



Sagebrush Sparrow, photo by ©Robert Shantz

### Conservation Profile

Species Concerns	
Unsustainable Livestock Grazing Invasive Plants Climate Change	
Conservation Status Lists	
USFWS <sup>1</sup>	No
AZGFD <sup>2</sup>	Tier 1C
DoD <sup>3</sup>	Yes
BLM <sup>4</sup>	No
PIF Watch List <sup>5b</sup>	No
PIF Regional Concern <sup>5a</sup>	Regional Concern BCR 16
Migratory Bird Treaty Act	
Covered	
PIF Breeding Population Size Estimates <sup>6</sup>	
Arizona	69,000 ●
Global	5,400,000 ●
Percent in Arizona	1.27%
PIF Population Goal <sup>5b</sup>	
Maintain	
Trends in Arizona	
Historical (pre-BBS)	Unknown
BBS <sup>7</sup> (1968 – 2013)	+1.89/year ●
PIF Urgency/Half-life (years) <sup>5b</sup>	
Insufficient Data	
Monitoring Coverage in Arizona	
BBS <sup>7</sup>	Not adequate
AZ CBM	Not covered
Associated Breeding Birds	
Sage Thrasher, Northern Mockingbird, Brewer's Sparrow, Lark Sparrow, Black-throated Sparrow, Western Meadowlark	

### Breeding Habitat Use Profile

Habitats Used in Arizona	
Primary: Cold-Temperate Desertscrub Secondary: None	
Key Habitat Parameters	
Plant Composition	Sagebrush, saltbushes, greasewood, and other xeric shrubs
Plant Density and Size	Variable shrub density with shrub height up to 3 – 7 feet; typically low grass/forb cover <sup>8</sup> Nest sites are selected where shrubs are clumped; shrubs with at least 75% live material are preferred
Microhabitat Features	Sagebrush or salt desert shrubland with little or no cheatgrass invasion <sup>8</sup> ; nearby surface water may be important; area requirements unknown but thought to be area-sensitive
Landscape	
Elevation Range in Arizona	
5,000 --- 7,000 feet <sup>9</sup>	
Density Estimate	
Territory Size: 2 – 12 acres Density: 15 – 40 birds/100 acres	

### Natural History Profile

Seasonal Distribution in Arizona	
Breeding	April – July <sup>9</sup>
Migration	February – March; August – October
Winter	September – March
Nest and Nesting Habits	
Type of Nest	Cup <sup>8</sup>
Nest Substrate	Within or under dense shrubs <sup>8</sup>
Nest Height	Within 2 – 3 feet of ground <sup>9</sup>
Food Habits	
Diet/Food	Insects, plant material; seeds in winter <sup>8</sup>
Foraging Substrate	Ground

