Best Management Practices for Shortgrass Prairie Birds:

A Landowner's Guide

13401 Piccadilly Road
Brighton, CO 80601
(303) 659-4348

www.cbobirds.org

Scott W. Gillihan and Scott W. Hutchings
Colorado Bird Observatory

Colorado Bird Observatory (CBO) is a nonprofit organization founded in 1988. Our mission is the conservation of Rocky Mountain and Great Plains birds and their habitats through research, monitoring, and public education. CBO's work is designed to increase the understanding of birds—what habitats they use, what roles they play in healthy ecosystems, and what factors threaten their survival. CBO accomplishes its goals through the education of children, teachers, natural resource managers, and the general public, and through on-the-ground conservation work and research in cooperation with government agencies and conservation organizations.

Prairie Partners, a program developed and managed by Colorado Bird Observatory, seeks private landowners and asks their voluntary cooperation to conserve shortgrass prairie birds and their habitat. The program succeeds by determining and then tracking the status of birds, mainly on private lands, and then working with private landowners to promote effective stewardship of these birds and their habitats. *Prairie Partners* is currently being implemented in the shortgrass region throughout western North America.

Acknowledgments

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Bird illustrations: Louise Zemaitis
Layout: Sherrie York

Cover photos: Tony Leukering and Scott Gillihan
Habitat photos: Scott Gillihan and Stephanie Jones

A Short History of Shortgrass

Ecology—

The shortgrass prairie lies along the eastern edge of the Rocky Mountains, from New Mexico north to Alberta. Storm fronts traveling east across the continent from the Pacific Ocean lose their moisture as they climb over the Rockies, and the resulting rain shadow creates the driest conditions found on the Great Plains. These semi-arid conditions support only limited plant growth, and the ankle-high vegetation of the shortgrass prairie is the result. Traveling east, precipitation increases, and shortgrass gives way to the taller mixed-grass and tallgrass prairies. Shortgrass prairie is dominated by two low-growing warm-season grasses, blue grama and buffalograss; western wheatgrass is also present, along with taller vegetation such as prickly-pear, yucca, winterfat, and cholla. Sandsage prairie is found where sandy soils occur, and is dominated by sand sagebrush and grasses such as sand bluestem and prairie sand-reed. Pockets of mixed-grass prairie (including needle-and-thread and side-oats grama) and tallgrass prairie (including big bluestem, little bluestem, and switchgrass) are found where moisture is adequate.

The shortgrass prairie landscape has been shaped over time by the forces of climate, grazing, and fire. Precipitation, for example, was lower and more unpredictable than in either the mixed-grass or tallgrass prairies. Droughts were not uncommon, and vegetation growth was variable from year to year. These climatic conditions persist today. Another force shaping the prairie is grazing. Before widespread settlement by European-Americans, a major grazing force came from the expanding, contracting, and shifting prairie dog colonies. Herds of bison, pronghorn, and elk wandered widely but at times concentrated in small areas, so the impact of their grazing and trampling was spread unevenly over the landscape. The result of such animal activities was that, at any given time, some areas were grazed intensively and others not at all, creating a diversity of habitat conditions across the landscape. Little is known about the ecological role of fire in shortgrass, although fires were probably never very frequent because of the lack of dense grass as fuel. Fires probably always occurred less frequently in shortgrass than in either mixed-grass or tallgrass prairie. Humans have used fire as a management tool in shortgrass to improve grazing conditions for livestock by removing woody vegetation, cacti, and accumulated litter. However, the grasses recover slowly, requiring 2–3 years with normal precipitation.

Areas important to shortgrass prairie birds.

Because of the forces of fire, grazing, and climate, shortgrass prairie birds historically had access to a patchwork of vegetation in a variety of growth stages and conditions. Each bird species could move about the prairie until it found the habitats most suitable for its nesting and foraging. Ideally, modern prairie management would continue to create this patchwork of vegetation by duplicating the timing, intensity, and landscape distribution of the natural forces that shaped the prairie. However, the primary management activity on native shortgrass prairie today, livestock grazing, tends to spread out its effects evenly, resulting in a landscape that varies little from one area to another. The patches of habitat are very similar in vegetative growth and condition. Shortgrass birds no longer have access to the variety of habitats that they had historically, and it is increasingly difficult for some species to find the particular habitat conditions that meet their needs.

A tradition of stewardship—

During the 1800s, the U.S. government gave much of the Great Plains grasslands to homesteaders and the railroads (who eventually sold much of it to individuals) to encourage westward expansion. Those landowners plowed and planted the prairie and ran cattle on it. Today, about 70% of the shortgrass prairie remains in private ownership. Landowners in the shortgrass region have a long tradition of careful and effective management of the land (*stewardship*), a necessity in a dry region where so little vegetation grows. Careful stewardship includes maintaining healthy ecosystems upon which livestock, wildlife, and humans depend. Landowners live close to the land, and recognize that abusing it reduces its productivity. Land that is less productive is less profitable. And because abused land affects not only the current owners but also future generations, landowners nurture it to leave a lasting legacy of healthy land.

Because of the semi-arid climate and low human population density, less of the shortgrass prairie has been altered than either the mixed-grass or tallgrass prairies. Less than 50% of the original shortgrass prairie has been converted to other land-cover types. By comparison, cropland and other land-cover types now cover about 98% of the original tallgrass prairie. As prairie is lost, so are the plants and animals that are adapted to it. Prominent among the animals that are declining are some species of prairie birds.

Bird conservation—

Together, the shortgrass, mixed-grass, and tallgrass prairies cover about one-fifth of North America. In spite of their large size, the prairies support a bird community with few members. Only nine bird species are restricted to the Great Plains (eight of the nine are included in this publication), and only 20 others are closely linked with it (four are covered here). These 29 species are a small fraction of the approximately 650 bird species that breed in North America north of Mexico. Such a small community is easily overlooked, especially in comparison with the more numerous and colorful bird communities of forested lands.

As a result, population declines among shortgrass bird species have been largely overlooked until recently. Part of this neglect was due to widespread concern about well-publicized population declines among bird species of the eastern deciduous forest. However, grassland birds may now be the highest conservation priority—among North American birds, they have shown the steepest and most consistent population declines of any group. With 70% of shortgrass prairie habitat in private ownership, you can see why your help is needed.

Basic Bird Biology

Migration—

For many years scientists believed that North American birds flew south for the winter to avoid the cold and snow. However, recent research has suggested that many North American birds actually originated in the tropics, in Central and South America. They fly north to take advantage of abundant food and nest sites during the breeding season, then return to their southern homes to spend the rest of the year. Many species that we think of as "our" birds actually spend the greater part of each year elsewhere.

Coloration—

Unlike the colorful reds, yellows, and blues worn by many forest birds, grassland birds are mostly brown. Such drab coloration is needed as camouflage. Blending in with the background is critical for grassland birds, which spend much of their time foraging or nesting on the ground where they are vulnerable to predators.

