



Scaled Quail, photo by @George Andrejko

## Conservation Profile

| Species Concerns   |              |
|--|--------------|
| Habitat Degradation  |              |
| Unsustainable Livestock Grazing  |              |
| Climate Change (Drought)   |              |
| Conservation Status Lists  |              |
| USFWS <sup>1</sup>   | No           |
| AZGFD <sup>2</sup>   | Tier 1C      |
| DoD <sup>3</sup>   | No           |
| BLM <sup>4</sup>   | No           |
| PIF Watch List <sup>5b</sup>   | Yellow List  |
| PIF Regional Concern <sup>5a</sup>   | BCR 34       |
| Migratory Bird Treaty Act  |              |
| Not Covered  |              |
| PIF Breeding Population Size Estimates <sup>6</sup>  |              |
| Arizona  | 83,000 ●     |
| Global   | 5,100,000 ●  |
| Percent in Arizona   | 1.63%        |
| PIF Population Goal <sup>5b</sup>  |              |
| Reverse Decline  |              |
| Trends in Arizona  |              |
| Historical (pre-BBS)   | Unknown      |
| BBS <sup>7</sup> (1968 – 2013)   | +1.7%/year ● |
| PIF Urgency/Half-life (years) <sup>5b</sup>  |              |
| 8  |              |
| Monitoring Coverage in Arizona   |              |
| BBS <sup>7</sup>   | Not adequate |
| AZ CBM   | Covered      |
| Associated Breeding Birds  |              |
| Swainson's Hawk, Chihuahuan Raven, Horned Lark, Cassin's Sparrow, Lark Sparrow, Black-throated Sparrow, Pyrrhuloxia, Chihuahuan Meadowlark |              |

## Breeding Habitat Use Profile

| Habitats Used in Arizona  |  |
|---|--|
| Primary: Semi-desert Grasslands                                     |  |
| Secondary: Cold-temperate Desertscrub                               |  |
| Key Habitat Parameters  |  |
| Plant Composition   | Diverse mixture of bunch grasses & low shrubs & cacti, burroweed, snakeweed, mesquite, yucca, saltbush, or sage, depending on region; plant species variable <sup>8</sup>                              |
| Plant Density and Size  | Open country with total groundcover often < 50%; low-growing grasses (4 – 16 inches) usually > 25%; <sup>9</sup> shrub component important but only < 10 – 20% cover; tree cover < 6%. <sup>9,10</sup> |
| Microhabitat Features   | Patches of dense, tall (2 – 3 feet) cover for nesting and escape; diverse forbs for foraging; bare ground for mobility <sup>10,11</sup>  |
| Landscape   | Mosaic of mid-to-late successional grassland, rolling hills, low ridges & mesas with significant summer rainfall (> 6 inches) <sup>10</sup>  |
| Elevation Range in Arizona  |  |
| 2,800 – 5,000 feet (SE AZ), 5,200 – 6,700 feet (NE AZ) <sup>8</sup> |  |
| Density Estimate  |  |
| Territory Size: 700 – 2,200 acres <sup>12</sup>                     |  |
| Density: Average 4 birds/100 acres (range 2 – 100) <sup>10</sup>    |  |