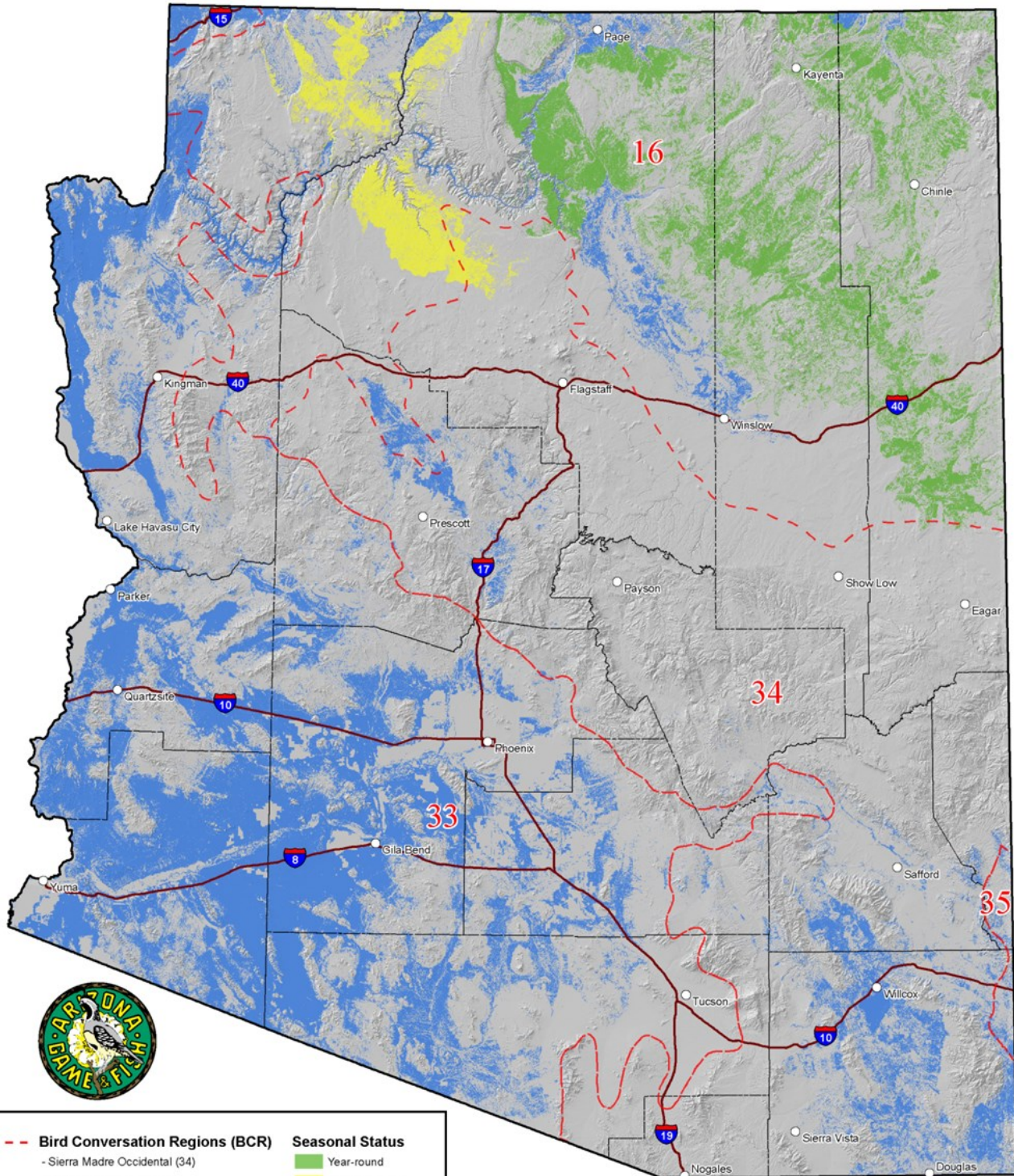
SPECIES ACCOUNT ● SAGEBRUSH SPARROW *Artemisiospiza nevadensis*



Confidence in Available Data: ● High ● Moderate ○ Low ^ Not provided

Last Update: April 2023

# Distribution of Sagebrush Sparrow



**Arizona Game & Fish**

**--- Bird Conservation Regions (BCR)**

- Sierra Madre Occidental (34)
- Chihuahuan Desert (35)
- Sonoran & Mojave Deserts (33)
- Southern Rockies & Colorado Plateau (16)

**Seasonal Status**

- Year-round
- Breeding Only
- Winter Only

Counties

This map represents the predictive distribution for an individual species. AZGFD warrants no guarantees of accuracy or currency of the data represented.



## General Information

### Distribution in Arizona

Sagebrush Sparrows breed in northern Arizona, primarily on Navajo and Hopi Tribal lands and west to the Kaibab Plateau, but locally as far west as the Hurricane Cliffs and southeast to St. Johns (Corman 2005). Arizona is part of the southern boundary of the species' breeding range (Martin and Carlson 1998). Preliminary observations suggest some breeding populations in Arizona are greatly reduced or absent during years with below-normal precipitation (Corman 2005). Sagebrush Sparrows winter primarily in southern desertscrub lowlands, but can be found locally in small numbers in and near some Arizona breeding areas, as well.