Food—

Some birds eat fruits, some eat seeds, and some eat animals, but many birds eat insects. Even some species that rarely consume insects will eat them during the breeding season for the protein and calcium they provide. Both nutrients are necessary for producing eggs. Some young birds are fed only insects to help them grow and develop. Even hummingbirds eat spiders and insects, in spite of the common belief that they survive on nothing but nectar. The number of insects that a bird can eat is impressive: a biologist once found a Swainson's Hawk in Kansas with 98 crickets in its crop and another 132 in its stomach. Other Swainson's Hawks have been found with 40–50 grasshoppers in their stomachs. Although birds usually cannot control large insect outbreaks after they have begun, under normal conditions they can suppress the numbers of insects, keeping them below the outbreak levels that require more active control by landowners.

Birds of prey (raptors) take their toll on rodents—a large hawk or owl can eat over a thousand mice and voles per year, adding up to many thousands over the course of its lifetime. A pair of Ferruginous Hawks will kill about 500 ground squirrels each summer to feed themselves and their young. Such natural controls on insect and rodent populations are of great economic value to landowners and should be considered an integral part of any integrated pest management plan.

Basic habitat needs—

A bird's habitat is the area that provides all the elements that it needs to survive and reproduce. Bird habitats supply three basic needs: *food*, *water*, and during the breeding season, *nest area*:

• *Food* is an obvious need, essential for the survival of all organisms. What is not so obvious is that birds may require large areas in which to find enough food. This is especially true for hawks and other large birds with widely scattered food supplies.

• *Water* is also an obvious need; most birds need water for drinking, but many also need it for bathing. Oily, matted feathers are life-threatening—clean feathers are essential for flight, for protection from rain and snow, and to insulate from temperature extremes. However, many birds of the shortgrass prairie do not need access to open water for drinking or bathing—they eat moisture-rich food and some "bathe" in fine dust.

• *Nest area* is the nest site itself (for example, a clump of grass) and the area around the nest site. This is the area needed by the bird for gathering nest materials and enough food to feed itself and its growing family.

Birds and a healthy environment—

Naturalist Aldo Leopold said, "To keep every cog and wheel is the first precaution of intelligent tinkering." Birds are integral parts of the prairie mechanism, and they are essential for its proper function. They help control insects and rodents, disperse seeds, eat carrion (dead animals), and serve as food for other animals. Scientists are continually gaining new information about how birds fit into their habitats and how they affect the lives of other organisms. When a species is missing because its habitat needs are not met, its function as a cog or wheel in the prairie mechanism is missing. But when all the parts are present, the prairie "machine" hums along smoothly. Because of their importance in smooth system operations, healthy populations of birds indicate a healthy environment. Also, because bird habitat overlaps with habitat for other wildlife species, by preserving bird habitat we ensure the preservation of homes for many other animals, all of which are essential for a healthy prairie.

How You Can Help

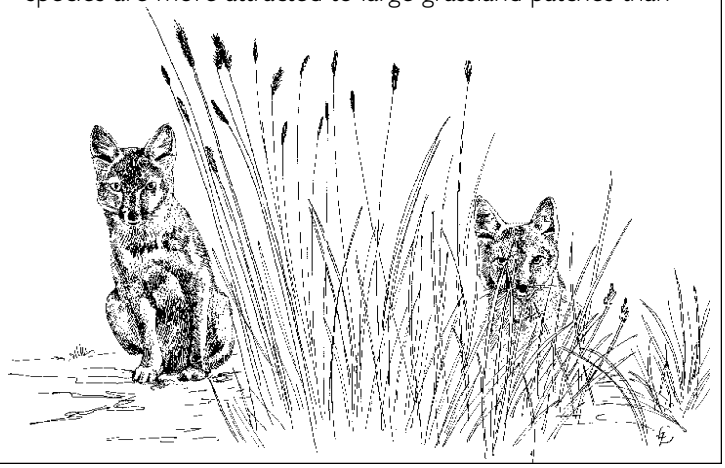
General management recommendations—

These recommendations and those found in the sections on individual bird species are *suggestions* only; it is not necessary to implement all of them, and landowners should choose those that are compatible with other uses of their land:

• Conserve native shortgrass prairie and the plant and animal species found there. This is the simplest and most effective strategy for maintaining populations of shortgrass birds—they can obtain all of the habitat elements they require if enough native prairie is available.

• Note the different grazing regimes, ranging from rested to heavily grazed, that produce a patchwork of grasslands. These different habitat structures are preferred by different species of birds. Determine which species occur or could occur on your property and which type of grazing management will benefit these birds. Appropriate grazing systems can include deferred rotation, rest rotation, and high-intensity/low-frequency.

• Manage pastures and other grassland parcels as large units, rather than as many small ones, because many bird species are more attracted to large grassland patches than



to small patches. Grassland patches should be as large as practical, with 125 acres considered a minimum by some scientists.

• Schedule any haying, plowing, burning, or heavy grazing in the spring *before* the nesting season or *after* it in the summer (at least mid-July), fall, or winter—such activities during the nesting season can disrupt breeding activities, destroy nests, or expose nests and birds to predators.

• Use a flush bar, flush chain, or similar device attached to the swather of the mowing machine if you must mow while birds are nesting, usually before July 15. These tools will cause a bird to "flush" in front of the mower and are most effective when operated at less than top speed.

• Do not mow at night, when birds are on their nests.

• Burn shortgrass prairie every 8–10 years, an interval that is approximately equal to the historic interval.

• Mow or burn uncultivated areas in rotation, leaving some areas uncut and unburned each year, to make a variety of habitats available to birds at all times.

• Manage croplands under a conservation tillage system (no-till or minimum tillage), which can provide crop residue that acts as cover for birds, their nests, and their prey, resulting in higher nest success than in either conventional or organic farms. Delay first tillage until at least late June (mid-July would be even better) to avoid destroying nests.

• Apply Integrated Pest Management practices, including alternatives to chemical control of insects, to preserve the food supply for insect-eating birds. If chemical controls are necessary, use pesticides that degrade rapidly.

• Protect agricultural land from grasshopper damage by using a bait line only along the boundary between agricultural and range land.

• Avoid high stocking rates during the nesting season (for most grassland birds, April to mid- or late July), which can result in nest trampling.

• Reseed with native species—if you have land enrolled in CRP (Conservation Reserve Program), use shortgrass species. Birds have a long history with specific plants and plant communities and are more likely to breed successfully and overwinter where the plants are natives.

How You Can Get Help

A number of programs are available from government agencies and private organizations to assist landowners and land managers in protecting, creating, and enhancing habitat for birds in the shortgrass prairie.

Conservation Easement

• Landowner voluntarily transfers (by donation or sale) certain development and land-use rights for all or part of their land to a qualifying conservation organization, while retaining title to the land. Both parties agree to the details of the contract, which can include continued operations on the land, such as farming or ranching.

• Easements donated to certain conservation organizations may be eligible for income tax deductions. Property with a conservation easement in place may be eligible for reduced property and estate taxes.

• For more information, contact the Land Trust Alliance, 1319 F Street NW, Suite 501, Washington, DC 20004-1106; phone 202-638-4725 (www.LTA.org).

