparrow
Upland Shrub Cover	1069	0.003 (+)
Herbaceous Cover	1069	<0.001 (-)
Tree Density (#/ha)	1039	<0.001 (-)
AUC (area under ROC curve)		0.850

- Sage Sparrows were strongly associated with greater shrub cover and the absence of trees. They were negatively associated with herbaceous cover, and shrub height was not a strong predictor
 - Proximity to water did not increase the likelihood of Sage Sparrow detection [s].

- Landscape Associations (NBC data)

- *P-values of univariate relationships for Sage Sparrow density with proportions of GIS habitat types in the landscape (under both linear and logistic regression)*

Veg Type (Proportion)	Coef	Statewide (linear)	State (logit)	Controlled for Sage and Salt
Mojave Scrub	-	0.019	0.001(16)	+0.607
Mesquite-Catclaw	-	0.321	0.168	
Salt Desert	+	0.000 (19.9)	0.000 (24)	
Sagebrush	+	0.000 (97.7)	0.000 (87)	
Pinyon-Juniper	-	0.005	0.004	-0.827
Mt. Mahogany	-	0.059	0.046	+0.616
Montane Sage+Shrub	-	0.031	0.208	
Montane Sage	-	0.049	0.286	+0.388
Montane Shrub	-	0.157	0.222	
Montane Ripar+Aspen	-	0.001(10.4)	0.002(15)	
MontaneRiparian			.029	+0.603
Aspen			.007	
Coniferous Forest	-	0.063	.043	+0.714
Lowland Riparian	-	0.003	.001	-0.051
Wetland	-	0.199	.401	0.948
Agricultural	-	0.098	.073	-0.486
Exotics(2181-2183)	+	0.770	.016	+0.045
Cheatgrass			+.694	-0.439
Crested Wheatgrass				+0.168
Invasive Forbs				+0.012
DISTANCE TO WATER	+	0.056	.208	+0.088

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- Sage Sparrow is clearly associated with lowland sagebrush, and secondarily with Salt Desert
- Sage Sparrows do not require proximity to water
- Although the density table (see above) suggests some association with Montane Shrubland, this analysis makes clear that Sage Sparrows only occur on Montane Shrubland transects when they contain or adjoin a large amount of lowland sagebrush habitat.
- The pattern of results obtained in this analysis suggest that Sage Sparrows tend to be “edge avoiders” that prefer large patches of suitable, unfragmented shrubland.
- The apparent association with exotic vegetation is probably spurious, related to lag times between survey dates and the subsequent effects of fire on some survey locations.

Other

- Data suggest that vegetation structure (shrub height, shrub density, and patch size) are more important to Sage Sparrows than plant species composition [i6]
- Data on preference for regularly-spaced versus clumped shrub distribution is ambiguous [p1, p3]

MAIN THREATS AND CHALLENGES

Because this bird prefers relatively large expanses of intact sagebrush or other shrubland (> 130 ha; [p9]), Sage Sparrows can be negatively affected by many factors that fragment their habitat or alter its basic structure, including:

- Fire
- Cheatgrass invasion
- Heavy livestock use
- Expansion of Pinyon-Juniper woodland into shrubland
- Heavy OHV use

Additionally, Sage Sparrows may attempt to nest unsuccessfully in degraded habitat because of persistent fidelity to breeding territories [p1, p8]

CONSERVATION STRATEGIES

Habitat Strategies

- General Sagebrush and Salt Desert conservation strategies, with special attention to the items below
- Prevent or reduce conifer invasion into large stands of high-quality sagebrush (especially Wyoming big sagebrush)
- Control activities, such as heavy livestock grazing and heavy OHV use, that promote cheatgrass establishment

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- Minimize impacts or activities that would fragment larger, high-quality sagebrush stands
- Conserve soil integrity within Salt Desert shrub communities (especially those containing greasewood) by managing OHV use

Research, Planning, and Monitoring

- Identify and map large, contiguous, mature stands of sagebrush (especially Wyoming big sagebrush) that contain tall shrubs, low grass cover, and little cheatgrass
- Ensure that these stands are given high priority for fire suppression efforts

OTHER PRIORITY SPECIES WITH SIMILAR CONSERVATION STRATEGIES

- Sage Thrasher
- Brewer's Sparrow

FURTHER READING

- Rotenberry and Wiens 1980
- Wiens and Rotenberry 1981
- Wiens et al. 1985
- REVIEWERS

Temporary Map Key

Pink: Breeding range

Hot pink / magenta: For some birds, breeding data was limited, and was supplemented by extrapolation to include likely breeding range. In these cases, hot pink represents known breeding range, and lighter pink the extrapolated breeding range.

Blue: Winter range

Yellow: Important migration stopover areas

Purple: Year-round range

Green: In some maps, wetlands mapped by SWReGAP are shown in green for interpretational purposes

Dot symbols: In cases where breeding records were isolated or very restricted in extent, they are represented by a pink dot symbol rather than a shaded area.

Arrows: Major migration routes. These are shown only for birds for which there are migration-associated conservation issues.

Temporary codes for standard references

[p1] Birds of N. America account for this species

[p2] NV Bird Conservation Plan ver. 1 (Neel 1999)

[p3] NV Wildlife Action Plan

[p4] Nevada Breeding Bird Atlas

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[p5] PIF N. American Landbird Conservation Plan (Rich et al 2004) (NOTE:
[p6] Intermountain West Regional Shorebird Plan (Oring et al 2003)
[p7] Pacific Flyway reports
[p8] Shrubsteppe Landscapes in Jeopardy (Dobkin and Sauder 2004)
[p9] Birds in a Sagebrush Sea (Paige and Ritter 1999)
[s1] NBC-based population size estimates
[s2, s3] NBC-based habitat relationship analysis
[s4] Breeding Bird Atlas breeding phenology data
[i1] BBS trends analysis (Sauer et al 2005)
[i2] NV Upland Game Management Plan (Espinosa et al in prep.)
[i3] Western Quail Management Plan (Zornes et al 2008)
[i4] NDOW Shorebird and Waterbird monitoring data (Neel)
[i5] Brad Andres IMJV Shorebird / Waterbird data set
[i6] GBBO Technical Report 08-01 (2008)
[EO] Expert opinion from NVPIF group members
[IWWCP] Intermountain West Waterbird Conservation Plan
[NAWCP] North American Waterbird Conservation Plan
[LBCUSACP] Long-billed Curlew Status Assessment and Conservation Plan
[USSCP] U.S. Shorebird Conservation Plan
[WHSRN] Western Hemispheric Shorebird Regional Network