Chihuahuan Meadowlark, photo by © Bill Radke

Conservation Profile

Species Concerns
Population Declines
Habitat Loss and Degradation
Unsustainable Livestock Grazing

Conservation Status Lists	
USFWS[1]	No
AZGFD[2]	Tier 1C
DoD[3]	Yes
BLM[4]	No
PIF Watch List[5b]	Common Birds in Steep Decline
PIF Regional Concern[5a]	No

Migratory Bird Treaty Act
Covered

PIF Breeding Population Size Estimates[6]	
Arizona	240,000 ◑
Global	Unknown
Percent in Arizona	Unknown

PIF Population Goal[5b]
Stabilize

Trends in Arizona	
Historical (pre-BBS)	Unknown
BBS[7] (1968 – 2013)	+1.33/year ◑

PIF Urgency/Half-life (years)[5b]
23

Monitoring Coverage in Arizona	
BBS[7]	Not adequate
AZ CBM	Covered

Associated Breeding Birds
Scaled Quail, Swainson's Hawk, Chihuahuan Raven, Horned Lark, Botteri's Sparrow, Vesper Sparrow, Grasshopper Sparrow

Breeding Habitat Use Profile

Habitats Used in Arizona
Primary: Semi-desert Grasslands
Secondary: Great Basin, Plains and Subalpine grasslands

Key Habitat Parameters	
Plant Composition	Many grass species used, prefer native, taller grasses; scattered young mesquite and acacia (south), sagebrush and other shrubs (north) often present[8,9]
Plant Density and Size	High grass; tall, even, dense grass and forbs with scattered low to medium shrubs[8,9]
Microhabitat Features	Nests under dense grass with overhead cover; scattered shrubs or fence posts for song perches[8]; probes soft soils for insects
Landscape	Less abundant in grassland patches < 25 acres[10]; not tolerant of < 4 inches stubble heights for nesting[11]

Elevation Range in Arizona
3,500 – 5,000 feet in southeast; up to 9,500 feet in north[8]

Density Estimate
Territory Size: 7 acres[9]
Density: 8 – 20 males/100 acres[10]

Natural History Profile

Seasonal Distribution in Arizona	
Breeding	April – mid-September; May – August in north[8]
Migration	March – April; October; some year-round residents[8]
Winter	Mid-September – March

Nest and Nesting Habits	
Type of Nest	Grass lined depression with overhead cover[9]
Nest Substrate	Ground[9]
Nest Height	Ground[9]

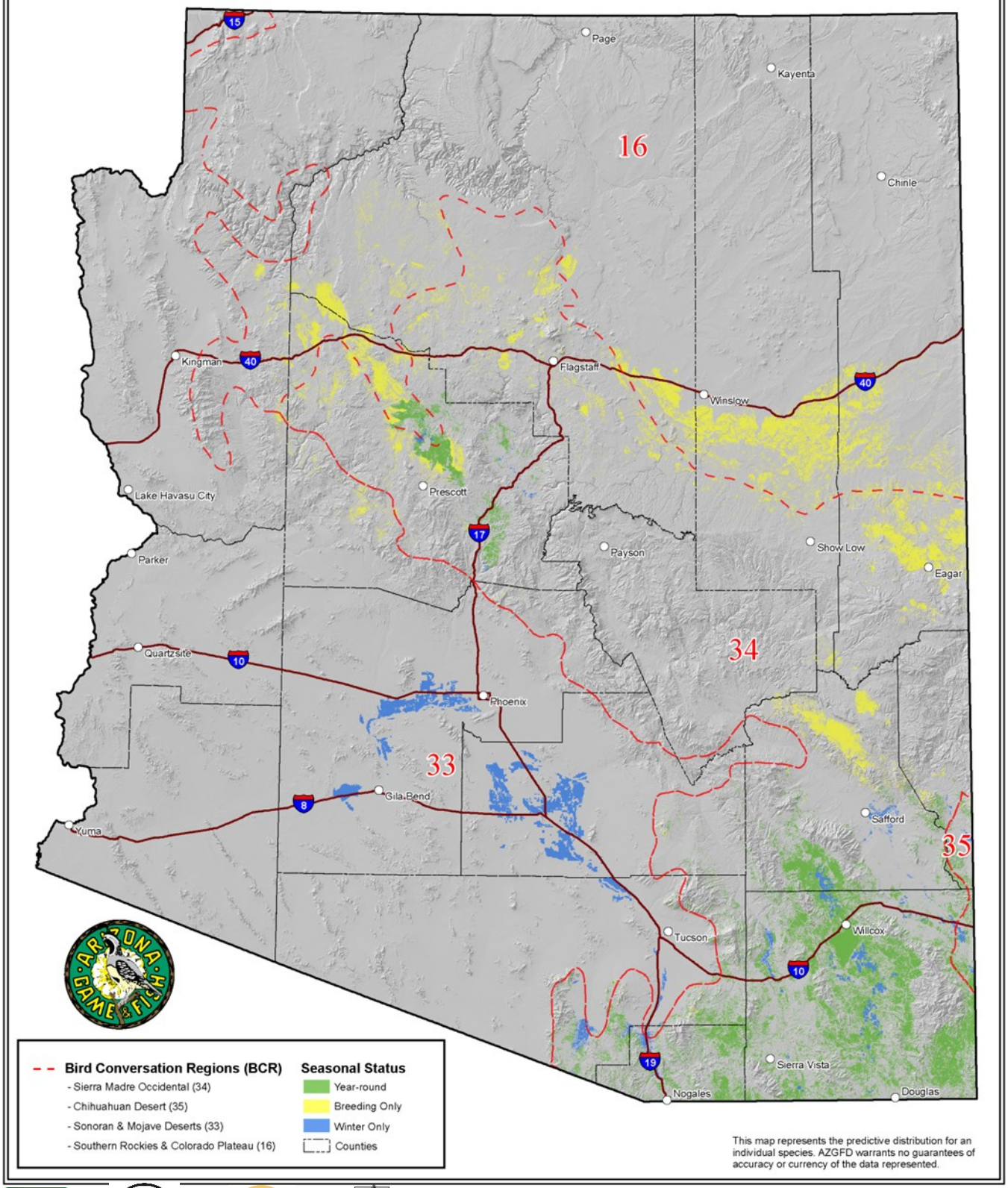
Food Habits	
Diet/Food	Insects; seeds in winter[9]
Foraging Substrate	Ground