Natural Resources Conservation Service (NRCS)

• Provides educational, technical, and financial assistance to landowners who wish to protect and enhance wildlife habitat.

• Funding is available on a cost-share basis to help offset the cost of implementing conservation practices that benefit wildlife, such as integrated pest management, forage management, or wildlife habitat management. Programs include CRP, EQIP, and WHIP.

• Contact your local NRCS (Natural Resources Conservation Service) office for more information (www.nrcs.usda.gov).

Partners for Fish and Wildlife

• Provides technical assistance and cost-share funding for wildlife habitat restoration or enhancement.

• Special emphasis on native plant communities important to uncommon animal species.

• Contact the nearest U.S. Fish and Wildlife Service office (http://partners.fws.gov).

Pheasants Forever

• Provides up to 100% of cost to establish or maintain habitat.

• Emphasis is on pheasants and other upland game birds, but managing their habitat also benefits other birds with similar habitat needs, such as Upland Sandpipers.

• Contact your local Pheasants Forever chapter (www.pheasantsforever.org).

Prairie Partners

• Provides educational material and technical assistance, including bird inventory and habitat guidelines, for managing shortgrass prairie.
• Contact Colorado Bird Observatory, 13401 Piccadilly Road, Brighton, CO 80601; phone 303-659-4348 (www.cbobirds.org).

Safe Harbor Agreement

• These agreements help landowners help endangered species; however, none of the shortgrass birds are currently listed as endangered.
• The agreements allow landowners to protect or enhance habitat for endangered species, without fear of the federal government imposing land-use restrictions. Also, neighbors on adjoining lands will not be subject to additional regulations if the species uses habitat on their property.
• Cost-share monies may be available to help offset the cost of enhancing the habitat.
• Contact the nearest U.S. Fish and Wildlife Service office for more information (www.fws.gov).

Additional information is available from your state wildlife agency, Soil and Water Conservation District offices, and state lands offices.

In Canada...

Native Prairie Stewardship Program

• Voluntary stewardship agreements with landowners.
• Provides educational materials and technical assistance.
• Contact Saskatchewan Wetland Conservation Corporation, 2022 Cornwall St., Room 101, Regina, Saskatchewan, Canada S4P 2K5; phone 306-787-0726 (www.wetland.sk.ca).

Operation Grassland Community

• Provides educational materials and technical assistance.
• Incorporates Operation Burrowing Owl.
• Special focus on Burrowing Owls, Loggerhead Shrikes, and other uncommon or declining grassland species.
• Contact Operation Grassland Community, Box 1644, Brooks, Alberta, Canada T1R 1C5 (www.eidnet.org/local/ogc).

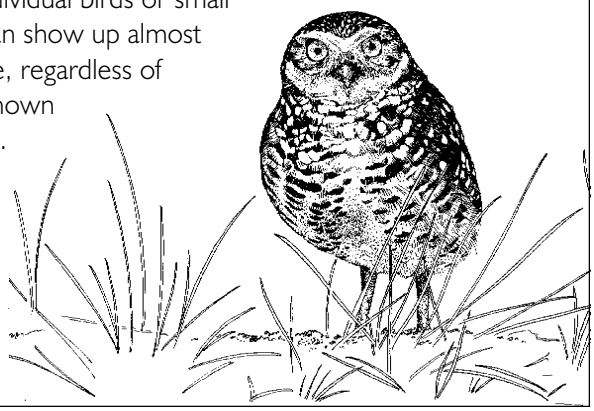
Species Accounts

The information that follows is designed to guide you in creating and maintaining habitat for 13 bird species of the shortgrass prairie, birds that are in need of conservation efforts. For each species, there is a brief description of the bird, its nest, eggs, and preferred habitat. There is also a summary of critical aspects of the bird's life, including information about its breeding season, reasons for its conservation need, and specific management activities that will contribute to healthy populations on your land.

Implementing the management recommendations

Not all of these birds will be on your land. The first step is to determine which species are present or *could* be present if the right habitat conditions were available. Compile a list of the birds present with the help of a local birdwatcher, biologist, or Prairie Partners coordinator. Or look over the maps and decide which species could *potentially* be on your land, based on their distributions. Then, for each of those species, read through the sections on habitat to find out which ones might be able to find suitable homes on your land, given the kind of habitat they need and the kind of habitat your land can provide. Follow the guidelines and manage the land to provide the necessary habitat conditions. In some cases, the management recommendations for one species contradict the recommendations for another species. If both species are on your land, follow both sets of recommendations but in different areas, or consult with local bird experts to determine which species is a higher conservation priority in your area, and follow the recommendations for that species.

The maps included with each species account are based on the best information currently available, but birds constantly shift their distributions in response to changes in climate, habitat, or human activity. Therefore, these maps should not be taken as the final word on where a bird lives—individual birds or small groups can show up almost anywhere, regardless of what is shown on a map.



Swainson's Hawk

SWAINSON'S HAWK (*Buteo swainsoni*)

Identification: These birds are identified by a dark brown head and bib, contrasting with a white chin and belly. However, some individuals are dark brown underneath rather than white. The tail has several dark, narrow bands with a wider one near the tip. The wingspan is 52".

Nest: A large stick nest, 2'–4' across and about 1' tall, usually placed high in a live tree but sometimes in a large bush or on a rock outcrop. Swainson's Hawks often reuse the same nest each year, or use old nests of other birds, especially magpies, as the base for their nest.

