

BRINGING BIRDS HOME

*A Guide to Enhancing
Grasslands for Birds and
Other Wildlife*





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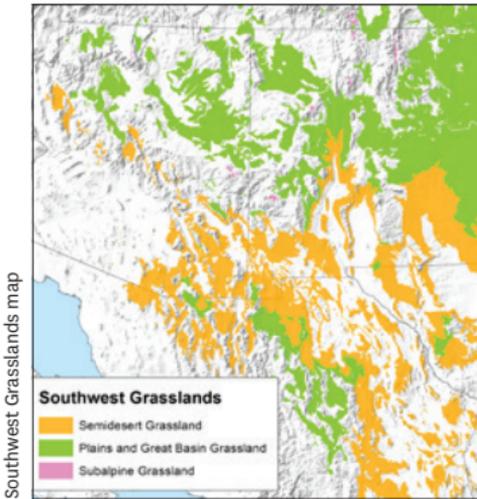


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WHY BIRDS?

Because birds are relatively conspicuous and easy to observe (compared to other animals), they are ideal indicators for monitoring environmental change. Most birds have specific habitat requirements, and changes in habitat can result in changes in the birds that use the area. Arizona is amazingly diverse—from mountains and moist canyons to grasslands and deserts. These different places generate astonishingly high animal diversity. Arizona is famous for our number of native bird species. In fact, according to a study conducted by Natureserve (natureserve.org/library/stateofunions.pdf) Arizona ranks third in the country for the most bird species (and that's while landlocked). The grasslands, especially in the southeastern part of the state, provide a home for a unique assortment of birds.



This guide will help you create healthy grasslands for birds and other wildlife, as well as people. Healthy grasslands stabilize soils to moderate soil erosion, help keep water tables high, contribute to healthy water quality, and provide a biologically rich environment. Grasslands can be a source of forage for cattle and other livestock and are an important part of Arizona's agriculture economy.



ARIZONA GRASSLANDS

Grasslands productivity is based on many things including the slope, aspect, climate, soil, and water features associated with the site (NRCS fact sheet).

Southwest grasslands are typically composed of bunch grasses rather than sod-forming grasses. Bunch grasses have deep root systems that allow them to survive during periods of drought, but they spread slowly by seed instead of sending runners. This leaves gaps for other plants and open space between the bunches.

In Arizona, grasslands support a group of breeding birds found only in the southwestern United States and northern Mexico. The Southwest also provides important wintering grounds for grassland birds that breed in the northern United States and Canada.

Grasslands are vulnerable to changes in the climate, including drought, increased frequency of wildfires, and extreme weather. Sustainable management of Arizona grasslands ensures Arizona's working landscapes remain resilient and viable for the industries, people, and diverse bird and animal populations that rely on them. Enhancing grasslands for birds and wildlife is an investment in the prosperity, resiliency, and health of traditional ranching and agricultural economies.

This guide is designed to assist owners and managers of grasslands in Arizona. To learn more about grassland types and descriptions, you may be interested in the conservation planning resources available for free from the Natural Resources Conservation Service (NRCS) nrcs.usda.gov.

A very helpful book to help you identify grasses is Arizona Range Grasses: Their Description, Forage Value, and Grazing Management edited by George B. Ruyle and Deborah J. Young, available online through the University of Arizona Cooperative Extension program: cals.arizona.edu/.



Arizona Biological Regions	GRASSLANDS
Colorado Plateau <i>(Apache, Navajo, Coconino, Mohave Counties)</i>	Cold-Temperate (Great Basin) Grasslands Plains Grasslands Semiarid Grasslands
Mogollon Transition <i>(Greenlee, Gila, Yavapai Counties)</i>	Plains Grasslands Semiarid Grasslands Oak Savannahs and Woodlands
Arizona and New Mexico Mountains <i>(Apache, Navajo, Coconino, Greenlee Counties)</i>	Subalpine Grasslands Montane Meadow Grasslands
Sonoran Desert <i>(Pinal, Pima, Maricopa, Yuma, LaPaz, Mohave Counties)</i>	Sonoran Savanna Grasslands
Southeastern Arizona <i>(Cochise, Graham, Santa Cruz, Pima Counties)</i>	Montane Grasslands Plains Grasslands Semiarid Grasslands Oak Savannahs and Woodlands



Subalpine Grassland, Tice Supplee

Subalpine Grasslands 8500–11,500 feet

Geographic Distribution in Arizona: Restricted to the high elevations of the San Francisco, White, Chuska, and Pinaleno mountains and on the Kaibab Plateau. Low-growing grasses mixed with forbs (aster, sedge, fleabane, clovers, and cinquefoil) and low shrubs. Primary grass species include Arizona fescue and alpine timothy. This grassland is associated with low swales where water pools in the spring after snowmelt. Natural disturbances are water-caused erosion, drought, and elk grazing.

Representative Birds: Savannah Sparrow, Mountain Bluebird, and Brewer's Blackbird.



Montane Meadow; Big Lake, AZ; wikipediacommons

Montane Meadows *6500–8500 feet*

Geographic Distribution in Arizona: Widespread but scattered in the mountain forests. The best examples are in the White Mountains and on the Kaibab Plateau, in association with the pine forests from Williams to Flagstaff, and east into New Mexico.

Moister sites support sedges, rushes, and plants that are food for livestock and wildlife. Common grasses include Arizona fescue, blue grama, pine dropseed, bromes, and mountain muhly. Shrubs and low-growing forbs are interspersed and include bitterbrush, rabbitbrush, and sagebrush. Montane meadows are associated with ponderosa pine, ponderosa pine-Gambel's oak, mixed conifer, and aspen forests. Important natural disturbances are fire and elk grazing.

Representative Birds: Mountain Bluebird, Vesper Sparrow, Savannah Sparrow, and Eastern (Lilian's) Meadowlark.



Great Basin Grassland, Tice Supplee

Great Basin Grassland <6000 feet

Geographic Distribution in Arizona: Widespread throughout the central and northern regions of the Colorado Plateau. To the east this cold-temperate grassland transitions into plains grassland.

This grass and shrub community has been invaded in recent times by pinyon pine and juniper woodlands. Grass species in this habitat include Indian ricegrass, needle-and-thread, dropseeds, alkalai sacaton, galleta, muhlys, and blue grama. Common shrubs are sand sagebrush, Mormon tea, yucca, and rabbitbrush. Important natural disturbances are drought, wind erosion, cool grass fires, and elk grazing.

Representative Birds: Swainson's Hawk, Ferruginous Hawk, American Kestrel, Burrowing Owl, Common Nighthawk, Cassin's Kingbird, Western Kingbird, Loggerhead Shrike, Horned Lark, Western and Mountain Bluebird, Vesper Sparrow, Lark Sparrow, Eastern (Lilian's) and Western Meadowlark, and Scott's Oriole.



Plains Grassland, Audubon Arizona

Plains Grasslands *5000–7500 feet*

Geographic Distribution in Arizona: Widespread in the eastern and central sections of the Colorado Plateau mostly below 6500 feet. This is the grassland of northern Yavapai County, south to Chino Valley. Found locally in southeastern Arizona with the best examples being the San Rafael Valley and Sonoita grasslands. Important natural disturbances are drought, wind erosion, and cool grass fires.

