



Gray Flycatcher, photo by ©Robert Shantz

## Conservation Profile

Species Concerns	
Climate Change (Drought, Increasing Fire Frequency)	
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>	No
PIF Regional Concern <sup>5a</sup>	No
Migratory Bird Treaty Act	
Covered	
PIF Breeding Population Size Estimates <sup>6</sup>	
Arizona	170,000 ●
Global	2,900,000 ●
Percent in Arizona	5.86%
PIF Population Goal <sup>5b</sup>	
Maintain	
Trends in Arizona	
Historical (pre-BBS)	Unknown
BBS <sup>7</sup> (1968 – 2013)	+3.34%/year ●
PIF Urgency/Half-life (years) <sup>5b</sup>	
> 50	
Monitoring Coverage in Arizona	
BBS <sup>7</sup>	Not adequate
AZ CBM	Not covered
Associated Breeding Birds	
Cassin's Kingbird, Gray Vireo, Plumbeous Vireo, Pinyon Jay, Juniper Titmouse, White-breasted Nuthatch, Western Bluebird, Black-throated Gray Warbler, Scott's Oriole, Hairy Woodpecker	

## Breeding Habitat Use Profile

Habitats Used in Arizona	
Primary: Pinyon-Juniper Woodlands Secondary: Cold-Temperate Desertscrub	
Key Habitat Parameters	
Plant Composition	Pinyon pine, juniper, tall sagebrush species, bitterbrush, mountain mahogany; sometimes ponderosa pine, oak <sup>8,9</sup>
Plant Density and Size	Open tree stands (10 – 40% cover or 6 trees/acre) <sup>1</sup> with open shrub understory or taller sagebrush/cliffrose shrublands <sup>8</sup> ; requires at least some shrubs or trees > 3 – 5 feet tall <sup>8</sup>
Microhabitat Features	Mixed shrublands and woodlands of varying canopy densities; avoids closed-canopy woodlands <sup>8</sup>
Landscape	Mid to late successional stages; transitional zone between woodlands and shrublands likely important habitat
Elevation Range in Arizona	
4,300 – 7,600 feet <sup>9</sup>	
Density Estimate	
Territory Size: 2 – 13 acres <sup>8</sup> Density: 2 – 14 pairs/100 acres <sup>8</sup>	

## Natural History Profile

Seasonal Distribution in Arizona	
Breeding	May – August <sup>9</sup>
Migration	Late-March – mid-May; mid-August – mid-October <sup>9</sup>
Winter	October – March <sup>9</sup>
Nest and Nesting Habits	
Type of Nest	Cup <sup>8</sup>
Nest Substrate	Juniper, pine, or tall shrub <sup>8,9</sup>
Nest Height	3 – 15 feet <sup>8,9</sup>
Food Habits	
Diet/Food	Flying insects <sup>8</sup>
Foraging Substrate	Aerial foraging from low perch