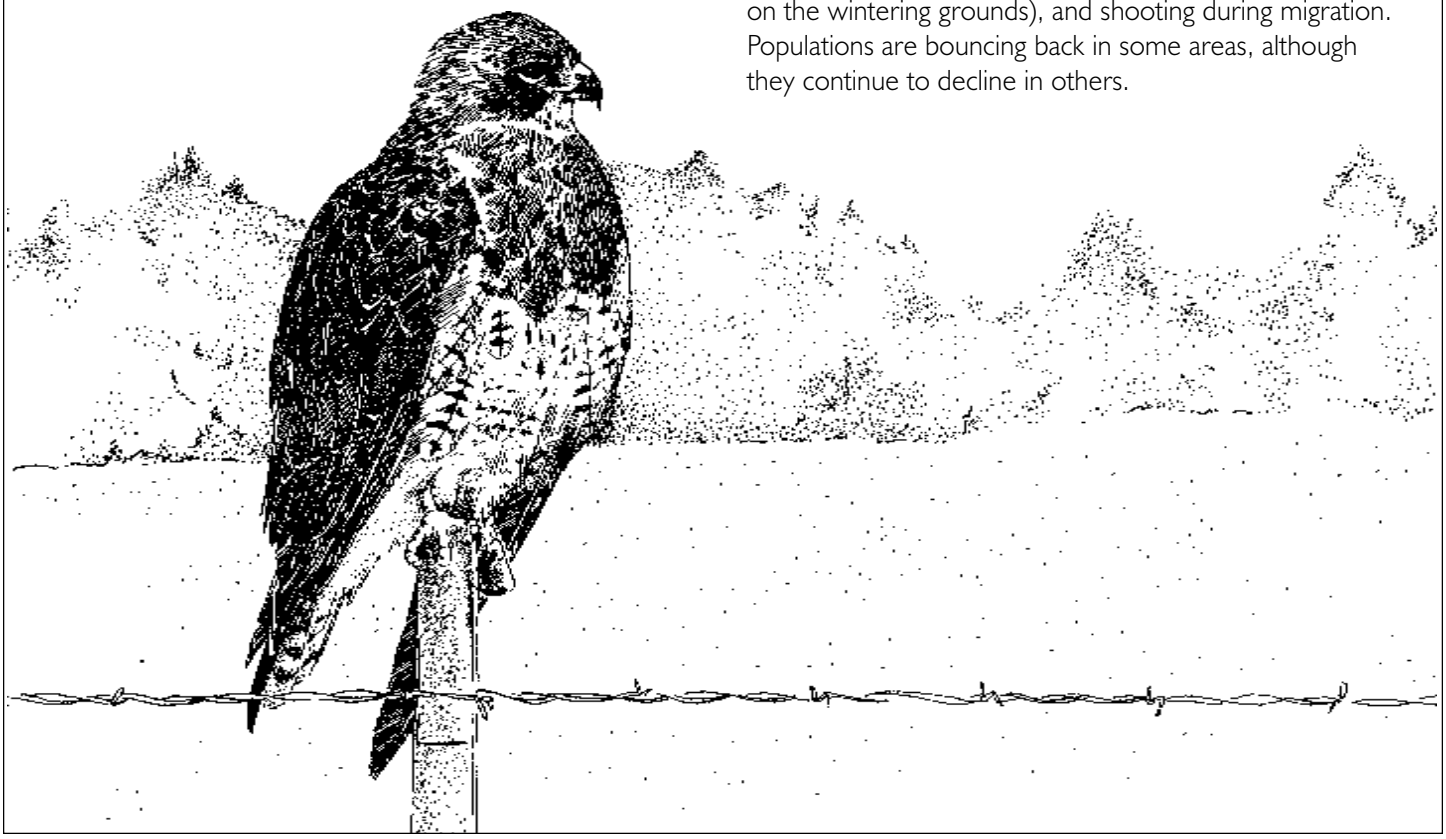
Eggs: Usually 2 (sometimes 3 or 4), 2 1/4" long, white with dark brown blotches.

Habitat: Nesting habitat includes grasslands where trees or large shrubs are found, such as river bottoms, shelterbelts, or farmyards. The hawks hunt in nearby open habitats such as grasslands, hay fields, open shrublands, or croplands. The wintering habitat is grasslands and croplands.

Natural history: Swainson's Hawks begin to leave their wintering grounds in February and early March, and arrive on the breeding grounds in March and April. They begin nesting in April and May, with young birds usually out of the nest by June or July. Many ranchers and farmers are familiar with this species' habit of following farm equipment through the fields to pick up injured rodents and insects. The birds leave for the wintering grounds by September and October, migrating in large flocks, sometimes containing thousands of birds.

Did you know? Swainson's Hawks are long-distance migrants—the trip between their breeding grounds and South American wintering grounds covers 5,000–8,000 miles and lasts 15–35 days *each way*.

Conservation need: California populations have declined an estimated 91% since the early 1900s and their breeding range across the continent has diminished considerably. Causes include habitat loss (loss of native grasslands, loss of nest trees, conversion of suitable agricultural land by urbanization), pesticide use (especially on the wintering grounds), and shooting during migration. Populations are bouncing back in some areas, although they continue to decline in others.



Swainson's Hawk Distribution

Management recommendations:

• Preserve trees in shelterbelts, windbreaks, and around old homesteads, as those trees provide nest sites. However, many of the trees are lost through natural aging and dying, and through active removal as small farms are consolidated into larger farms and old homesteads are removed. As the trees are lost, suitable nest sites become more scarce.

• Preserve trees that already contain nests, since pairs often use the same nest year after year.

• Protect nest trees from livestock rubbing by using fences or other barriers, and from destruction by fire, herbicides, or other causes.

• Establish new trees or shrubs where appropriate.

• Retain populations of the primary summer prey species (rodents and grasshoppers), at levels compatible with economic activities on the land. Programs to control those animals are harmful to Swainson's Hawk populations—less food means fewer hawks.

• Leave unused utility poles for use as hunting perches.

Associated species:

Other birds that may benefit from habitat management for Swainson's Hawks include Red-tailed Hawks, Ferruginous Hawks, Rough-legged Hawks, Golden Eagles, American Kestrels, Mourning Doves, Great Horned Owls, Western and Eastern Kingbirds, and Loggerhead Shrikes.

Swainson's Hawk Habitat

Swainson's Hawk Summer Diet

Small mammals (including ground squirrels, rabbits, prairie dogs) 67%

On the winter grounds, the diet is almost 100% invertebrates, especially grasshoppers.

Birds 25%

Snakes, frogs, and insects 8%

Ferruginous Hawk

Ferruginous Hawk (*Buteo regalis*)

Identification: Often seen while soaring, these hawks are rust-colored on the back and shoulders, mostly white under the wings and on the breast, belly, and tail (which lacks the dark bands of other hawks). The rust-colored legs contrast with the white body and look like a dark "V" when the bird is flying overhead. This is the largest hawk in North America, with a 53" wingspan. It gets its name, Ferruginous *(fer-OO-jin-us)* from the red coloration, like rusty iron (ferrous).

Nest: A bulky stick nest 3' across and 2' tall, in an isolated tree or within a small grove of trees. Nests can also be placed on other elevated sites such as large shrubs, rock outcrops, buttes, haystacks, transmission towers, and low cliffs. The same nest can be used year after year, with the birds adding more sticks each year—some Ferruginous Hawk nests are 12'–15' tall. Nests are located adjacent to open areas such as grasslands or shrublands.

Eggs: 3 or 4 (but sometimes as many as 6), 2 1/2" long, off-white, sometimes with brown blotches.