## Natural History Profile

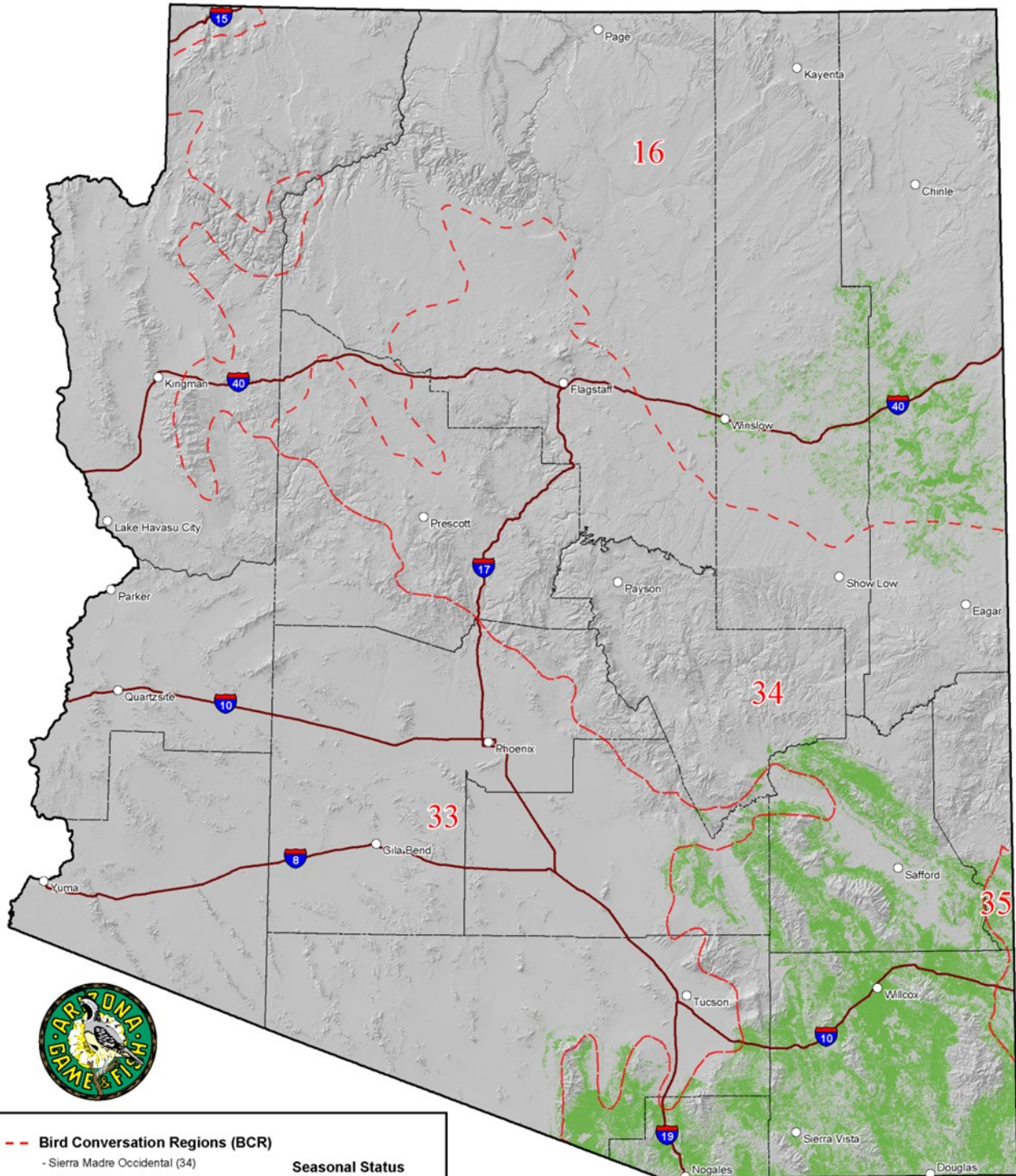
| Seasonal Distribution in Arizona |   |
|----------------------------------|---|
| Breeding                         | Mid-April – September <sup>8</sup>                              |
| Migration                        | Year-round resident   |
| Winter                           | Year-round resident   |
| Nest and Nesting Habits          |   |
| Type of Nest                     | Lined depression <sup>10</sup>                                  |
| Nest Substrate                   | Ground in dense vegetation <sup>10</sup>                        |
| Nest Height                      | Ground <sup>10</sup>  |
| Food Habits                      |   |
| Diet/Food                        | Seeds from forbs, grain, leaves; insects in summer <sup>7</sup> |
| Foraging Substrate               | Ground  |



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

Last Update: October 2023

# Distribution of Scaled Quail



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

In southeastern Arizona, Scaled Quail occurs in the Sulphur Springs, San Simon, and San Bernardino valleys, west to the Baboquivari Mountain foothills (Wise-Gervais 2005). One population found north of Oracle has declined dramatically and may be extirpated (Zornes et al. 2008). There is another much less studied population in northeastern regions of the state in Navajo and Apache counties, primarily within the upper Little Colorado River drainage south to Lyman Lake and locally in the Red Rock Valley just northeast of the Chuska Mountains (Brown 1989, Wise-Gervais 2005). Scaled Quail is a year-round resident in the state.

### Habitat Description

Scaled Quail in southeastern Arizona occur in semiarid grasslands and adjacent desertscrub habitats with relatively open stands and a diverse mix of grasses and forbs, as well as scattered shrubs such as mesquite, soap tree, yucca, skunkbush, and cactuses (Merola-Zwartjes 2005, Wise-Gervais 2005). In northeastern Arizona, they are often encountered in a mixture of Plains grassland and open desert scrublands with scattered cactuses, saltbush, sand sagebrush, and other low shrubs (Wise-Gervais 2005). The species avoids pure grasslands that lack a mix of shrubs, grasses, and forbs, as well as areas that have abundant trees > 5 feet tall (Bristow and Ockenfels 2006). While a diversity of plants is important, specific plant species are apparently not required (Dabbert et al. 2009). Grasslands that feature < 6% tree cover and > 25% grass cover (4 – 16 inches tall) are suitable for Scaled Quail (Bristow and Ockenfels 2006), but overall vegetation cover rarely exceeds 50% in occupied areas (Wise-Gervais 2005).

### Microhabitat Requirements

Scaled Quail nest on the ground, usually in very dense clumps of vegetation, but they are apparently not selective about which plants or structures provide the required overhead cover for the nest (Dabbert et al. 2009). Seeds of forbs and woody plants, such as mesquite, acacia, and hackberry, make up a large part of Scaled Quail diet, which is likely the reason why plant species diversity is important to this species (Merola-Zwartjes 2005, Zornes et al. 2008, Dabbert et al. 2009). Bare ground that naturally occurs between bunchgrasses may be important for Scaled Quail, especially for chick mobility (Merola-Zwartjes 2005, Zornes et al. 2008).

