



Ferruginous Hawk, photo by ©Robert Shantz

## Conservation Profile

Species Concerns	
Habitat Loss or Degradation	
Human Disturbance	
Climate Change (Droughts)	
Conservation Status Lists	
USFWS <sup>1</sup>	BCC List (BCR 16)
AZGFD <sup>2</sup>	Tier 1B
DoD <sup>3</sup>	No
BLM <sup>4</sup>	No
PIF Watch List <sup>5b</sup>	No
PIF Regional Concern <sup>5a</sup>	BCR 16
Migratory Bird Treaty Act	
Covered	
PIF Breeding Population Size Estimates <sup>6</sup>	
Arizona	Not given
Global	110,000 ●
Percent in Arizona	Not given
PIF Population Goal <sup>5b</sup>	
Maintain	
Trends in Arizona	
Historical (pre-BBS)	Unknown
BBS <sup>7</sup> (1968 – 2013)	Not given
PIF Urgency/Half-life (years) <sup>5b</sup>	
> 50	
Monitoring Coverage in Arizona	
BBS <sup>7</sup>	Not adequate
AZ CBM	Covered
Associated Breeding Birds	
Western Kingbird, Loggerhead Shrike, Horned Lark, Lark Sparrow, Black-throated Sparrow, Western Meadowlark	

## Breeding Habitat Use Profile

Habitats Used in Arizona	
Primary: High-Elevation Grasslands	
Secondary: Great Basin Desertscrub	
Key Habitat Parameters	
Plant Composition	Grasses with varying shrub cover of sagebrush, snakeweed, etc., with some pinyon or juniper for nesting and scanning <sup>8</sup>
Plant Density and Size	Open country of primarily grasslands with sparse shrubs and isolated trees <sup>9</sup>
Microhabitat Features	Slope, knoll, or other high point with scattered trees preferred for nesting <sup>9</sup>
Landscape	Prefer to nest in remote landscapes; especially common at interface between pinyon-juniper and shrubsteppe <sup>9</sup> ; area requirements unknown
Elevation Range in Arizona	
4,700 – 6,400 feet <sup>8</sup>	
Density Estimate	
Home Range: Up to 8.5 square miles (Idaho) <sup>9</sup>	
Density: No Arizona data	