A grass-dominated community with few shrubs or forbs. Strong influences from summer high-intensity (monsoon) storms. Common grasses are blue and side-oats grama, galleta, muhlys, three-awns, and dropseeds. Shrubs include rabbit brush, yucca, mimosa, acacia, and mesquite.

Representative Birds: Scaled Quail, Northern Harrier, Ferruginous Hawk, Common Nighthawk, Horned Lark, Lark Sparrow, Grasshopper Sparrow, Cassin's Sparrow, Eastern (Lilian's) and Western Meadowlark. Wintering Longspurs, Lark Bunting, Savannah Sparrow, and Sprague's Pipit. Southeastern Arizona ONLY: Botteri's Sparrow and Baird's Sparrow.



Sacaton Grassland, Audubon Arizona

Sacaton Grasslands 2000–5000 feet

Geographic Distribution in Arizona: Primarily Southeastern Arizona.

Located within the valley-bottom floodplains, typically adjacent to cottonwood/willow and mesquite forests, or in swales or depressed basins where mesquite, oak, or desert scrub may be present on higher ground. Sacaton Grassland requires a water table shallower than 30' to thrive; where water table is now lower, Sacaton Grassland persists but does not spread or rejuvenate. Grasses grow in clumps and can easily reach 6 feet and higher. Grassland sparrows and migrant buntings depend on this vegetative community. In southeastern Arizona alkali sacaton and giant sacaton are the dominant species. Important natural disturbances are grass fire and flooding.

Representative Birds: Cassin's Sparrow and Botteri's Sparrow.



Oak Savannah, Huachuca Mountains, Audubon Arizona

Oak Savannas and Woodlands *5000–7500 feet*

Geographic Distribution in Arizona: Mogollon Transition and South-eastern Arizona.

Oak savannas have many species of evergreen oaks, often narrowly confined to areas near water. There is often a gradient from the oak savannah to oak woodlands that extend some distance up hillsides. Native grasses and forbs are diverse and include gramas, beardgrass, dropseeds, and panic grasses. This unique grassland community is primarily associated with Southeastern Arizona and New Mexico mountains and the Mogollon Transition in central Arizona. Important natural disturbances are drought and grass fires.

Representative Birds: Montezuma (Mearn’s) Quail, Gray Hawk, Ladder-backed Woodpecker, Arizona Woodpecker, Mexican Jay, Eastern (Azure) Bluebird, Rufous-crowned Sparrow, Scott’s Oriole.



Semi-arid Tobosa Grassland, Yavapai County, Audubon Arizona

Semi-arid Grasslands 3000–5500 feet

Geographic Distribution in Arizona: Southeastern Arizona near New Mexico, north to the San Carlos Apache reservation, and west through southern Yavapai and eastern Mohave counties.

Shrubs, cactus, and small trees are mixed in with this grassland. Grasses are often in patches with bare ground and rock in between. Common grass species are tobosa, three-awns, muhlys, and gramas. Shrubs include mesquite, acacias, mimosa, and creosote bush, with canotia and Joshua tree in Mohave and Yavapai Counties. Important natural disturbances are drought, wind erosion, and grass fires. South African Lehmann Lovegrass has replaced a more diverse native grass community in many areas.

Representative Birds: Swainson's Hawk, American Kestrel, Burrowing Owl, Scaled Quail, Lesser Nighthawk, Cassin's and Western Kingbird, Loggerhead Shrike, Horned Lark, Bendire's Thrasher, Canyon Towhee, Cassin's Sparrow, Rufous-crowned Sparrow, Lark Sparrow, Black-throated Sparrow, Scott's Oriole, and Western Meadowlark; SE Arizona ONLY: Rufous-winged Sparrow, Grasshopper Sparrow, and Eastern (Lilian's) Meadowlark.



Sonoran Savanna, Sally Flatland, USFWS

Sonoran Savanna (Desert) Grasslands *300–3500 feet*

Geographic Distribution in Arizona: Found primarily in the upper Altar Valley in Pima County on the Buenos Aires National Wildlife Refuge and adjacent ranches.

Similar in composition to the semi-arid grassland. Common grasses are grammas, three-awns, muhlys, Arizona cottontop, fluffgrass, and tangle-head. Associated shrubs and cactus are typical of the Sonoran desert and include palo verde trees, mesquite, cholla, and prickly pear cactus. Important natural disturbances are drought, wind erosion, and grass fires. The exotic buffelgrass has become a persistent invasive that burns easily and recovers quickly from fire.

Representative Birds: Swainson's Hawk, American Kestrel, Scaled Quail, Lesser Nighthawk, Cassin's and Western Kingbird, Loggerhead Shrike, Rufous-winged Sparrow, Lark Sparrow, and wintering Vesper Sparrow, Lark Bunting, and White-crowned Sparrow.

GRASSLAND ASSESSMENT

Begin by asking the following questions:

- Are you happy with the amount and diversity of grasses on your land?
- If not, What do you want your grasslands to look like, in 5, 10, 20, or 50 years?
- What is the elevation and topography? (flat, rolling hills, deep ravines, steep slopes)
- How have historic activities and disturbances affected the vegetation and ecological condition of the site?
- Is there fire and what is the frequency (years between fires)?
- What times of year do you get the most precipitation (rain or snow)?
- What wildlife and bird species occur on the site?
Use the Arizona Game and Fish Department online HabiMap to get a list (See page 61).
- How does the site fit with the surrounding landscape?
Check all that apply:
 - part of a larger grassland type
 - isolated patch
 - adjacent to woody or desert sites

Use the NRCS Ecological Site description and assistance from a Range Conservationist to answer the following questions:

- What soils are on the site? (Have soils been lost historically?)
- How might the soils and topography affect erosion and vegetation establishment?
- What are the main plant species?
- What is the potential for the site to be a native grassland?
- What known problems are interfering with the health of the site?
Examples: invasive plants, drought, erosion, historic land uses

Signs of a Healthy Grassland Ecosystem

Habitat Score Sheet Part 1

- Are there many young native grasses? Yes No
- Is fire part of the landscape? Yes No
- Are soils stable and have minimal evidence of current erosion?
 Yes No
- Is water currently captured by soil with minimal runoff? Yes No
- Are there two or more species of native perennial grass?
 Yes No
- Are un-grazed grasses knee high or taller in the growing season?
 Yes No

For every 'Yes' add one point—enter total here:

Look for Potential Issues

Habitat Score Sheet Part 2

- Are there invasive plant species? Yes No
Examples: mustards, thistles, buffelgrass, cheatgrass, Johnson grass, Bermuda grass, Lehman's lovegrass.
- Are there signs of erosion and overland flow of water? Yes No
- Is there woody plant encroachment into the grassland?
 Yes No
- Is there mostly bare ground? Yes No
- Will conditions on the surrounding landscape negatively influence the wildlife habitat suitability for your site? Yes No
- Are there only grasses with no wildflowers or annual forbs?
 Yes No

For every 'No' add one point—enter total here:

Combine the two scores—overall total:

What Did You Find?

Overall score 10–12:

It looks pretty good!

There are numerous native bunchgrass species, there is no or minimal active erosion, shrubs are not dominant, roads are in good condition and not eroding, and there are no or few invasive plants.

Overall score 7–9:

There are some opportunities to improve

Your system is mostly healthy overall, but with a little work and updated practices, your grasslands can be even better for you and your family. There are many ideas in this booklet to help you accomplish a goal of a healthier grassland.