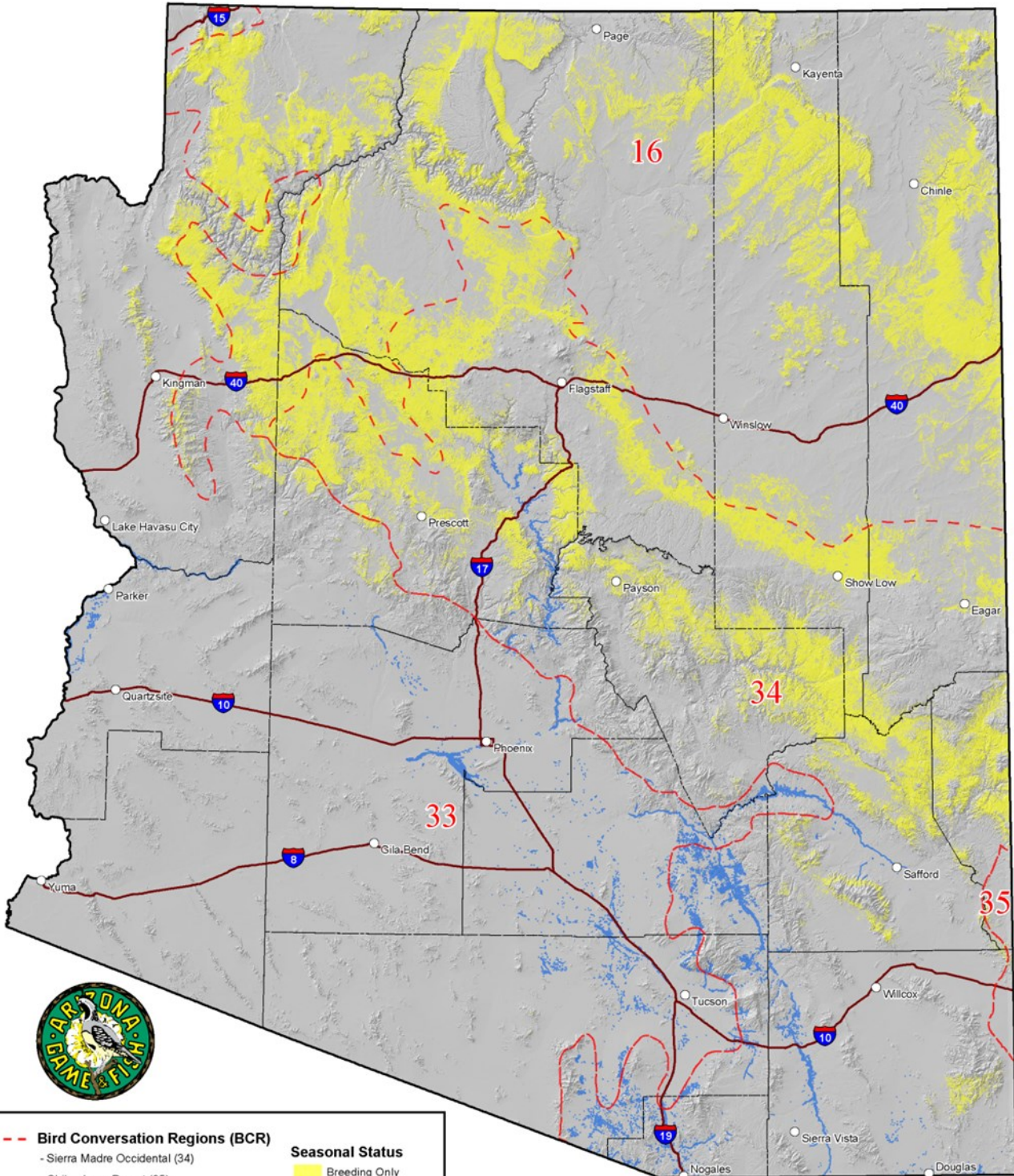
SPECIES ACCOUNT ● GRAY FLYCATCHER *Empidonax wrightii*



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

Last Update: October 2023

# Distribution of Gray Flycatcher



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

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

**Seasonal Status**

- 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.

**SPECIES ACCOUNT ● GRAY FLYCATCHER *Empidonax wrightii***



## General Information

### Distribution in Arizona

Gray Flycatchers nest throughout middle-elevation woodlands at 4,300 – 7,600 feet elevation, particularly in the pinyon pine and juniper of central and northern Arizona (Wise-Gervais 2005). They range south and east along the slopes of the Mogollon Rim to northeastern Graham and central Greenlee counties and very locally south to the Galiuro, Pinaleño, and Chiricahua mountains of southeastern Arizona (Wise-Gervais 2005). The winter distribution of Gray Flycatchers in Arizona is centered in the south-central region along the lower Salt, Middle Gila, Santa Cruz, and San Pedro river valleys, and north sparingly within the Lower Verde River drainage. There are also scattered records along the lower Colorado River (eBird 2016).

### Habitat Description

Gray Flycatchers breed in semi-arid woodlands, primarily pinyon-juniper, and the interface with adjoining shrublands (Schlossberg and Sterling 2013). They are most common in tall stands of pinyon pine and/or juniper with an open shrub understory of sagebrush, cliffrose, and mountain mahogany or similar shrubs (Wise-Gervais 2005). Some also nest in ponderosa pine or Madrean evergreen forests, but usually only if these also have a pinyon-juniper component. Where trees are absent, Gray Flycatchers generally only occur in areas where sagebrush reaches near-tree heights (Schlossberg and Sterling 2013). In northeastern Arizona, Gray Flycatchers are also found in greasewood-saltbush shrublands (LaRue 1994). Gray Flycatchers increase in abundance with increasing tree cover, although they avoid the densest stands of trees (Goguen et al. 2005, Schlossberg and Sterling 2013). Migration habitat consists mainly of lowland riparian woodlands, but also drier uplands with pines and oak woodlands (Schlossberg and Sterling 2013). The species winters mostly in Mexico, but they are also found in south-central Arizona in open riparian woodlands and wooded washes, particularly those with abundant mesquite (T. Corman pers. comm.).