## Natural History Profile

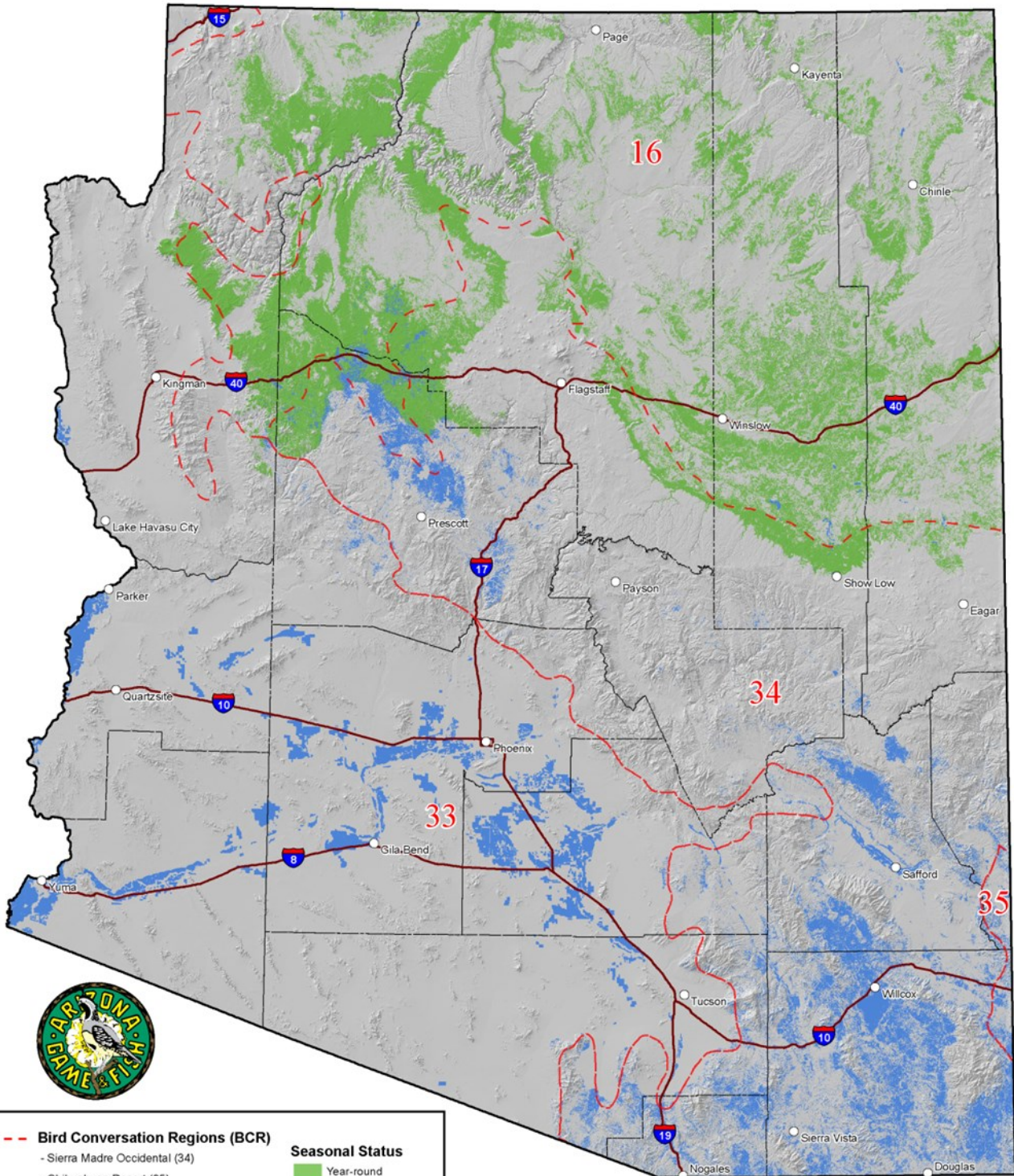
Seasonal Distribution in Arizona	
Breeding	April – July <sup>8</sup>
Migration	Mid-February – March; September – October <sup>8</sup> ; some northern Arizona breeders may be resident <sup>8,9</sup>
Winter	November – February
Nest and Nesting Habits	
Type of Nest	Stick nest <sup>9</sup>
Nest Substrate	Isolated tree; sometimes cliff or ground <sup>9</sup>
Nest Height	8 – 26 feet (tree nests) <sup>8</sup>
Food Habits	
Diet/Food	Rabbits, ground squirrels, pocket gophers, and prairie dogs <sup>9</sup>
Foraging Substrate	Scanning ground from tree perch or soaring



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

Last Update: April 2023

# Distribution of Ferruginous Hawk



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

The Ferruginous Hawk is a local and sparse breeder throughout Arizona's Plains and Great Basin grasslands and Great Basin desertscrub, particularly in northwestern Arizona from Aubrey Valley through the Coconino Plateau and north of the Grand Canyon in the Arizona Strip region (Corman 2005). The Plains grasslands south of the Mogollon Rim were probably part of its historic breeding range (Latta et al. 1999), and some older reports suggest that Ferruginous Hawks once nested in the semiarid grasslands of southeastern Arizona, where they no longer occur except in winter (Corman 2005). Depending on annual food resources, Ferruginous Hawks winter in grasslands and agricultural areas throughout the state. Ferruginous Hawks occur year-round in the northern half of Arizona, but the larger and more widespread wintering populations include migrants which breed north of the state.