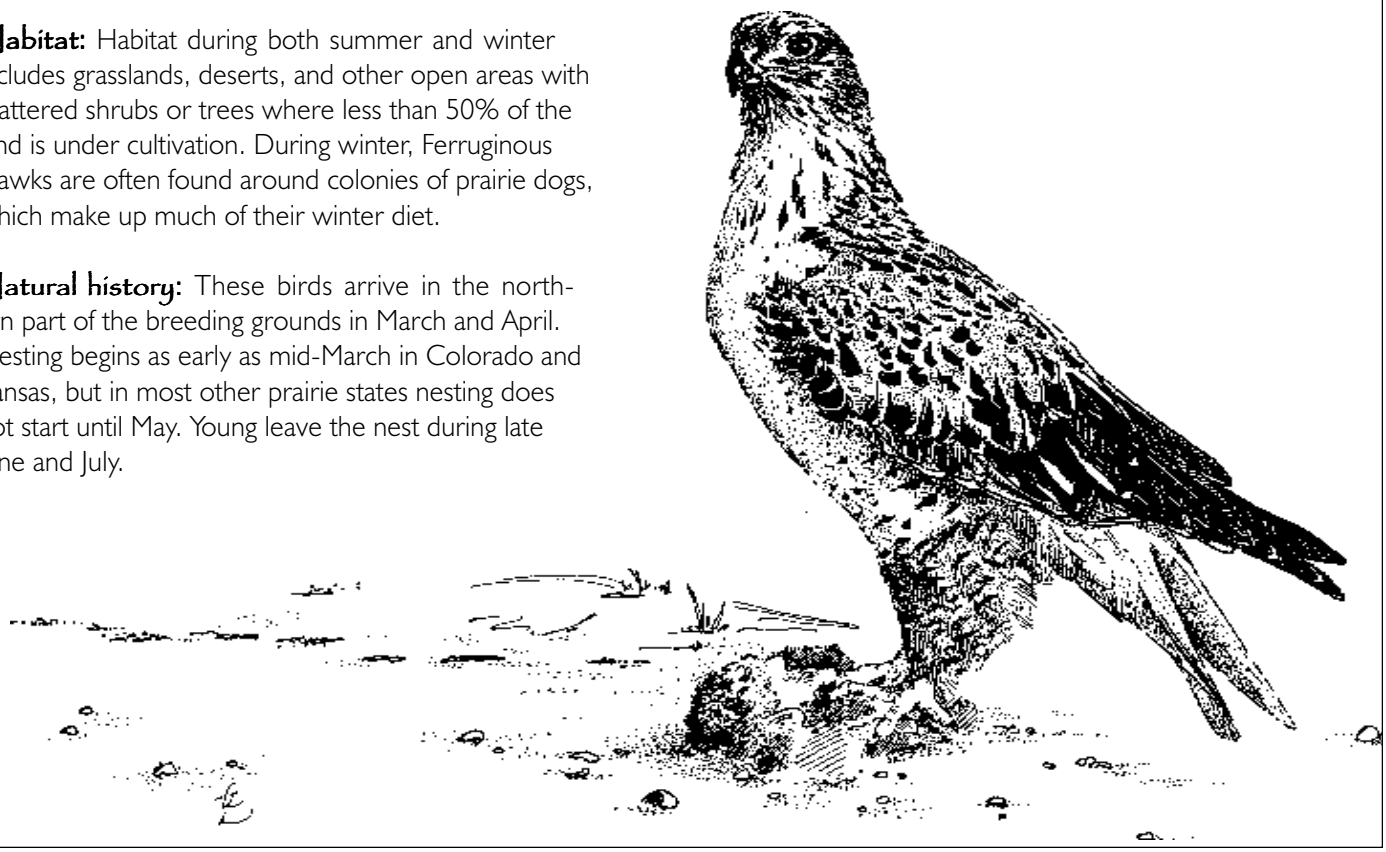
Habitat: Habitat during both summer and winter includes grasslands, deserts, and other open areas with scattered shrubs or trees where less than 50% of the land is under cultivation. During winter, Ferruginous Hawks are often found around colonies of prairie dogs, which make up much of their winter diet.

Natural history: These birds arrive in the northern part of the breeding grounds in March and April. Nesting begins as early as mid-March in Colorado and Kansas, but in most other prairie states nesting does not start until May. Young leave the nest during late June and July.

Did you know? In the Old West, Ferruginous Hawks used not only sticks but also *bison bones* to build nests, and used bison wool and manure to line the nests.

Conservation need: Ferruginous Hawk numbers are low—a 1993 estimate placed the population as low as 12,000 birds. The populations are stable in some areas but declining in others. Causes for declines include loss of habitat (by conversion of native prairie to cropland or other uses, conversion of suitable habitat by urbanization, and conversion of native vegetation to non-native) and disturbance of nesting birds.

Associated species:
Other birds that may benefit from habitat management for Ferruginous Hawks include Swainson's Hawks, Red-tailed Hawks, Rough-legged Hawks, Golden Eagles, American Kestrels, Mountain Plovers, Mourning Doves, Great Horned Owls, Burrowing Owls, Western and Eastern Kingbirds, and Loggerhead Shrikes.



Management recommendations:

• Preserve native grassland, as its conversion to cropland is considered the main factor in population declines.

• *Control* rather than *eradicate* the primary prey species (ground squirrels, prairie dogs, and jackrabbits). Retain populations at levels compatible with economic activities on the land. Consider the use of barrier fences to control the distribution of prairie dogs.

• Defer grazing in mixed-grass prairie to help control prairie dogs—the vegetation grows faster than the prairie dogs can clip it in the spring, and they will not settle in these areas.

• Poison only active burrows if you use chemical controls for prairie dogs.

• Avoid the use of strychnine to poison rodents. Hawks can die from eating the poisoned animals.

• Avoid disturbances near Ferruginous Hawk nests during the nesting season, such as visits by humans, mineral extraction, or pipeline construction. Such activities result in fewer young birds produced, or even nest abandonment by the adults. Limit brief disturbances to no closer than 1/2 mile, prolonged disturbances no closer than 1 mile, and long-term disturbances (such as construction) no closer than 1 1/2 miles.

• Preserve trees planted as windbreaks and around homesteads. As with Swainson's Hawks, some nest sites are in those areas, and as those trees are lost, nest sites become more scarce.

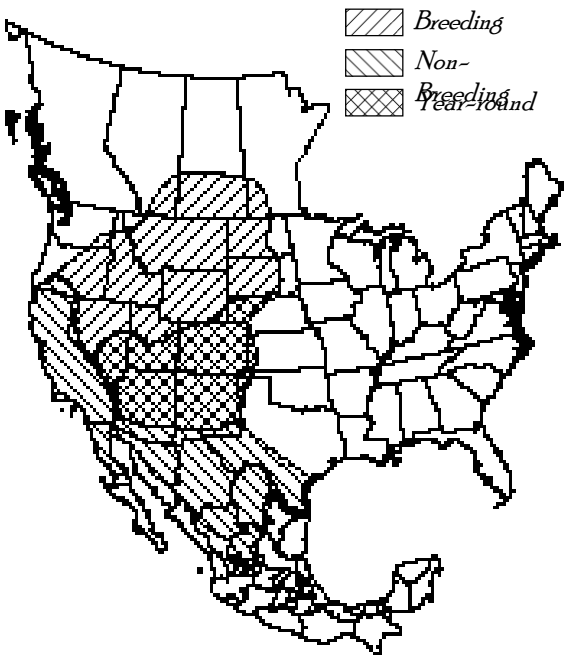
• Preserve trees that already contain nests, since pairs often use the same nest year after year.

• Establish new trees and shrubs where appropriate.

• Protect nest trees from livestock rubbing by using fences or other barriers, and from destruction by fire, herbicides, or other causes.

• Leave unused utility poles for use as hunting perches.