### Microhabitat Requirements

Gray Flycatchers nest 2 – 16 feet above the ground in pines or junipers, but also use tall sagebrush or bitterbrush when trees are not available (Wise-Gervais 2005, Schlossberg and Sterling 2013). Details on nesting territories, other than the presence of small trees or tall shrubs, as well as on migration and winter habitat requirements, are currently unknown.

### Landscape Requirements

Gray Flycatchers prefer pinyon-juniper or ponderosa pine woodlands, but these need to be only moderately dense and feature a shrub understory that allows for fly-catching of aerial insects during the breeding season. Area requirements are currently unknown, but are likely not large. Migration and wintering landscape requirements are largely unknown.



## 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>Agriculture</b> <ul style="list-style-type: none"> <li>Livestock farming and ranching</li> </ul>	Medium
<b>Biological Resource Use</b> <ul style="list-style-type: none"> <li>Logging and wood harvesting</li> </ul>	Medium
<b>Natural System Modifications</b> <ul style="list-style-type: none"> <li>Fire and fire suppression</li> </ul>	Medium
<b>Climate Change</b> <ul style="list-style-type: none"> <li>Ecosystem encroachment</li> <li>Changes in precipitation and hydrological regimes (drought)</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

The effects of livestock grazing on Gray Flycatchers still need to be clarified (Schlossberg and Sterling 2013). However, grazing practices that alter the preferred habitat structure of moderately dense conifers and an ample shrub component are likely detrimental to Gray Flycatcher populations.

#### Recommended Actions:

1. Manage grazing to maintain a shrub component of > 20% and native grass cover.

#### Biological Resource Use:

- Logging and wood harvesting

Breeding habitat loss and modification of pinyon-juniper woodlands have occurred throughout Gray Flycatcher range from chaining, clearing, and burning of large, mature woodland tracts for livestock and ungulate forage, house and road development, and fuelwood cutting. Loss of early- to mid-successional pinyon pine and juniper from the woodland-sagebrush transition zone leads to declines in Gray Flycatchers (Schlossberg and Sterling 2013). Several studies have shown that extensive chaining eliminates this species from pinyon-juniper woodland (LaRue 1994, Schlossberg and Sterling 2013), even after 15 years of revegetation of some experimental plots (O'Meara et al. 1981). Mesquite is a popular fuel wood, and local and unregulated harvesting can potentially locally reduce wintering Gray Flycatcher populations.



*Recommended Actions:*

1. Discourage clearing of large mature tracts of woodland habitat.
2. Encourage forest stewardship that lead to small openings in dense pine forests.
3. Maintain stand-level stem densities of 2 – 6 trees/acre with a canopy cover of 10 – 40% and no areas with < 5% or > 70% cover.
4. Manually remove juniper trees versus chaining or mechanical efforts where feasible.
5. Maintain or restore a broad, mixed-cover transition zone between pinyon-juniper woodlands and adjoining shrublands.
6. Document and monitor mesquite wood collecting locations and establish limits or other regulations as needed in an effort to maintain the integrity of the woodland.

**Natural System Modifications:**

- Fire and fire suppression

In a fire study in northwestern Nevada, Gray Flycatcher densities were reduced by 60 – 90% on burned sites compared with control areas, even after the shrub canopy had recovered (Holmes and Robinson 2013). However, in dense ponderosa pine forests, Gray Flycatchers responded positively to prescribed fires that reduced tree density (Russell et al. 2009).

*Recommended Actions:*

1. Maintain fire regimes that support open pinyon-juniper stands with a shrub understory.

**Climate Change:**

- Ecosystem encroachment
- Changes in precipitation and hydrological regimes

Pinyon-juniper and adjacent ponderosa pine woodlands may respond negatively to prolonged drought caused by climate change. In fact, pinyon pines have already experienced widespread mortality in northern Arizona and elsewhere due to drought and subsequent bark beetle infestations (Martin 2005, Clifford et al. 2011). These changes may also reduce insect availability and increase the potential for catastrophic fires that lead to Gray Flycatcher habitat loss at a landscape scale. The range of pinyon-juniper habitat is predicted to contract significantly in Arizona and neighboring states under current climate change models (Johnson et al. 2012).

*Recommended Actions:*

1. Delineate current extent and density/age classes of pinyon-juniper woodlands to identify highly suitable areas for Gray Flycatchers for conservation action, and to set a baseline for monitoring spatial changes in available habitat.