### Habitat Description

Ferruginous Hawks nest in grasslands, sagebrush, saltbush-greasewood shrublands, and at the periphery of forests, including sparse riparian forests, canyon areas, and isolated individual or small groves of trees (Bechard and Schmutz 1995). They appear to favor the interface between woodlands and the shrubsteppe for nesting (Bechard and Schmutz 1995). Populations of Ferruginous Hawks have been shown to rise and fall with the abundance of prey populations (Bechard and Schmutz 1995), which is why management for this species takes into account habitat management for small and medium-sized mammals.

### Microhabitat Requirements

Ferruginous Hawks prefer elevated nest sites and seek out sparse trees, rock outcrops, cliffs, buttes, and woodland edges for nest locations (Dechant et al. 2003, Bechard and Schmutz 1995). They prey on small mammals, such as prairie dogs, ground squirrels, and rabbits (Bechard and Schmutz 1995), and the availability of prey appears to be a critical determinant of breeding habitat suitability (Cook et al. 2003, Merola-Zwartjes 2005). Wintering Ferruginous Hawk populations in Arizona that use agricultural fields also regularly feed on pocket gophers and possibly cotton rats (T. Corman pers. comm.) It has been suggested that relatively open vegetation is required for successful foraging by Ferruginous Hawks (Schmutz 1987).

### Landscape Requirements

Large areas of Great Basin grassland and desertscrub that are remote from human activities provide the stronghold of current Ferruginous Hawk populations in Arizona (Gilmer and Stewart 1983, Latta et al. 1999). Nesting Ferruginous Hawks are absent from intensively cultivated lands, although they occasionally nest in areas of up to 30% cultivation if prey is sufficiently abundant (Schmutz 1987, Collins and Reynolds 2005). Artificial nesting platforms can be important in areas that lack natural nest sites within otherwise suitable habitat (Collins and Reynolds 2005). Area requirements and sensitivity to landscape disturbances have not been studied in detail in southwestern populations of Ferruginous Hawk. However, it has been suggested that nesting success for these raptors depends heavily on the degree of remoteness of nesting sites from developed areas (Snyder and Snyder 1991).



## 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 to Medium
<b>Energy Production and Mining</b> <ul style="list-style-type: none"> <li>Mining and quarrying</li> <li>Renewable energy</li> </ul>		Medium
<b>Biological Resource Use</b> <ul style="list-style-type: none"> <li>Hunting and collecting terrestrial animals</li> </ul>	Local prairie dog shooting, esp. abandoned carcasses w/ lead.	Medium
<b>Human Intrusions and Disturbance</b> <ul style="list-style-type: none"> <li>Recreational activities</li> <li>Work and other activities</li> </ul>		Medium
<b>Natural System Modifications</b> <ul style="list-style-type: none"> <li>Other ecosystem modifications</li> </ul>		High
<b>Climate Change</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.

#### Energy Production and Mining:

- Mining and quarrying
- Renewable energy

Mining disturbance is linked to Ferruginous Hawk nest desertion (Olendorff 1993). Pairs near active petroleum wells experienced lower productivity than those that nest farther away. Renewable energy activities are a concern, particularly an increase in the number of wind farms in nesting and wintering areas. Some agricultural areas are being transformed into solar fields, leading to loss of potential winter foraging habitat.



*Recommended Actions:*

1. Avoid disturbance of nest sites from 15 March to 15 July (Bechard and Schmutz 1995).
2. Create buffer zones of 275 yards around active Ferruginous Hawk nests for brief disturbances, and buffers of approximately 1,100 yards for long-term disturbances such as construction activities (Olendorff 1993).
3. Work with mining operations on ecological requirements and benefits of Ferruginous Hawks.

**Biological Resource Use:**

- Hunting and collecting terrestrial animals

**Human Intrusions and Disturbance:**

- Recreational activities
- Work and other activities

Ferruginous Hawks are particularly sensitive to human disturbance during courtship and incubation. They generally avoid nesting or experience lower reproductive success near established disturbed sites, such as mines and energy developments (Bechard and Schmutz 1995). Coyote, prairie dog, rabbit, and ground squirrel shooting, particularly with lead ammunition, is a local concern for this and other raptors that scavenge on carcasses (Knopper et al. 2006).