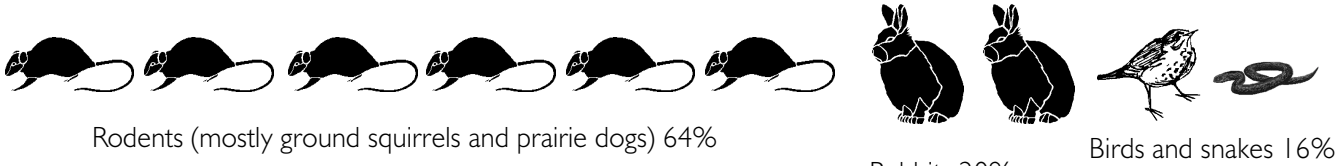
Ferruginous Hawk Distribution



Ferruginous Hawk Habitat

Ferruginous Hawks prefer open areas with scattered shrubs and trees (shown), as well as grasslands, deserts, and areas with cliffs.

Ferruginous Hawk Summer Diet



Mountain Plover

Mountain Plover (*Charadrius montanus*)

Identification: In summer, the Mountain Plover is mostly light brown with a white throat and breast, and white under the wings. It has a white forehead and white line over the eye, which contrast with a dark brown cap. Plovers blend in extremely well with the background, making them very difficult to spot, especially when they hunker down on their nests. The winter plumage is similar to the summer plumage, but the brown colors are paler. Plovers lack the black bands across the chest found on their more common (and noisier) relative, the Killdeer. They are a little smaller than Killdeer—about 8" tall. This species was originally called "Rocky Mountain Plover," but the name was shortened.

Nest: A shallow bowl on the ground, sometimes lined with dried grasses. Unlike some other ground-nesting prairie birds, Mountain Plovers do not place their nests next to tall vegetation, although they often place them next to dried manure.

Eggs: Usually 3 (but sometimes 2 or 4), 1 1/2" long, buffy or olive-colored, with small dark brown splotches. Well-camouflaged and extremely difficult to find.

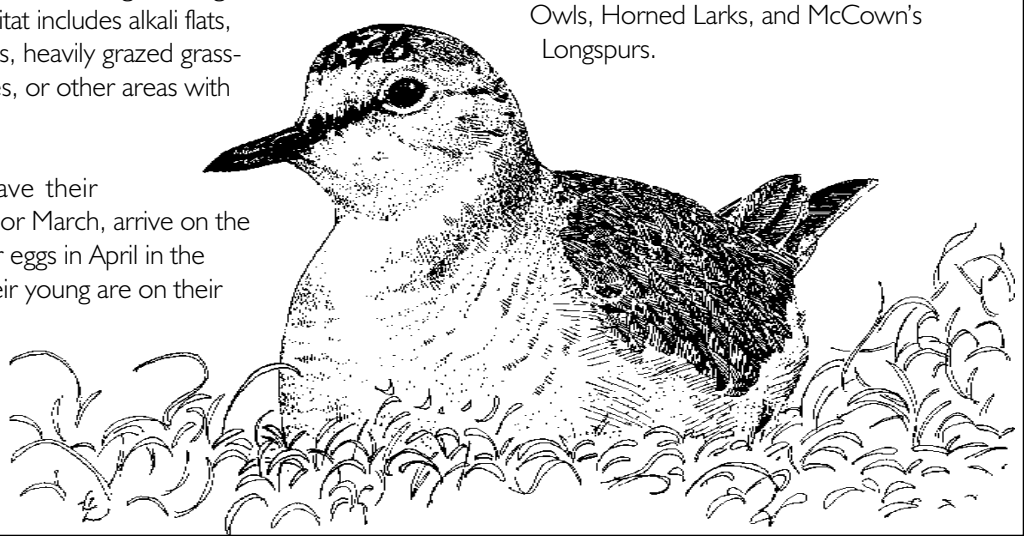
Habitat: In spite of their name, Mountain Plovers breed in shortgrass prairie where the land is fairly flat or with smooth, gentle slopes. They favor areas where vegetation is sparse (at least 30% bare ground) and very short (2" or less). Dry alkaline lakes are attractive to plovers, as are areas where grazing livestock or prairie dogs have reduced vegetation height and density. They will also nest in areas with low, widely scattered shrubs. Plovers will forage and nest in agricultural fields that are bare or contain short vegetation, but will abandon nests in such habitats when the vegetation grows taller than about 2". The winter habitat includes alkali flats, plowed or burned fields, fallow fields, heavily grazed grasslands, sod farms, prairie dog colonies, or other areas with low, sparse vegetation.

Natural history: These birds leave their wintering grounds by mid-February or March, arrive on the breeding grounds in March, lay their eggs in April in the south and June in the north, and their young are on their own by June or July. In hot weather, young birds can die within 15 minutes if not protected from the sun by an adult. Adults protect their nests from trampling by flying up into the face of cattle that get too close. Mountain Plovers don't need access to water for drinking, because they get enough from their diet. Although they are often found near water sources such as stock ponds, it may be the low, sparse vegetation that attracts them. The adults usually begin leaving for the wintering grounds as early as July, arriving during mid-September to November. During migration, they sometimes form flocks of hundreds of birds.

Did you know? A female Mountain Plover will sometimes lay eggs in one nest, then leave the eggs in the care of the male while she lays eggs in a second nest, which she tends.

Conservation need: The Mountain Plover's population and distribution are declining at an alarming rate, faster than any other grassland bird. Between 1966 and 1991, the population dropped by an estimated 63%. The current population is estimated at less than 10,000 birds, which is a very low population compared to most other bird species. Causes for the decline include conversion of native shortgrass prairie to cropland, urbanization (especially on the wintering grounds), removal of prairie dogs, oil and gas development, and plowing and planting on the nesting grounds (the bare ground of fallow and plowed fields is very attractive to plovers, but many nests are destroyed when the fields are planted or tilled, or are abandoned when the crops grow taller than 2").

Associated species:
Other bird species that may benefit from habitat management for Mountain Plovers include Long-billed Curlews, Burrowing Owls, Horned Larks, and McCown's Longspurs.



Management recommendations:

• Graze shortgrass prairie at moderate to heavy levels in summer, late winter, or early spring to create the short, sparse vegetation profile preferred by Mountain Plovers.

• Burn shortgrass prairie to create favorable vegetation conditions.

• *Control* rather than *eradicate* prairie dogs. Retain populations of prairie dogs at levels compatible with economic activities on the land. Efforts to control prairie dogs may be detrimental to plovers, as prairie dogs provide the low, sparse vegetation structure favored by plovers. Consider the use of barrier fences to control the distribution of prairie dogs.

• Poison only active burrows if you use chemical controls for prairie dogs.

• Defer grazing in mixed-grass prairie to help control prairie dogs—the vegetation grows faster than the prairie dogs can clip it in the spring, and they will not settle in these areas.

• Preserve native shortgrass prairie, because plovers usually cannot nest successfully in croplands.

• Plant native shortgrass species (blue grama and buffalograss) rather than taller, non-native species. Plovers will not use areas with tall grasses.