### Habitat Description

Big sagebrush is the preferred shrub of the Sagebrush Sparrow in Arizona. While Sagebrush Sparrows mostly nest in sagebrush, they also use bitterbrush, saltbush, shadscale, rabbitbrush, and greasewood (Martin and Carlson 1998). They nest in semi-open stands of shrubs. Vertical structure, patchiness, and shrub density are likely more important than shrub species composition (Martin and Carlson 1998).

### Microhabitat Requirements

Sagebrush Sparrows nest in shrubs or clumps of shrubs 3 – 7 feet tall that provide sufficient crown cover, or on the ground in bunchgrasses. Thermal cover of the nest is likely among the critical selection criteria for the nest site, and nests are often located in the densest part of the vegetation (Martin and Carlson 1998). Sagebrush Sparrows forage mostly on the ground and at the base of shrubs for insects and seeds in the leaf litter and other plant material (Martin and Carlson 1998).

### Landscape Requirements

Sagebrush Sparrows avoid fragmented sagebrush areas and small habitat patches (Knick and Rotenberry 1995). Minimum patch size requirements are currently unclear for Arizona populations and the species is often absent in patches of seemingly suitable habitat (Martin and Carlson 1998). This suggests that landscape-scale issues influence the species' ability to nest in a given area. Sagebrush Sparrows may alter their territory selection based on availability of water, which is an area of research that deserves further study.



## Conservation Issues and Management Actions

### Threats Assessment

This table is organized by Salafsky et al.'s (2008) standard lexicon for threats classifications. Threat level is based on expert opinion of Arizona avian biologists and reviewers. We considered the full lexicon but include only medium and high threats in this account.

Threat	Details	Threat Level
<b>Agriculture</b> <ul style="list-style-type: none"> <li>Livestock farming and ranching</li> </ul>		High
<b>Energy Production and Mining</b> <ul style="list-style-type: none"> <li>Mining and quarrying</li> <li>Renewable energy</li> </ul>	Wind farms	Medium
<b>Natural System Modifications</b> <ul style="list-style-type: none"> <li>Fire and fire suppression</li> <li>Other ecosystem modifications:</li> </ul>	Sagebrush removal	Medium
<b>Invasive and Problematic Species</b> <ul style="list-style-type: none"> <li>Invasive non-native/alien plants</li> <li>Problematic native plants</li> </ul>	Invasive grasses fuel wildfires	Medium
<b>Climate Change</b> <ul style="list-style-type: none"> <li>Ecosystem encroachment</li> <li>Changes in temperature regimes</li> <li>Changes in precipitation and hydrological regimes</li> </ul>		High

In the following section we provide more detail about threats, including recommended management actions. Threats with similar recommended actions are grouped.

#### **Agriculture:**

- Livestock farming and ranching

#### **Energy Production and Mining:**

- Mining and quarrying
- Renewable energy

#### **Natural System Modifications:**

- Fire and fire suppression
- Other ecosystem modifications

#### **Invasive and Problematic Species:**

- Invasive non-native/alien plants
- Problematic native plants



Widespread disturbance to native grasses and removal of sagebrush and other shrub communities used by Sagebrush Sparrows threatens habitat suitability for nesting (Wiens and Rotenberry 1985, Martin and Carlson 1998). Unsustainable livestock grazing and motorized recreation in semi-arid shrublands carry the risks of losing the native grass understory, reducing vigor and survival of shrub canopies, and introducing invasive weeds (Paige and Ritter 1999). Invasive weeds generally reduce the ability of native understory plants to recover and lead to increased fire frequencies that further threaten shrub survival. In most Sagebrush Sparrow breeding range, these processes are the leading causes of habitat degradation (Martin and Carlson 1998, Paige and Ritter 1999).