*Recommended Actions:*

1. Avoid disturbances of nest sites from 15 March to 15 July (Bechard and Schmutz 1995).
2. Create buffer zones of 275 yards around active Ferruginous Hawk nests for brief disturbances, and buffers of approximately 1,100 yards for long-term disturbances such as construction activities (Olendorff 1993).
3. Educate the public about the ecological requirements and benefits of Ferruginous Hawks.
4. Encourage the use of non-lead ammunition for sportsmen hunting common prey species (coyotes, prairie dogs, ground squirrels, and rabbits).

**Agriculture:**

- Livestock farming and ranching

**Natural System Modifications:**

- Other ecosystem modifications

Habitat loss may be caused by conversion of grasslands to agriculture, cutting of scattered trees that serve as nest sites, and various land uses that reduce habitat suitability for small mammals, the Ferruginous Hawk's favored prey (Bechard and Schmutz 1995). Range-wide, agricultural developments have restricted the species to remote, rolling landscapes or other areas unsuitable for agriculture (Dechant et al. 2001). Although they avoid areas that have been largely converted to agriculture, Ferruginous Hawks appear to be relatively tolerant of moderate grazing (Bechard and Schmutz 1995).



The elimination of prairie dogs from southeastern Arizona and reduced populations in the north probably contributed to a breeding range reduction of Ferruginous Hawks in Arizona (Latta et al. 1999). Encroachment of shrubs and other woody species may have also reduced foraging success and Ferruginous Hawk habitat suitability in these areas (Latta et al. 1999).

*Recommended Actions:*

1. Protect large tracts of native grassland from conversion to cropland or urbanization.
2. Restore native grassland on abandoned croplands if they are located in the current or historic breeding Ferruginous Hawk range.
3. Create conservation easements or make use of government incentive programs that favor land management to protect prey populations and nest sites for Ferruginous Hawk.
4. Leave individual trees to provide nest habitat during pinyon-juniper management treatments.
5. Protect nest trees through fencing where they are threatened by disturbances or destruction, especially in the vicinity of known prey concentrations such as prairie dog towns.
6. Create artificial nest structures where habitat appears otherwise suitable, especially in the vicinity of known prey concentrations such as prairie dog towns.
7. Implement and encourage management practices that maintain healthy small and medium-sized mammal populations.
8. Restore and manage grasslands for prairie dogs, ground squirrels, and cottontails.
9. Reintroduce prairie dogs in historically occupied areas and encourage application of the Sylvatic Plague Vaccine (SPV) to reduce plague die offs.
10. Reduce or eliminate chemical rodent control of prairie dogs and ground squirrels, especially in suitable Ferruginous Hawk nesting habitat.

### **Climate Change**

- Ecosystem encroachment
- Changes in precipitation and hydrological regimes

Despite historical changes to their habitat and likely declines, Ferruginous Hawks currently appear to be stable or increasing throughout most of the West (Sauer et al. 2012). There are insufficient data to determine population trends in Arizona, partly because it is at the southern periphery of Ferruginous Hawk global breeding range (Bechard and Schmutz 1995). The effects of climate change, particularly prolonged droughts, are mainly a concern on prey populations, such as ground squirrels, prairie dogs, and rabbits.

*Recommended Actions:*

1. Delineate stronghold areas of Ferruginous Hawks at a landscape scale and determine habitat conditions for small mammals, particularly ground squirrels, prairie dogs, and rabbits.
2. Determine land use practices and intensities that maintain prey populations at a sustainable level.

### **Research and Monitoring Priorities**

1. Conduct inventory and monitoring of breeding Ferruginous Hawks to determine population status.



2. Create monitoring plans that include documenting distributional shifts in response to climate change.
3. Study winter populations of Ferruginous Hawks and their habitat and prey resources in Arizona.
4. Determine Ferruginous Hawk response to management efforts, such as buffer zones and management of prey habitats.

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### Recommended Citation

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