• Control non-native plants, including cheatgrass, leafy spurge, and knapweed, which do not provide the structure favored by plovers, and also displace native shortgrass prairie plants.

• Avoid disturbance to nesting plovers by restricting activities such as oil and gas exploration, water well development, and other similar activities during the nesting season. Such activities are restricted at certain sites from April through June in Colorado, Wyoming, and Utah to protect plovers.

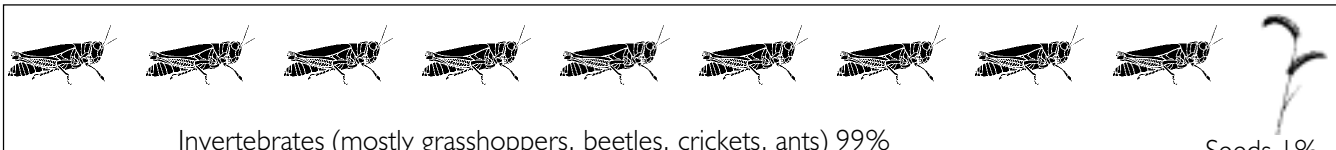
• Protect the area around known nest sites because some plovers will reuse nest sites in subsequent years, and their offspring will return to nest near where they hatched.

• Maintain wintering sites as native rangeland, and protect from uses that are harmful to plovers, such as use of off-road vehicles.

Mountain Plover Distribution

Mountain Plover Habitat

Mountain Plover Summer Diet



Invertebrates (mostly grasshoppers, beetles, crickets, ants) 99%

Seeds 1%

Upland Sandpiper

Upland Sandpiper (*Bartramia longicauda*)

Identification: Brown on the back and wings, but lighter on the breast, belly, and underwings. Long neck, and eyes that look like they're too large for the small head. Just under 1' tall. Upland Sandpipers are often seen perched on fenceposts. Adults sometimes feign injury to draw humans and predators away from nests.

Nest: A depression in the ground, 2"–3" deep, lined with grasses, inside diameter 4"–5", usually covered by overhanging vegetation.

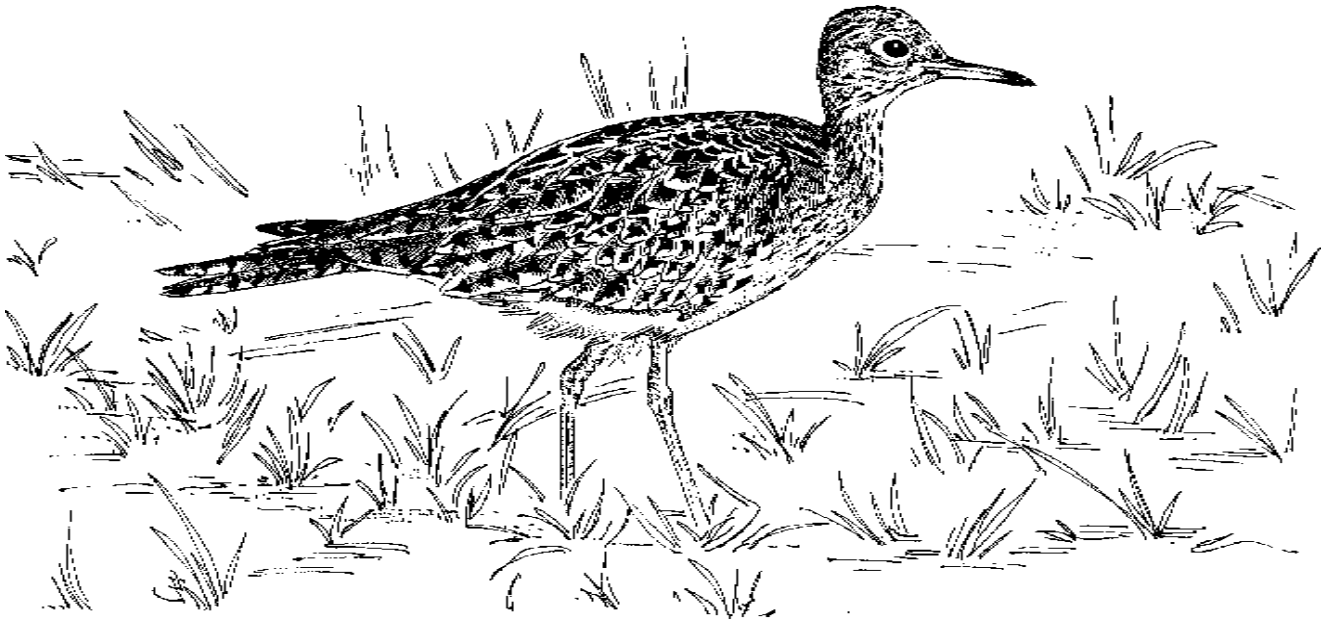
Eggs: Usually 4 (sometimes 3 or 5), 1 3/4" long, buff-colored with brown speckles and blotches concentrated on the large end of the egg.

Habitat: In shortgrass prairies, Upland Sandpipers are usually found near water and other areas with tall grasses, up to 24", although they sometimes nest in grass as short as 4". Their typical nesting habitat is the tall, dense vegetation found in mixed-grass and tallgrass prairies, with up to 50% forbs, few shrubs, and little bare ground. They also nest in wet meadows and hayfields, and sometimes in weedy fallow fields, roadsides, Conservation Reserve Program lands, and rowcrops. Litter cover is usually moderate to dense, 1 1/2"–3 1/2" deep. Their nesting territory usually includes rock piles, stumps, or fenceposts for displaying. They forage in areas of short vegetation (less than 10" tall), such as grazed pastures, plowed fields, stubble, and croplands. Brooding areas contain vegetation 4"–8" tall.

Natural history: Upland Sandpipers leave their wintering grounds in mid-February, arriving on the southern breeding grounds in April, and in the north in May. Nesting in the southern part of their range begins in late April and May, and in the northern areas in late May and June. Most young birds leave the nest in June and July. They depart for the wintering grounds by late July.

Did you know? Upland Sandpiper numbers dropped substantially during the 1880s as market hunters ran out of Passenger Pigeons and switched their aim to the sandpipers.

Conservation need: Populations are increasing in the East because of forest clearing, but declining in other areas, such as the Upper Midwest. They have never been very common in the shortgrass prairie.



Management recommendations:

• Maintain a patchwork of shortgrass and other grasses of different heights and densities to provide habitat for foraging, nesting, and brood-rearing.

• Avoid grazing in areas known or suspected to be used for nesting sites, which removes the taller grasses preferred by Upland Sandpipers for nesting.