Overall score 6 or lower:

Your grassland needs some work

Making some changes can really improve the overall health of your property and retain moisture while reducing the problems of erosion and grass species loss. Some issues pointing to a less-than-healthy grassland include erosion, extensive bare ground (greater than 75%), too many woody plants, trampled or severely overgrazed vegetation, vehicle damage, or lack of expected grass species diversity and few young plants. If your score was way below six, there are resources in the back of this booklet with more comprehensive information to help you.

The Appleton-Whittell Research Ranch of the National Audubon Society has excellent stands of native grasses and serves as a reference site for southeastern Arizona grasslands.



AWRR HQ, Audubon Arizona

ASSESSMENT

These northern Arizona Great Basin grasslands show extensive invasion by woody plants and the positive results of tree removal.



Woody invasion, Northern Arizona; Audubon Arizona

This desert grassland is suffering from erosion, loss of grass species, and woody plant invasion.



Poor-condition grassland, Rana Tucker

RECOMMENDED PRACTICES

Let's address your findings

Maybe you noticed some issues in your grasslands. Fixing or reducing just a few key things can help maintain a functioning, healthy grassland.

Here are some things you can do:

- Livestock grazing – Rest the area for 1–3 years if in poor condition, adjust livestock numbers, implement pasture management systems, seasonally defer grazing to benefit key grass species.
- Complete a Natural Resources Conservation Service grazing plan.
- Consider installing livestock “drinkers” for better livestock distribution and water for wildlife.
- Road and access management – often road damage is a result of public use at times of year when roads can be damaged. The Arizona Game and Fish Department Land Owner Respect program is a great way to educate the public about responsible travel on your ranch roads and can include a sign-in and -out requirement for public use.
- Remove invasive shrubs and trees using mechanical means, hand cutting, fire, or careful use of herbicides. (Avoid primary bird breeding season April–July and in SE Arizona June–September) (Avoid using persistent broadleaf herbicides, which will remove forbs and wildflowers from the community).
- Restore native grasses and forbs by seeding or plug planting.
- Contact an Audubon chapter to help you plan for the birds in your grasslands.
- Write a conservation plan with the help of the Natural Resources Conservation Service or the University of Arizona Cooperative Extension program: extension.arizona.edu/natural-resources.
- Install small rock or native vegetative check structures in eroding cuts and drainages.
- Mow around buildings, not the entire area.
- Install bird boxes for bluebirds and American kestrels.

Cover Your Pipes!

Open and uncapped vertical, standing pipes could be on your property for many reasons. They may look innocuous to us, but these pipes are literally death traps for many birds and other wildlife. Cavity-nesting birds investigating what looks like a potential nesting site are often unable to escape and die slowly. It is very straightforward to prevent future deaths by capping or covering these pipes. If it is a ventilation pipe, then cover it with fine metal screening (small enough to prevent bees). Sometimes the simplest solution is to remove the pipe entirely.

Death Pipe, National Forest Service

Hundreds of dead birds and lizards have been found in open vertical pipes throughout the American West.



RECOMMENDED PRACTICES

Capped Pipe, Susan Drown

This pipe has been covered with metal screening to prevent animals from entering. You can also use plastic caps or cement, or you could simply remove a standing pipe.



Wildlife Escape Ladders

Water tanks and troughs can be a great benefit to birds and wildlife but can also present a lethal danger. Wildlife can drown if they fall into the water while trying to get a drink and cannot climb the smooth metal walls. Installing an escape ladder is simple, inexpensive, and very effective at preventing these needless deaths. Many types of material can be used including metal screening sloping into the tank. This forms a ramp, which needs to connect to the side of trough so that an animal can get to the edge and escape.

RECOMMENDED PRACTICES



Water tanks are a good alternative to cattle entering a riparian zone and trampling the banks. A ramp in the tank gives wildlife an escape if they fall in.

Wildlife escape ramp, NRCS



Birds and other wildlife are drawn to tanks for the valuable water they provide. If an animal falls in, it can swim to an escape ladder, such as this one made of metal screen, and climb to safety.

Aluminum Wildlife Ramp, montanafberglass.com

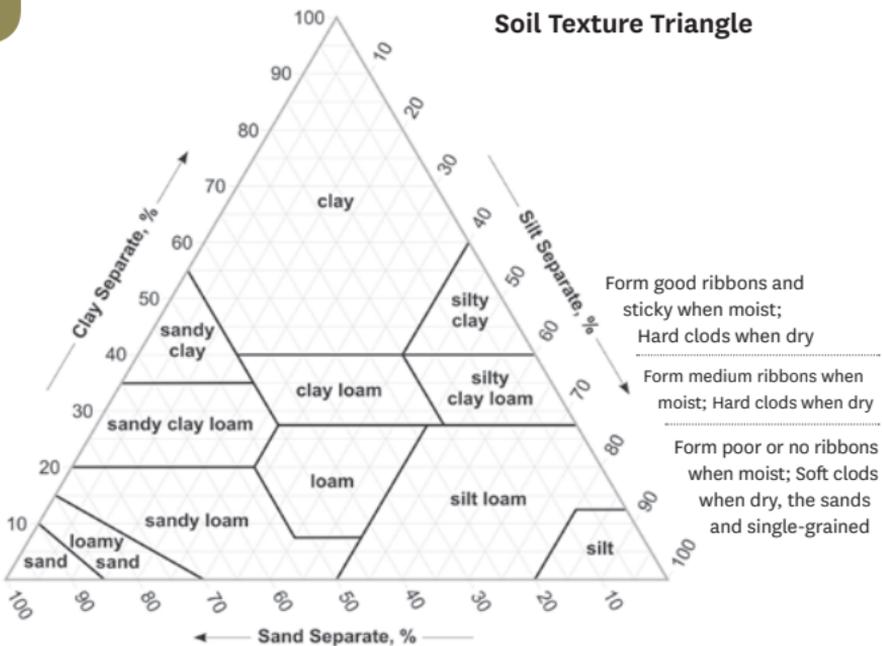
Know Your Soils!

The plants that will grow on a site depends on the properties of the soil. Knowing your soil type is as important as elevation, topography, average annual precipitation, and temperature to understand the potential for your grassland.

If you have a site that is mostly brush and pinyon or juniper and you are considering trying to restore it to a grassland, it is important to know what soils on your land will support a grassland. Not all soils are ideal for grasslands. Some support one type of grassland and not another. Soil types can also differ in the same general area. By knowing what soil type(s) you have on your land, you can better understand what grasses, forbs, and woody plants are likely to thrive there. You may conclude that your land is best managed as a mix of grassland and woody sites. There are also many birds that use shrubs and pinyon-juniper; keeping these plants on your land will increase overall diversity for birds and other wildlife. The Natural Resources Conservation Service (NRCS) field office staff can provide detailed maps of the soils on your land and help you determine your soil type. nrcs.usda.gov

The Ribbon Method

This simple field test will help determine the composition of your soil. Wet a small ball of soil and roll it between your thumb and finger to make a ribbon or snake. The more clay that is in the soil, the longer the ribbon. If the soil is mostly sand and gravel, it will fall apart and you will not be able to make a ball. Sandy soils drain better than soils high in clay. Many clay soils also have a tendency to crack and turn over, bringing rocks to the surface. Grasses such as tobosa and vine mesquite are adapted to this type of soil. Bromes, three-awns, and gramas prefer more sandy-gravelly soils. There is an excellent pocket series produced by NRCS for southeastern Arizona that will guide you through a field analysis of the soils on your land. The NRCS Ecological Site Description for your land will include a list of grasses and other plants associated with each soil type. esis.sc.egov.usda.gov/Welcome/pgReportLocation.aspx?type=ESD



Soil texture by the feel method (After Dureza, 1982)

Managing Your Grassland for Birds

Grassland birds are a vital part of North American landscapes. Forty-eight species will nest in grasslands in the United States, including quail, hawks, and songbirds. Grasslands cover 358 million acres of the United States, 85% of which are privately owned. These grasslands provide critical breeding habitat for the 29 species of birds that will nest only within grasslands. Happily, ranchers are implementing sustainable grazing systems and improving bird habitat on ranchlands in 11 western states.