## Research and Monitoring Priorities

1. Determine area requirements, breeding habitat requirements, and landscape requirements of Gray Flycatchers in Arizona.
2. Use multi-species programs to monitor Gray Flycatchers to determine population status and trends.
3. Study impacts of land uses (e.g., grazing, fire, wood-cutting, and OHV use) on Gray Flycatchers.
4. Clarify habitat requirements for migrant and wintering Gray Flycatcher populations.

## Literature Cited

<sup>4</sup>Arizona Bureau of Land Management Sensitive Species List – March 2017.

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

<sup>3</sup>Department of Defense. 2012. DoD PIF Mission-Sensitive Priority Bird Species. Fact Sheet #11. Department of Defense Partners in Flight Program.

Clifford, M., N. Cobb, and M. Buenemann. 2011. Long-term tree cover dynamics in a pinyon-juniper woodland: climate-change-type drought resets successional clock. *Ecosystems* 14:949 – 962.

eBird. 2016. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Accessed on August 23, 2016.

Goguen, C.B., D.R. Curson, and N.E. Mathews. 2005. Breeding ecology of the gray flycatcher in Pinyon-juniper woodlands in New Mexico. *Western Birds* 36:286 – 295.

Holmes, A.L., and W.D. Robinson. 2013. Fire mediated patterns of population densities in mountain big sagebrush bird communities. *The Journal of Wildlife Management* 77(4):737 – 748.

Johnson, K., L. Wickersham, T. Neville, G. Sadoty, J. Smith, J. Wickersham, and C. Finley. 2012. Habitat Use at Multiple Scales by Pinyon-Juniper Birds on Department of Defense Lands II: Nest and Territory/Colony Scale, Natural Heritage New Mexico Publication 12-GTR-366, Department of Defense Legacy Resource Management Program: 48 pp.

LaRue, C.T. 1994. Birds of northern Black Mesa, Navajo County, Arizona. *Great Basin Naturalist* 54(1):1 – 63.

Martin, J.L. 2005. Pinyon Jay. *In: Arizona Breeding Bird Atlas*. Corman, T.E., and C. Wise-Gervais (eds.) University of New Mexico Press. Albuquerque, NM.

O'Meara, T., J. Haufler, L. Stelter, and J. Nagy. 1981. Nongame wildlife responses to chaining of pinyon-juniper woodlands. *Journal of Wildlife Management*. 45(2):381 – 389.



- <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.
- <sup>5b</sup>Rosenberg, K.V., J.A. Kennedy, R. Dettmers, R.P. Ford, D. Reynolds, J.D. Alexander, C.J. Beardmore, P. J. Blancher, R.E. Bogart, G.S. Butcher, A.F. Camfield, A. Couturier, D.W. Demarest, W.E. Easton, J.J. Giocomo, R.H. Keller, A.E. Mini, A.O. Panjabi, D.N. Pashley, T.D. Rich, J.M. Ruth, H. Stabins, J. Stanton, T. Will. 2016. Partners in Flight Landbird Conservation Plan: 2016 Revision for Canada and Continental United States. Partners in Flight Science Committee.
- Russell, R.E., J.A. Royle, V.A. Saab, J.F. Lehmkuhl, W.M. Block, and J.R. Sauer. 2009. Modeling the effects of environmental disturbance on wildlife communities: avian responses to prescribed fire. *Ecological Applications* 19(5):1253 – 1263.
- Salafsky, N., Salzer, D., Stattersfield, A.J., Hilton-Taylor, C., Neugarten, R., Butchart, S.H.M., Collen, B., Cox, N., Master, L.L., O'Connor, S. and Wilkie, D. 2008. A standard lexicon for biodiversity conservation: unified classifications of threats and actions. *Conservation Biology* 22(4): 897 – 911.
- <sup>7</sup>Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, Jr., and W.A. Link. 2016. The North American Breeding Bird Survey, Results and Analysis 1966 – 2013, Version 2016. USGS Patuxent Wildlife Research Center, Laurel, MD. Accessed on July 1, 2016.
- <sup>8</sup>Schlossberg, S., and J.C. Sterling. 2013. Gray Flycatcher (*Empidonax wrightii*), *The Birds of North America Online* (A. Poole, ed.) Ithaca: Cornell Lab of Ornithology.
- <sup>1</sup>U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, VA. 85 pp.
- <sup>9</sup>Wise-Gervais, C. 2005. Gray Flycatcher. *In: Arizona Breeding Bird Atlas*. Corman, T.E., and C. Wise-Gervais (eds.) University of New Mexico Press. Albuquerque., NM

### Recommended Citation

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