Wind energy development has led to local impacts to sagebrush and other cold-temperate desertscrub habitats. It is expected that this activity will increase in the future with unknown impacts to breeding birds. Potential loss of habitat due to wind energy development and mining is cause for concern for this species.

*Recommended Actions:*

1. Determine sources of habitat degradation in areas that are currently occupied by Sagebrush Sparrows and in potentially suitable areas.
2. Limit treatment of sagebrush and other cold-temperate desertscrub habitat types with prescribed fire or mechanical clearing to areas of < 40 acres. Schedule treatments to avoid bird nesting (April–early July; Braun et al. 1976).
3. Encourage grazing practices that leave > 50% of annual plant growth intact (Paige and Ritter 1999), particularly in drought years.
4. Concentrate livestock use and motorized recreation in areas that are already degraded and are ideally outside the currently-occupied range of Sagebrush Sparrow.
5. Monitor amount invasive weeds in areas occupied by Sagebrush Sparrow and develop strategies for combating them before habitat suitability is reduced and habitat conversion occurs.
6. Determine current fire regimes in Sagebrush Sparrow areas and manage fires to allow local burns at sufficiently large time intervals to allow shrub stands to recover to 3 – 7 feet height.
7. Develop fire management strategies that support high-quality legacy sagebrush habitat while promoting traditional fire regimes.

**Climate Change:**

- Ecosystem encroachment
- Changes in temperature regimes
- Changes in precipitation and hydrological regimes

Climate change may affect the southern boundary of the Great Basin cold desertscrub by reducing its distribution in Arizona, which would directly affect Sagebrush Sparrows. Sagebrush Sparrows also appear to be sensitive to precipitation patterns and adjust their habitat use in patterns that are not fully understood and need further study.

*Recommended Actions:*

1. Delineate areas of desertscrub (including sagebrush, greasewood, shadscale, and saltbush communities) that are potentially suitable for Sagebrush Sparrow breeding.



## Research and Monitoring Priorities

1. Assess current Sagebrush Sparrow breeding habitat areas and clarify population status and distribution in light of potential effects of climate change.
2. Determine area and landscape requirements of Sagebrush Sparrow in Arizona.
3. Determine Sagebrush Sparrow responses to water availability.
4. Determine patterns of Sagebrush Sparrow habitat use under different scenarios of precipitation.
5. Map distribution of invasive weeds in Sagebrush Sparrow occupied areas.
6. Clarify wintering distribution of Sagebrush Sparrows in Arizona.
7. Clarify migration and wintering habitat requirements of Sagebrush Sparrows in Arizona.
8. Monitor change in distribution of Sagebrush Sparrow communities that takes into account plant responses to climate change.
9. Monitor Sagebrush Sparrow populations to detect population trends and changes in distribution.

## Literature Cited

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<sup>2</sup>Arizona Game and Fish Department. 2012. Arizona's State Wildlife Action Plan: 2012 – 2022. Arizona Game and Fish Department, Phoenix, AZ.

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<sup>9</sup>Corman, T.E. 2005. Sage Sparrow. *In*: Arizona Breeding Bird Atlas. Corman, T.E., and C. Wise-Gervais (eds.) University of New Mexico Press. Albuquerque, NM.

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<sup>8</sup>Martin, J.W., and B.A. Carlson. 1998. Sage Sparrow (*Amphispiza belli*), *The Birds of North America Online* (A. Poole, ed.) Ithaca: Cornell Lab of Ornithology.

Paige, C., and S.A. Ritter. 1999. Birds in a Sagebrush Sea: managing sagebrush habitats for bird communities. *Partners in Flight Western Working Group*, Boise, ID. 47 pp.

<sup>5a</sup>Partners in Flight. 2019. Avian Conservation Assessment Database, version 2019. Accessed on March 31, 2020.

<sup>6</sup>Partners in Flight Science Committee. 2019. Population Estimates Database, version 3.0. Accessed on March 31, 2020.



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### Recommended Citation

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