Birds eat a wide variety of food, ranging from fruits and seeds to other animals. Many birds rely on a diet of insects to get the nutrition they require to lay eggs and raise young. Many grassland birds are seed-eating specialists, especially in the winter.

Birds come in many shapes and display a variety of habits. Most of the birds found in grasslands are drab and brown in color. This makes them less visible to predators. Identifying them can be very challenging, even for the best of bird watchers.

Most grassland birds are migrants. Southeastern Arizona grasslands have the highest diversity of wintering birds in the United States. In addition to providing areas for birds to breed and spend the winter, all of Arizona grasslands serve as stopover locations during migration. Birds pause to rest and refuel here before continuing their journey.

There are some easy things you can do to benefit birds that use your grasslands. Some birds require specific features (bare ground vs. tall grass vs. shrubs). Some do best with multiple habitat features for nesting, foraging, and raising young. Providing various heights of grasses and mixes of shrub cover will help meet the diverse needs of grassland birds. The presence of some birds can serve as indicators of a healthy grassland. Those species are noted in the bird description section of this guide as Habitat Quality Indicators.

1. Minimal or no shrub cover available (<1%)

Herbaceous Cover*	Habitat Quality Indicator Birds	Distribution
Low-Moderate (grass and forb height < 6 inches)	Horned Lark** Burrowing Owl** McCown's Longspur Baird's Sparrow Savannah Sparrow	Statewide Statewide Winter SE AZ Winter SE AZ Northern AZ Mountains; Winter Southern AZ
Moderate-High (grass and forb height > 6 inches)	Botteri's Sparrow Grasshopper Sparrow Chestnut-collared Longspur	SE AZ SE AZ and Chino Valley Winter SE AZ

*Herbaceous cover is the height of all grasses and forbs (broadleaf plants like wild flowers)

**Horned Lark and Burrowing Owl need bare ground

2. Low shrub cover available (1-5%)

Herbaceous Cover*	Habitat Quality Indicator Birds	Distribution
Low-Moderate (grass and forb height < 6 inches)	Horned Lark** Lark Sparrow Scaled Quail Ferruginous Hawk	Statewide Statewide SE Arizona Northern AZ
Moderate-High (grass and forb height > 6 inches)	Lark Bunting Scaled Quail Swainson's Hawk Cassin's Sparrow Eastern (Lilian's) and Western Meadowlark Vesper Sparrow	Statewide Migrant SE and NE AZ SE and Northern AZ SE and Central AZ SE and Northern AZ Northern AZ; Winter Southern AZ

3. High shrub cover available (>5%)

Herbaceous Cover*	Habitat Quality Indicator Birds	Distribution
Low-Moderate (grass and forb height < 6 inches)	Lark Sparrow Loggerhead Shrike Brewer's Sparrow	Statewide Statewide Northern AZ; Winter Central and Southern AZ
Moderate-High (grass and forb height > 6 inches)	Rufous-winged Sparrow Cassin's Sparrow Montezuma (Mearns') Quail	SE AZ SE and Central AZ SE AZ; AZ-NM Mountains

CHARACTERISTIC SPECIES

RAPTORS: Hawks, Falcons, Eagles, and Owls

Northern Harrier Juvenile, Tom Koerner, USFWS



Northern Harrier (*Circus cyaneus*)

RANGE: Migration species that winters in Arizona. Found in association with cultivated fields. Prefers open grasslands or low and sparse scrublands.

IDENTIFICATION: Wingspan 38–48". Males are a light gray color with contrasting black in the wings. Females and immatures are dark-brown with a streaked breast. All have a prominent white rump, and in flight, the long and narrow wings are held above the body in a “v” shape.

HABITAT: Grasslands, marshes, and agricultural areas.

BEHAVIOR AND BREEDING: A few breeding records from Santa Cruz County and the Colorado Plateau. The nest is built on the ground in tall grass or reeds in marshes from May-June. They are most active in morning and late afternoon, flying low over the ground in a rocking flight.

DIET: Small rodents and larger insects in summer; small birds in winter.

CHARACTERISTIC SPECIES



Red-tailed Hawk, Don DeBold

Red-tailed Hawk (*Buteo jamaicensis*)

RANGE: Resident population with numbers increasing when winter migrants from the north arrive. The most common hawk in Arizona.

IDENTIFICATION: Wingspan 50" A large hawk that can be variable in appearance. The reddish tail of adults is a good field mark. Young birds lack the red tail color. Typical markings are a pale breast with a dark belly band and dark "elbows" on the leading edge of the wing. The back is a dark brown. Winter northern birds often have a much-darker belly and underwing coloration.

Habitat: An adaptable species, this hawk is found throughout Arizona in almost all habitats, including grasslands.

BEHAVIOR AND BREEDING: Builds a 2- to 2 ½-foot wide stick nest in trees, saguaro cactus, and sometimes on cliffs. Usually nests January–April in desert grasslands while birds at higher elevations nest April–June.

DIET: Mostly mammals (prairie dogs, other rodents, jackrabbits, and cottontails) and some reptiles.



Swainson's Hawk (*Buteo swainsoni*)

RANGE: Spring–Summer breeding in grasslands throughout Arizona. A long-distance migrant that winters in South America.

IDENTIFICATION: Wingspan 52", a distinctive slender hawk with a long tail and pointed wings that are held slightly above the body while soaring. When seen from below, the leading edge of the wings is lighter than the trailing edge, and the head is darker than the body.

HABITAT: Breeding populations in Arizona include semiarid and Great Basin grasslands, and Chihuahuan desert scrubland. Migrating birds in all grasslands and agricultural areas.

BEHAVIOR AND BREEDING: Typically builds a stick nest in a tree bordering grasslands or agricultural land. Nesting is from May–June.

DIET: Small mammals (ground squirrels, rabbits, prairie dogs, other rodents), birds, reptiles and insects (almost 100% insects in winter and during migration).



Ferruginous Hawk, Greg Schechter

Ferruginous Hawk (*Buteo regalis*)

RANGE: Migrants winter in Arizona; small breeding populations in northern Arizona grasslands.

IDENTIFICATION: Wingspan 56", the largest hawk in North America with light and dark forms. Tail on both is very pale, almost white in appearance. Dark birds have a dark head and body; the front of the wings on the underside are dark, while the flight feathers are pale in color. Light form appears almost all white.

HABITAT: Great Basin grasslands with a mix of low shrubs near slopes or knolls with juniper. Wintering birds use grasslands and agricultural lands.