### Landscape Requirements

Scaled Quail are most abundant in a mosaic of mid-to-late successional grassland communities (Saiwana et al. 1998) with fairly open stands, typical of the rolling hills, low ridges, and mesas of southeastern Arizona (Wise-Gervais 2005). Scaled Quail are often found far from permanent water sources (Dabbert et al. 2009), although water requirements are unknown. Minimum patch requirements and disturbance distances have not been studied for this species.





## 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  | Threat Level |
|---|--------------|
| <b><i>Residential and Commercial Development</i></b> <ul style="list-style-type: none"> <li>Housing and urban areas</li> </ul>  | High         |
| <b><i>Agriculture</i></b> <ul style="list-style-type: none"> <li>Livestock farming and ranching</li> </ul>  | High         |
| <b><i>Natural System Modifications</i></b> <ul style="list-style-type: none"> <li>Fire and fire suppression</li> </ul>  | High         |
| <b><i>Invasive and Problematic Species</i></b> <ul style="list-style-type: none"> <li>Invasive non-native/ alien plants</li> <li>Problematic native plants</li> </ul> | High         |
| <b><i>Climate Change</i></b> <ul style="list-style-type: none"> <li>Ecosystem encroachment</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.

#### **Residential and Commercial Development:**

- Housing and urban areas

#### **Agriculture:**

- Livestock farming and ranching

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

- Fire and fire suppression
- Other ecosystem modifications

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

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

Southwestern grasslands are degraded or converted by a variety of land uses. Permanent loss continues from urban and rural encroachment, while unsustainable grazing, particularly during drought years, causes reduced native bunchgrass cover or forb diversity and increased shrub cover. This leads to the invasion of non-native grasses and weeds and changes fire regimes (Zornes et al. 2008), which in turn reduces habitat



quality and availability for Scaled Quail. Although Scaled Quail also use woody plants, they require an open woody cover that allows for diverse, intermediate-successional bunchgrass and forb communities (Merola-Zwartjes 2005). Light to moderate grazing of mid- to late-stage grasslands can help maintain Scaled Quail habitat (Merola-Zwartjes 2005), but grazing on early-stage grasslands is detrimental (Saiwana et al. 1998).

*Recommended Actions:*

1. Restore natural fire regimes (frequency, intensity, and mosaic pattern) to counter effects of shrub and weed invasions.
2. Maintain livestock utilization rates that preserve key habitat components, including mid-seral stage native grass and forb cover and low shrub cover.
3. Maintain livestock stocking rates that use 30% of key forage species to maintain a mixture of late- and mid-seral stage condition areas that benefit Scaled Quail (Dabbert et al. 2009).
4. Develop and implement a livestock grazing management plan that reduces grazing pressure in Scaled Quail habitat during drought years.
5. Assess and address shrub encroachment in the Sulphur Springs and San Bernardino valleys.
6. Manage shrub-reduction programs in a manner that does not increase invasive grasses.
7. Re-establish native bunchgrass habitats in degraded areas, especially those already occupied by Scaled Quail.
8. Create conservation easements and protection for public lands that are important to Scaled Quail, particularly during prolonged droughts.
9. Control harmful invasive plant species and noxious weeds, with particular emphasis on Lehmann's lovegrass and buffleggrass.
10. Share information on recommended land use management in Scaled Quail occupied areas.

**Climate Change:**

- Ecosystem encroachment
- Changes in precipitation and hydrological regimes

Scaled Quail populations fluctuate with drought cycles, with population contractions related to the lack of succulent vegetation during a drought that leads poor productivity (Dabbert et al. 2009). Prolonged droughts carry the risk of long-term population declines. Significant net declines in Scaled Quail populations have already occurred since 1968 (Sauer et al. 2012). The sample size is too small to analyze trends for Arizona alone, but the whole Chihuahuan desert region shows annual declines of > 3% per year (Sauer et al. 2012). Given projections for the southwest that predict more arid conditions (Seager et al. 2007), climate change is a significant conservation challenge for this species.

*Recommended Actions:*

1. Implement mitigating actions to counteract the impacts of prolonged droughts on Scaled Quail habitat, such as providing access to water sources or irrigated areas.
2. Delineate breeding areas of Scaled Quail for conservation action.
3. Evaluate land use practices that compound the effects of prolonged droughts on Scaled Quail and negotiate compatible use rates, or set aside high-priority areas as conservation easements or protected areas on public lands.



## Research and Monitoring Priorities

1. Determine area requirements and disturbance distances of nesting Scaled Quail.
2. Determine grazing levels and regimes that support key habitat features for Scaled Quail reproduction.
3. Experiment with mitigation measures that may support reproductive success in core Scaled Quail areas during droughts, such as providing access to water sources or irrigated areas.
4. Determine effects of motorized recreation and urban encroachment on Scaled Quail.
5. Conduct breeding grassland bird surveys to monitor populations and assess habitat treatment success by determining occupancy and abundance of Scaled Quail.

## Literature Cited

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### Recommended Citation

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