SPECIES ACCOUNT ● *CHIHUAHUAN MEADOWLARK Sturnella lilianae*

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

Last Update: October 2023

Distribution of Chihuahuan Meadowlark



General Information

Distribution in Arizona

Chihuahuan Meadowlarks in Arizona ranges from Arizona to Trans-Pecos Texas and south into Mexico (Jaster et al. 2012). In Arizona, they occur in the semiarid and plains grasslands above 3,500 feet in the southeastern and central part of the state, in the subalpine and Great Basin grasslands of the upper Little Colorado River, and in the grasslands of the Chino Valley and Coconino Plateau, between Prescott and the Grand Canyon, including Hualapai Tribal lands (Corman 2005). In winter, northern Arizona populations retreat south into Maricopa and Pinal counties. Until 2022 Chihuahuan Meadowlark was classified as the "lilianae" subspecies of Eastern Meadowlark (Beam et al. 2021, Chesser et al. 2022).

Habitat Description

Chihuahuan Meadowlarks breed in various grassland types in Arizona that feature tall, even, dense grass cover with deep litter and little bare ground (Wiens et al. 1987). They may also use altered grasslands, such as edges of croplands, roadsides, orchards, and other developed areas (Lanyon 1995). In southeastern Arizona, grasslands used by Chihuahuan Meadowlarks often include scattered low shrubs such as young mesquite or acacia (Corman 2005), with < 5% woody cover preferred (Block and Morrison 2010). Winter habitat use is more flexible and includes cultivated fields, feedlots, and marshes (Lanyon 1995).

Microhabitat Requirements

Chihuahuan Meadowlarks nest on the ground under dense grass cover, with the nest well-concealed by overhanging vegetation (Lanyon 1995). They use low shrubs, agave, and yucca stalks, and fence posts for song perches. Chihuahuan Meadowlarks probe soft soil and low vegetation for insects (Lanyon 1995).

Landscape Requirements

Chihuahuan Meadowlarks are exclusively found in grassland landscapes for breeding. Large areas of grasslands are most suitable for maintaining their populations in Arizona. Studies from midwestern Eastern Meadowlark populations suggest that they require grassland patches of ≥ 25 acres (Winter and Faaborg 1999). In the absence of studies from the southwest, we assume minimum patch sizes in Arizona are similar. Researchers have not studied Chihuahuan Meadowlark response to landscape disturbances in the southwest. Winter season landscape use by this species appears to be flexible enough to be a lower priority for conservation planning in Arizona.

Conservation Issues and Management Actions

Population Decline

Chihuahuan Meadowlark is experiencing declines of over 4% per year in New Mexico and over 6% in the Chihuahuan Desert, while showing an increase in Arizona (Sauer et al. 2016). The disappearance of suitable nesting habitat due to urbanization or intensive agricultural practices has been cited as a major cause of range-wide decline (Jaster et al. 2012). Investigating causes of potential declines is important, as there is no reason to believe that Arizona is exempt from this regional trend.