BEHAVIOR AND BREEDING: Breeding populations in Arizona are small and found in the northern half of the state in the Aubrey Valley, Arizona Strip, and the Navajo Nation. They build a large bulky stick nest 3 feet across and 2 feet high in a large shrub or small tree or on a rock outcrop or butte. Nesting from May–July.

DIET: Mostly mammals (prairie dogs, other rodents, jackrabbits, and cottontails), with some reptiles and birds.



American Kestrel (*Falco sparverius*)

RANGE: Resident population statewide. Numbers increase in winter when birds migrate to Arizona from areas to the north.

IDENTIFICATION: Wingspan 23", the smallest falcon in North America. Males are a slate-blue contrasting with reddish-brown chest and two prominent sideburn markings on the side of the head. Females are reddish-brown. The long pointed wings distinguish this bird as a falcon. Often seen perched on a yucca stalk and power lines.

HABITAT: A generalist species that is found throughout Arizona.

BEHAVIOR AND BREEDING: They are "sit-and-wait" predators, using a high perch to scan the terrain below. They also hover and drop to the ground feet first after small rodents or insects, returning to a perch to consume their prize. Nest in cavities in trees, saguaros, and artificial nest boxes. Breeding begins in the desert in March and ends in July at higher elevations.

DIET: Small mammals, reptiles, and insects.



Burrowing Owl, Scott Bartell

Burrowing Owl (*Athene cunicularia*) Habitat Quality Indicator

RANGE: Resident and migratory populations throughout Arizona; most northern Arizona birds migrate during the winter.

IDENTIFICATION: 8–10" in height, long-legged, white spots on the back and wings, yellow eyes.

HABITAT: Semiarid, plains, and Great Basin grasslands. Often found in association with prairie dog colonies and where grass is sparse and not too tall. Modifies the burrows of other animals, primarily prairie dogs, ground squirrels, and kangaroo rats. This owl is compatible with livestock grazing and prefers grazed pastures where prey is more visible.

BEHAVIOR AND BREEDING: Typically stands on the ground or a fence-post; often active in daytime and bobs up and down while looking at prey or other animals (including us!). Nest is located underground at the end of a 4 to 12-foot long burrow. Birds nest in a colony of scattered burrows. Breeding begins in mid- to late-March and ends in September. Owlets respond to disturbance with a rattlesnake-sounding buzzing.

DIET: Small insects (mostly grasshoppers), small mammals, birds, amphibians, and reptiles.

Beneficial Management Practices for Raptors

- Minimize the use of pesticides, especially in hay fields.
- Retain scattered larger trees for nesting in the grasslands.
- Preserve known nest trees.
- Make sure utility poles are “raptor friendly” to prevent electrocutions.
- Buffer nest sites 100–200 yards during the nesting season. When passing through the area or near the nest (within 50 yards), minimize your stay if you hear calling or agitated birds.
- Control rather than eradicate prairie dog colonies (burrowing owls will particularly benefit).
- Defer burrowing-animal control to the fall, after burrowing owls have finished the nesting season. Burrows occupied by owls will have feathers and white droppings around the burrow entrance.
- Protect known owl nest burrows as the owls will return to the same burrow.

QUAIL



Montezuma Quail, Dominic Sherony (Flickr)

Montezuma (Mearns') Quail (*Cyrtonyx montezumae*)

Habitat Quality Indicator

RANGE: Southeastern Arizona resident (Cochise, Pima, Graham, Pinal and Santa Cruz counties). A population in the Gila watershed of New Mexico extends north and west along the Mogollon Rim through Gila County. Year-round residents.

IDENTIFICATION: 8 $\frac{3}{4}$ "-long, small brown, black, and white bird, generally seen in pairs or small groups in the ground. The contrasting black and white markings on the face of the male are very striking. The female is mottled brown in coloration. Other names for this bird are Harlequin and fool's quail, so named because they are often undetected until you almost step on them.

HABITAT: Steep slopes of oak-grasslands and pine-grasslands with a high diversity of grass species (from 2–20 inches in height), primarily those that grow in the warm season in response to summer thunderstorms. Requires oak or pine-and-oak mix of trees.

BEHAVIOR AND BREEDING: Pairing begins in late February and March and nesting in July and August. Young birds stay with the pair for the first six months. The home range of a pair or covey is usually less than 15 acres. Nests and night roosts are built in tall stands of bunch grass. Nests in tall grasses and sacaton bottoms.

DIET: Tubers and bulbs, particularly sedges and wood-sorrel (*Oxalis*), grass seeds, other seeds, and small insects. Consumption of insects increases during the breeding season.



Photo by A. Wilson

Scaled Quail (*Callipepla squamata*) Habitat Quality Indicator

RANGE: Eastern Arizona year-round resident.

IDENTIFICATION: 10"-long, small bluish gray bird often seen in groups. Also called blue quail or cotton top because of its color and white-tipped crest on top of the head.

HABITAT: Semiarid and plains grasslands with low-growing shrubs such as burroweed, snakeweed, and scattered yucca. Scaled quail generally avoid dense vegetation and are found in rolling hills, along ridges, and on mesas. They need cover for nesting and hiding.

BEHAVIOR AND BREEDING: Nesting usually is from May–September. Family groups combine into large winter flocks of 20–200 birds. An interesting behavior is how they roost. Two or more birds sit tail-to-tail in a tight circle on the bare ground with surrounding grass less than 16 inches high and free of any canopy. Scaled quail congregate near water; available water is especially important when they have chicks.

DIET: Seeds from native woody plants and forbs such as mesquite, sunflower, ragweed, grasses. Snakeweed seeds have been found to be a large portion of the diet in some areas. Green plant shoots and small insects are a source of moisture.

Beneficial Management Practices for Quail

- Graze moderately (35% use of annual production is defined as moderate in *Range Management Principles and Practices*, 6th edition, 2011) with pasture rotation or deferment.
- Minimize grazing in areas of sparse vegetation. Some tall vegetation is preferred for nesting and escape cover. Preserve a mix of shrub/grass mix with at least 5% shrub cover. Avoid disturbing nesting birds.
- Remove invasive woody plants. (Outside bird breeding seasons).
- Conserve and enhance medium-height grass cover with >50% canopy cover of grass heights from 8–20 inches. This provides birds with habitat for escape, nesting, brood rearing, and roosting cover.
- For Montezuma (Mearns') quail maintain a minimum of 25% tree canopy cover of oak and pinyon pines. Areas with tree canopy of up to 75% are frequented by Montezuma quail.
- Manage for preferred food plants of the Montezuma Quail, which includes acorns, underground tubers of wood sorrel (*Oxalis* sp.), sedges, panic grasses, morning glory, yucca, and lupine.
 - Install drinkers for better livestock distribution and leave water for wildlife when livestock are not in the pasture.
 - Retain tall grasses and shrubs at intervals to provide hiding and roosting cover for quail and other birds.

NIGHTHAWKS

Lesser Nighthawk, Marcelline Vandewater



Lesser Nighthawk (*Chordeiles acutipennis*) and Common Nighthawk (*Chordeiles minor*)

RANGE: During breeding season southern and central Arizona (Lesser Nighthawk) and Great Basin grasslands and pinyon-juniper in northern Arizona (Common Nighthawk); both migrate south in winter.

IDENTIFICATION: 8 ½ to 9 ½" long; both are brown-gray birds with pointed wings, slightly forked tail, and obvious white bars on wings. The smaller Lesser Nighthawk wingbars are closer to the wingtip.

HABITAT: All grassland types, pinyon/juniper, and desert scrub.

BEHAVIOR AND BREEDING: Typically seen at dawn and dusk, often flying after insects under streetlights. Lesser Nighthawk vocalization is a low trill, while Common Nighthawk makes a nasal “peent” noise. Both species nest in a shallow scrape and lay their eggs directly onto the soil, sand or pebble surface from May–July.

DIET: Insects.

CHARACTERISTIC SPECIES

PERCHING BIRDS (Shrikes, Flycatchers, Larks, Bluebirds, Sparrows and others)



Loggerhead Shrike, Alan Schmierer, Flickr

Loggerhead Shrike (*Lanius ludovicianus*)

RANGE: Statewide resident and migrating populations in the winter months.

IDENTIFICATION: 9" long. A handsome gray bird with white throat and breast and a black mask. Up close you can see the hooked beak.

HABITAT: Semiarid and Great Basin grasslands in association with scattered mesquite, yucca, and sotol in southern Arizona and juniper woodlands mixed with Great Basin grasslands in northern Arizona. Shrikes avoid large expanses of very short grass.

BEHAVIOR AND BREEDING: Arizona numbers increase when wintering northern birds join the resident Arizona birds. Shrikes build a bulky nest of twigs in a small shrub or tree in open country. Breeding begins as early as February in lower elevations and ends in July at higher elevations. Their habit of impaling food on thorns and barbed wire has earned shrikes the name "butcher bird." The reason for "storing" their food is to allow toxins to break down; the food is then safe to eat.

DIET: Insects (mostly grasshoppers), small mammals, reptiles, and birds.



Say's Phoebe (*Sayornis saya*)

RANGE: Statewide and fairly common. Birds that breed in northern Arizona winter in southern Arizona and further south.

IDENTIFICATION: 7 ½" long. Best identified by the fly-catching behavior and the rusty belly. Dark-brown wings and head contrast with a lighter-brown back.

HABITAT: Semiarid, plains, and cold-temperate grasslands in association with scattered shrubs and near buildings.

BEHAVIOR AND BREEDING: Typically perches on a fence or low shrub, flying out and back catching insects. Often builds a nest under the eaves of a house or barn, and isn't bothered by human activity. March–July nesting season.

DIET: Small insects.



Horned Lark, Alan Schmierer, Flickr

Horned Lark (*Eremophila alpestris*)

RANGE: Statewide

IDENTIFICATION: 7" long Distinctive black “horns” and yellowish or white face with a black stripe under the eye and a black bib with white belly. The mostly black tail is a good way to identify this otherwise-brown bird in flight.

HABITAT: Prefers very short grass and gravel or bare ground on flat or gently rolling landscapes, including tilled fields.

BEHAVIOR AND BREEDING: Winter flocks number in the hundreds. Breeding April–July; the nest is located on the ground. Feeds in flocks by walking and hopping on the ground.

DIET: Small seeds and insects.



Western Kingbird (*Tyrannus verticalis*) and Cassin's Kingbird (*Tyrannus vociferans*)

RANGE: Statewide; during late summer and fall migration it seems there is a kingbird perched on every fencepost or wire.

IDENTIFICATION: 8 ³/₄–9" long. Western Kingbird has white outer tail feathers and a gray face with a white chin and throat. Cassin's Kingbird has white tips on the tail and a darker head that contrasts with a white chin and gray throat. Both species have a dark-gray back and wings and pale sulphur-yellow belly.

HABITAT: Semiarid and cold-temperate grasslands and Madrean woodlands and savannas.

BEHAVIOR AND BREEDING: These flycatchers nest in taller trees or yuccas from March–August. Western kingbirds often nest in Joshua trees and tall agaves.

DIET: Small insects and fruit.



Botteri's Sparrow, Alan Schmierer, Flickr

Botteri's Sparrow (*Peucaea botterii*) **Habitat Quality Indicator**

RANGE: Southeastern Arizona; most migrate south in winter, but some are resident in SE Arizona.

IDENTIFICATION: 5–6"; a non-descript brown sparrow with a large bill and long tail. Song has a “bouncing ball” trill at the end.

HABITAT: Semiarid grassland and oak woodland savanna, preferring bunchgrass vegetation near drainages bordered by tall grass-covered hillsides. Will use non-native bunchgrasses for nesting. A habitat quality indicator for sacaton and plains grasslands.

BEHAVIOR AND BREEDING: Breeds in late summer with onset of the summer rains. Nests on the ground at the base of or in grass clumps.

DIET: Seeds in winter and insects in summer.



Cassin's Sparrow (*Peucaea cassinii*) Habitat Quality Indicator

RANGE: Southeastern and Central Arizona (Cochise, Pima, Santa Cruz, and southern Yavapai, Pinal, and Graham Counties). Present in the grasslands with limited numbers wintering. Populations in the Central Arizona grasslands of Pinal, Graham, and Yavapai counties are sporadically present April to June.

IDENTIFICATION: 5–6"; non-descript brown sparrow with a large bill and long tail and very similar looking to Botteri's sparrow. The easiest way to tell them apart is the song. The courting male sings from a branch above the female and then flies up into the air and flutters back to the ground in a skylarking flight.

HABITAT: Mid to tall grass with scattered woody shrubs (e.g., mesquite, yucca, acacia, mimosa, creosote).

BEHAVIOR AND BREEDING: A secretive bird most of the year, the singing males become very visible during the breeding season. Nest is at the base of grass plants or shrubs.

DIET: Grass and weed seeds; insects in summer.



Rufous-winged Sparrow, Alan Schmierer, Flickr

Rufous-winged Sparrow (*Aimophila carpalis*)

Habitat Quality Indicator

RANGE: Southern Arizona (southern Pinal, Pima, and northwestern Santa Cruz Counties with range spreading into Cochise County).

IDENTIFICATION: 5 3/4" slender sparrow with a gray face and a brown streak that extends behind the eye.

HABITAT: Sonoran desert grasslands and semiarid grasslands. Prefers grassy areas with scattered shrubs that are thorny and dense.

BEHAVIOR AND BREEDING: Breeds in late summer with onset of monsoon rains. A portion of the population breeds in the spring and may nest again during monsoon. Nests on the ground at the base of woody shrubs.

DIET: Seeds in winter and insects during summer.



Grasshopper Sparrow (*Ammodramus savannarum*)

Habitat Quality Indicator

RANGE: Southeastern Arizona (Cochise, Santa Cruz, Pima Counties) at elevations between 3400 and 5200 feet; a small population is in Chino Valley.

IDENTIFICATION: 5" and often difficult to detect. Buff breast with no streaking and a pale central stripe on the crown of a flat-topped head. A very short and pointed tail. The buzzy insect-like trill is often the best clue the bird is there.

HABITAT: Prefers sites with few woody plants and taller grass with very little bare ground. They also like grass edges around cultivated alfalfa fields.

BEHAVIOR AND BREEDING: When flushed, flies a short distance and dives into the grass. Nest is a shallow cup domed in the back and located at the base of a plant. Breeding begins with the onset of summer rains, usually in July and extending into September.

DIET: Mostly insects and small grass seeds.



Vesper Sparrow, Alan Schmierer, Flickr

Vesper Sparrow (*Poocetes gramineus*) **Habitat Quality Indicator**

RANGE: Breeding in northern Arizona grasslands and wintering in southern Arizona grasslands and agricultural lands.