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
Residential and Commercial Development • Housing and urban areas • Commercial and industrial areas	Development fragmenting grasslands	High
Agriculture • Annual and perennial non-timber crops • Livestock farming and ranching	Type conversion of grasslands to cultivated crops (row crops, orchards, vineyards). Grazing that reduces standing grass cover below minimal height for breeding	High
Natural System Modifications • Fire and fire suppression	Loss of natural fire in grasslands leads to woody species encroachment	Medium
Invasive and Problematic Species • Invasive non-native/alien plants • Problematic native plants	Lehman's lovegrass stand replacement of native grasses. Woody plant encroachment (mesquite, acacia, juniper)	High
Climate Change • Ecosystem encroachment • Changes in temperature regimes • Changes in precipitation and hydrological regimes	Long-term shifts in temperature extremes may reduce or shift distribution of grasslands in Arizona and aggravate woody species encroachments	Medium

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
- Commercial and industrial areas

Larger properties, including ranches, continue to be sold and transformed into smaller, individual parcels which are developed into ranchettes, vineyards, etc., leading to grassland fragmentation. Previous population studies suggest that Chihuahuan Meadowlarks require grassland patches of ≥ 25 acres (Winter and Faaborg 1999).

Recommended Actions:

1. Include grassland conservation in county land use and open space planning.
2. Work with land developers to incorporate native grassland conservation into development planning.
3. Create conservation easements or acquire critical grasslands for Chihuahuan Meadowlarks and other grassland bird species.

Agriculture:
- Livestock farming and ranching

Although Chihuahuan Meadowlarks are common in grasslands with scattered shrubs (Corman 2005), they may be sensitive to shrub encroachment in grassland landscapes (Block and Morrison 2010). Chihuahuan Meadowlarks responded positively to shrub removal in southwestern New Mexico (Coffman et al. 2014). Degradation of suitable breeding habitat may also be caused by excessive grazing and trampling from livestock. (Jaster et al. 2012). Chihuahuan Meadowlarks tolerate moderate grazing levels (Bock et al. 1994), but severe grazing that leads to stubble height of < 4 inches discourages nesting and foraging (Roseberry and Klimstra 1970).

Recommended Actions:

1. Encourage land use practices that retain tall, dense, native grass cover during the breeding season through agency partner and public outreach.
2. Avoid management activities that remove grass cover during the breeding season (April through the summer monsoon).
3. Reduce development in areas occupied by breeding Chihuahuan Meadowlarks in patch sizes of 25 acres or more.
4. In key conservation areas encourage grazing practices and fire regimes that mimic natural disturbances of local grassland types.
5. Reduce livestock numbers on rangelands following years with below normal precipitation.

Natural System Modifications:
- Fire and fire suppression

Invasive and Problematic Species:
- Invasive non-native/alien plants
- Problematic native plants

Activities such as unsustainable livestock grazing and fire suppression efforts to protect buildings, power poles, and other structures can greatly alter natural grassland communities. Reduction or loss of natural fire regimes in grasslands in Arizona often leads to an increase in native woody species encroachment, including mesquite, acacia, and juniper. Block and Morrison (2010) suggested that Chihuahuan Meadowlarks in southeastern Arizona prefer grasslands with < 5% woody cover. Native grasslands are less attractive to Chihuahuan Meadowlarks immediately after fires (Bock and Bock 1992), but ultimately natural fire regimes may benefit their populations.

Recommended Actions:

1. Encourage land use practices that introduce natural fire to the landscape.
2. Encourage Fire Wise practices for landowners.
3. Minimize mowing of native grasslands to defensible space rather than the entirety of owned land (e.g., ranchettes).
4. Participate in regional strategies for control of Lehman's lovegrass and other non-native grass species.
5. Manage invasive woody plants through partnerships with livestock operators, land management agencies, NRCS programs, and Arizona Game and Fish Department Habitat Partnership Program.

Climate Change:

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

No data exist on Chihuahuan Meadowlark susceptibility to the effects of climate change, such as prolonged droughts and excessive high temperatures. These effects are a conservation concern due to potential loss of grassland cover and associated soil invertebrates.

Recommended Actions:

1. Plan monitoring to include the possibilities of distributional changes of Chihuahuan Meadowlark populations as a result of climate change.
2. Include Chihuahuan Meadowlark in future climate modeling projects.

Research and Monitoring Priorities

1. Implement grassland breeding bird surveys as part of the Coordinated Bird Monitoring program to determine Chihuahuan Meadowlark population status and trends in Arizona.
2. Plan monitoring to include the possibilities of distributional changes of Chihuahuan Meadowlark populations as a result of climate change.
3. Plan monitoring coverage to include identification of key conservation areas.
4. Study Arizona breeding and winter habitat requirements of Chihuahuan Meadowlark, particularly its sensitivity to non-native grasses.
5. Study possible impacts to Chihuahuan Meadowlark of ranchette subdivision in grasslands (including increased susceptibility to brood parasitism by Brown-headed Cowbirds).

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Recommended Citation

Arizona Bird Conservation Initiative and Sonoran Joint Venture. 2023. Chihuahuan Meadowlark (*Sturnella lilianae*) Species Account. Available at https://sonoranjv.org/accounts/chihuahuan-meadowlark.pdf.