IDENTIFICATION: 5–6 ½" with white outer tail feathers, a notched tail and a patch of chestnut color at the bend in the wing. The back and chest are streaked. The bird has a melodious song and often sings in flight and during the twilight hours.

HABITAT: Found where Great Basin grasslands merge with sagebrush and blackbrush desert scrub and higher-elevation mountain meadows.

BEHAVIOR AND BREEDING: Builds a well-concealed nest on the ground near the base of a shrub or under a clump of grass. Adults will sometimes perform distraction displays to lead people or animals away from the nest.

DIET: Grass and weed seeds and insects during the summer.



Black-throated Sparrow (*Amphispiza bilineata*)

RANGE: Statewide except high mountain elevations and heavily wooded or forested areas.

IDENTIFICATION: 5 ½" with distinctive white eye stripe and a black bib with white belly, white edges on outer tail feathers. The call notes sound like a faint tinkling bell.

HABITAT: Grasslands with low shrubs and desert scrub.

BEHAVIOR AND BREEDING: Breeding begins as early as March, with a second nesting after summer rains. The nest is located in a shrub.

DIET: Small seeds and insects.



Lark Sparrow, Alan Schmierer, Flickr

Lark Sparrow (*Chondestes grammacus*)

RANGE: All grasslands.

IDENTIFICATION: 6 ½" with a bold head pattern of chestnut patches, white lines and white throat. White in corners of a long, rounded tail and a central breast spot.

HABITAT: Mesquite grasslands and grasslands near wooded areas.

BEHAVIOR AND BREEDING: Builds a cup nest of grass and twigs on the ground or low in a tree or shrub.

DIET: Insects and seeds.



Western Meadowlark (*Sturnella neglecta*) and Eastern (Lilian's) Meadowlark (*Sturnella magna lilianae*)

RANGE: Western is found statewide and Eastern breeds in south-eastern and north-central Arizona.

IDENTIFICATION: Robin-sized birds with yellow chest marked with a black "V" and bold white edges to the short tail. The easiest way to tell western and eastern birds apart is the song and call note. The Eastern song is short, and the call note is a "dzert." The Western call note is a "chuck," and the song is longer and more melodious.

HABITAT: Open grasslands and agriculture fields (pasture and alfalfa fields). Prefer low- to medium-height grass cover and native grasses.

BEHAVIOR AND BREEDING: Singing males perch on a fence post, agave or yucca stalk. Flight is quail-like, and birds often fly close to the ground and disappear in the grass. Ground feeders, they often become visible when hopping around. Large wintering flocks in agriculture are Western Meadowlarks.

DIET: Grains and seeds in winter and insects in summer.



L to R: Western Bluebird, Mountain Bluebird, Eastern Azure Bluebird; Alan Schmierer, Flickr

Bluebirds: Western (*Sialia mexicana*), Mountain (*Sialia currucoides*), and Eastern Azure (*Sialia sialia*)

RANGE: Mountain and Western are year-round in northern Arizona, wintering in southern Arizona. The Eastern or Azure bluebird is found only in the southeastern Arizona plains and oak savanna grasslands.

IDENTIFICATION: 7–7 ¼". Western male head, throat, and upperparts a deep blue. Rusty brick-red chest and blue-gray belly. Female is grayish overall with blue in wings and tail, paler rusty chest. Azure Bluebirds have a rusty-red throat. Male Mountain Bluebirds are sky-blue, and females are gray-brown with blue tinges in the wings and tail.

HABITAT: Meadows and grasslands near Ponderosa pine and pine-oak woodland.

BEHAVIOR AND BREEDING: All bluebirds are cavity nesters and will use nest boxes. Mountain Bluebirds often hover while foraging for insects. Both species are in large winter flocks, often in agricultural pastures and fields.

DIET: Insects and berries. Juniper berries are an important winter food.

WINTER BIRDS

Lark Bunting, Alan Schmierer, Flickr



Lark Bunting (*Calamospiza melanocorys*)

RANGE: Migrant in all grasslands; may not be present at a location every year.

IDENTIFICATION: 6 ½". In summer the male is black with white wing patches. Females are mostly brown with white wing patches, dark-brown streaks on a white breast and cream-colored corners on the tail. During winter, the males resemble the females with a black throat.

BEHAVIOR: Usually seen in spring and fall in large flocks often numbering 100s of birds. The males in the spring flocks may be molting into the black breeding plumage.

DIET: Seeds.



Brewer's Sparrow, Alan Schmierer, Flickr

Brewer's Sparrow (*Spizella breweri*)

RANGE: Wintering and migrant in southern Arizona, with largest wintering populations in southeastern Arizona.

IDENTIFICATION: 5 ½". A very drab, streaky-backed, gray-brown bird with a buff gray chest and a long tail.

HABITAT: Breeding populations in the Great Basin sagebrush of northern Arizona. Winters in desert scrub and grasslands of central and southern Arizona.

BEHAVIOR AND BREEDING: In winter, they are often in large flocks that include other sparrow species.

DIET: Small seeds and insects during the breeding season.



Baird's Sparrow (*Ammodramus bairdii*)

RANGE: Uncommon wintering bird in SE Arizona singly or in very small groups.

IDENTIFICATION: 5-5 1/2". Brown-streaked bird with clear whitish breast and some dark streaks under the chin that look like a necklace. The crown stripe is an ochre color. They are reluctant to fly and often scurry through the grass.

HABITAT: Plains and semiarid grasslands; may not be present in a location every year. This bird is an obligate species of grasslands and prefers low shrub density.

DIET: Seeds.



Chestnut-collared Longspur, Alan Schmierer, Flicker

McCown's Longspur (*Calcarius mccownii*) and Chestnut-collared Longspur (*Calcarius ornatus*)

RANGE: Wintering primarily in southern Arizona.

IDENTIFICATION: 6". White tail marks with a blackish triangle (Chestnut-collared) and dark inverted "T" (McCown's) are the best way to identify these birds in their brown winter plumage.

HABITAT: San Rafael Valley and Sonoita grasslands have large wintering populations of longspurs.

BEHAVIOR: Found in very large wintering flocks. The entire group will flush and fly as a group. Flocks often visit nearby earthen water tanks off and on through the day.

DIET: Seeds in winter.



White-crowned Sparrow (*Zonotrichia leucophrys*)

RANGE: Winters statewide.

IDENTIFICATION: 7". A larger sparrow, adults have a black-and-white striped head and a pale pink or yellowish bill. Young birds have a buff-and-brown striped head and bill is a bright yellow-to-orange color.

HABITAT: Found everywhere there are tangles of brush or low shrubs, including yards.

BEHAVIOR: Found in large wintering flocks. Birds will flush from bush to bush.

DIET: Seeds in winter.

Beneficial Management Practices for Perching Birds

- Retain populations of insect prey species (grasshoppers, crickets, beetles).
- Use pesticides only when necessary and in minimum amounts in localized areas.
- Retain tall grasses and shrubs at scattered intervals and within 200 yards of known nest trees.
- Retain trees with cavities for nesting.
- Conserve dense patches of giant sacaton within river and intermittent stream or creek bottomland.
- Conserve mid and tall grassland from loss due to development
- Use rotational or deferred grazing of pastures to provide a patchwork of grass condition throughout each year.
- Introduce managed fire into the system.
- Maintain at least 5% shrub cover.
- Avoid disturbing nesting birds.
- Install nest boxes for bluebirds and other cavity nesters.
- Install drinkers for better livestock distribution and leave water for wildlife when livestock are not in the pasture.

NOTABLE GRASSLANDS ANIMALS

Badger, California Department
of Fish and Wildlife



American Badger (*Taxidea taxus*)

Found statewide, preferring flatter areas with soils they can easily dig. They feed on rodents and other burrowing animals. Numbers tend to be higher where there are prairie dogs.

Black-footed Ferret, AGFD



Black-footed Ferret (*Mustela nigripes*)

Historic range is the grasslands of northern Arizona. An endangered species; a population has been introduced in the Aubrey Valley in Coconino and Yavapai counties. Requires the presence of prairie dogs, a primary food source.

Black-tailed Prairie Dog, Brian Garrett, Flickr



Gunnison's (*Cynomys gunnisoni*) and Black-tailed (*C. ludovicianus*) Prairie Dog

Gunnison's are found in the plains, desert and Great Basin grasslands of northern Arizona. Black-tailed prairie dogs were absent from the state until introduced to the Las Cienegas National Conservation Area in Pima County.

Ornate Box Turtle, Alan Schmitter, Flickr



Ornate Box Turtle (*Terrapene ornata*)

Arizona's only native box turtle, found only in SE Arizona grasslands. State protected status by the Arizona Game and Fish Department.

Pronghorn (*Antilocarpa americana*)

In all Arizona grasslands. The fastest North American animal, pronghorn are adapted to the arid conditions of the West. The greatest threat to the species is fragmentation of habitat. They go under, not over, fences. Using a smooth bottom wire set at least 16 inches from the ground allows pronghorn to cross.



Pronghorn Antelope, Betty Dickens

Tiger Salamander (*Ambystoma mavortium*)

Arizona's only native salamander. The young occupy stock ponds, lakes, and streams. Adults are terrestrial in the grasslands.

Populations of the Sonoran (*A. m. stebbinsi*) in SE Arizona within the San Rafael Valley is listed as Endangered.



Tiger Salamander,
John Breitsch, Flickr

Massasauga Rattlesnake (*Sistrurus catenatus*)

A small rattlesnake found only in Graham and Cochise Counties grasslands. State protected status by the Arizona Game and Fish Department.



Massasauga Rattlesnake,
Timothy Cota

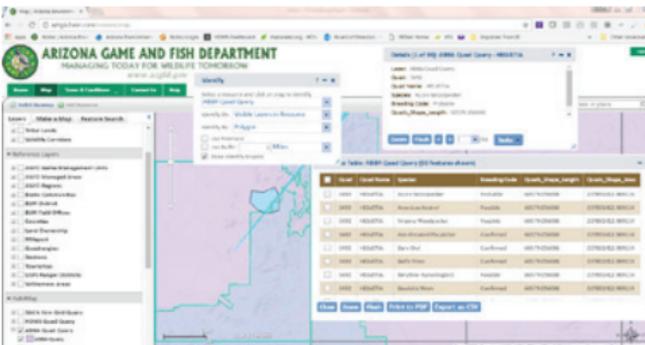
Environmental Review Tool (ERT)

The Arizona Game and Fish Department's Online Environmental Review Tool (ERT) is an excellent resource for determining if your grassland is within an Arizona Important Bird Area. The included Arizona Breeding Bird Atlas data can help you develop a list of possible breeding birds on your site.

The steps are easy:

1. Open the Online Environmental Review Tool map on your computer: <http://azhgis2.esri.com/content/map>.
2. Click "agree" to terms of use, and zoom to your location.
3. Click on the layer for Important Bird Area (IBA) to determine if your project is inside an IBA.
4. Scroll down on the Layer Table of Contents below the IBAs to the HabiMap Section.
5. Click on the layer for ABBA Query and then on the + sign and click the next box for ABBA Query.
6. Use the identify tool  on the top right menu above the map.
7. This opens a dialog box.
 - a. Select ABBA Quad Query in the top line for resource.
 - b. Identify by: select polygon.
 - c. You can choose to add a buffer if you want.
8. Draw your project area.
9. In the detail box that opens, click on the Task button, then Show Results in Table.
10. Export the list as a CSV file, and it will save as an Excel spreadsheet.

Determine the potential bird community your grassland could support.



ERT showing IBA and project boundaries and the ABBA query steps. Use the ERT tool, consult with an Arizona Game and Fish Department biologist, NRCS Wildlife Biologist, local Audubon Chapter, or this booklet and the bird distribution information.

CONCLUSION



Audubon's Important Bird Areas Program is a partnership of Audubon Arizona and Tucson Audubon, and is committed to identifying areas most important for native birds.

Sometimes these areas are large and grand, but more often birds find refuge in small patches of good habitat that are being protected and enhanced by someone like you.

Caring for your own wildlife habitat that you manage is a critical link in the conservation of birds statewide. Birds know no boundaries. We hope this guide aids in making your grasslands hospitable for many birds and other wildlife and for the beneficial to your family and community. ***Thank you!***

More Resources for Improving Your Grasslands

The **Natural Resources Conservation Service (NRCS)**, an agency of the U.S. Department of Agriculture, provides many voluntary programs to assist private landowners with wildlife habitat conservation projects. The U.S. Forest Service, Fish and Wildlife Service, Arizona State Land Department, Arizona Department of Forestry, and Arizona Game and Fish Department also have programs to assist landowners and can provide technical advice.

To gain more information, visit

nrcs.usda.gov/programs

fws.gov/arizonaes/Partners.htm

gf.state.az.us/outdoor_recreation/landowner_lip.shtml

U.S. Fish and Wildlife Service Partners for Fish and Wildlife Program is a federal program administered by the U.S. Fish and Wildlife Service to assist private landowners to protect, enhance, or restore wildlife habitat for federally listed endangered or threatened species. For information on Arizona's program, visit fws.gov/southwest/es/arizonaes/Partners.htm.

We encourage you to check with your area Audubon chapter and connect with the **Arizona Game and Fish Department's Landowner Relations Program**. This state program coordinates funding sources, and provides technical assistance to private landowners and public lands lessees to develop, plan, and conduct habitat projects to conserve, enhance, or restore habitat for all wildlife species. For more information about this program, visit azgfd.com/Wildlife/LandOwners/. The Habitat Partnership Committee is a collaborative group of Federal and State Agency personnel, members of the agricultural community, and Non-Government Organizations working together to plan and implement habitat improvement projects, and operates under the wing of the Landowner Relations Program. For more information about this program, visit azgfd.com/Wildlife/HPC.

Tribal Landowner Incentive Program (TLIP) is a federally administered program by the U.S. Fish and Wildlife Service. Technical assistance and funding are available to federally recognized Native American tribes to develop, plan, and conduct projects to conserve, enhance, or restore habitat for federally listed, proposed, candidate, or other at-risk species on tribal lands. For information on this program, visit fws.gov/grants/tribal.html.

Online Resources for Birds and other Wildlife

Arizona Important Bird Areas Program—aziba.org

Arizona Game and Fish Department—azgfd.gov

Arizona Antelope Foundation—azantelope.org

eBird—ebird.org

National Audubon Society—audubon.org

Reptiles and Amphibians of Arizona online field guide—reptilesfaz.org/

Sonoran Joint Venture—sonoranjv.org

Intermountain West Joint Venture—iwjv.org

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