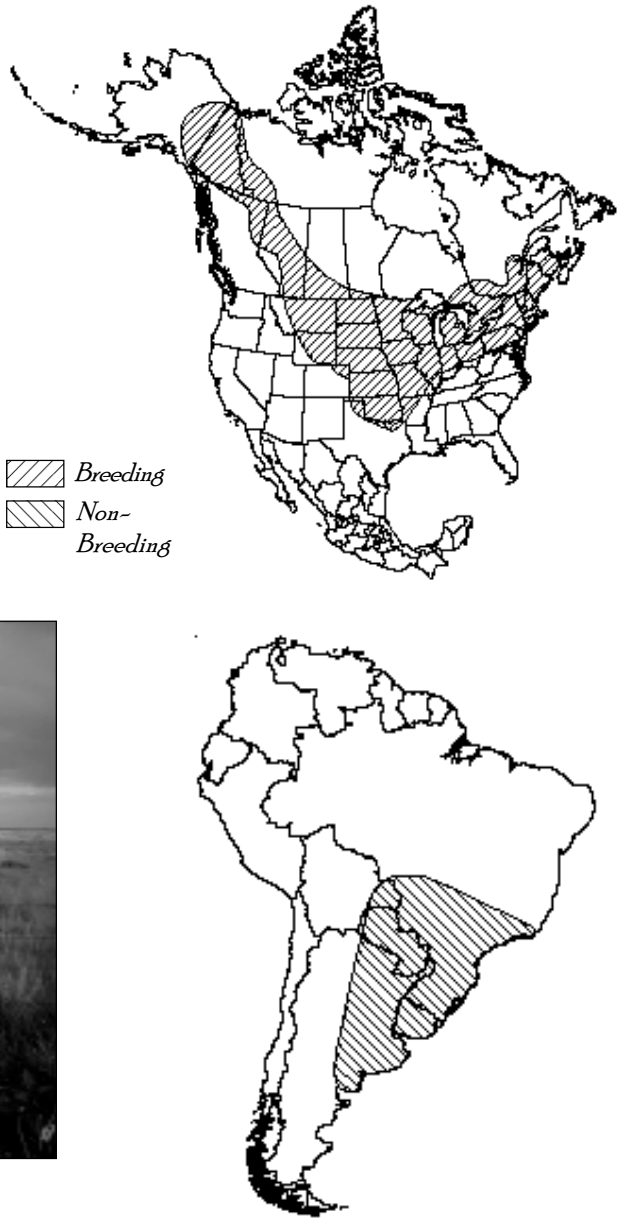
• Protect taller grasses around water, which may be the only suitable habitat for Upland Sandpipers in the shortgrass prairie.

• Delay mowing or pesticide applications until late July, to allow the birds to complete their nesting cycle.

• Leave small pockets of uncut hay as refuges for young birds if hayfields must be cut before late July.

• Use a flush bar or similar device if you must mow earlier than mid-July.

Upland Sandpiper Distribution



Upland Sandpiper Habitat

Associated species:

Other birds that may benefit from habitat management for Upland Sandpipers include Ring-necked Pheasants, Sharp-tailed Grouse, Greater Prairie-Chicken, Baird's Sparrows, Grasshopper Sparrows, and Western Meadowlarks.

Upland Sandpiper Summer Diet

Invertebrates (mostly grasshoppers, crickets, weevils; also beetles, grubs) 97%

Seeds 3%

Long-billed Curlew

Long-billed Curlew (*Numenius americanus*)

Identification: This is North America's largest shorebird, standing about 16" tall. The overall color is cinnamon brown, lighter on the breast and belly, with brown markings. But the most striking feature of these birds is the extremely long, downward-curving bill: 5"–6" long for the male, and 6 1/2"–8" for the female. Their long bills are used to probe for food deep in mud and soft soil. Their "curlee" calls can be heard for long distances across the prairie.

Nest: A depression in the ground about 2" deep, lined with grass or weeds, inside diameter about 8".

Eggs: Usually 4 (sometimes 5), 2 1/2" long, pale green or buff-colored, heavily marked with dark brown blotches.

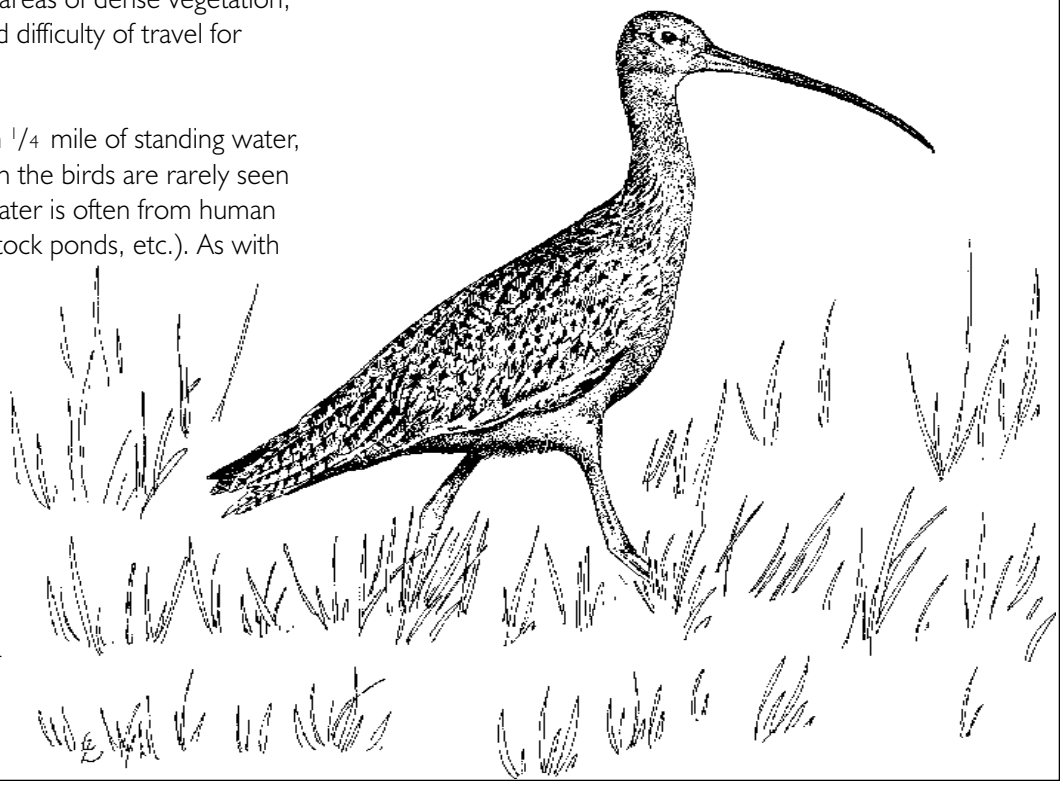
Habitat: Curlews nest in shortgrass and mixed-grass prairie, with or without scattered shrubs, and occasionally in idle cropland such as wheat stubble. They prefer short vegetation, and nest where it is less than 12" and often where it is less than 4" tall. Total vegetation cover should be 50%–95%. After hatching, the adults move the chicks to areas of taller grasses and scattered forbs and shrubs, apparently for protection from predators and weather extremes, although they avoid areas of dense vegetation, possibly due to low visibility and difficulty of travel for chicks.

Curlews are often found within 1/4 mile of standing water, and often much closer, although the birds are rarely seen actually using the water. The water is often from human sources (stock tank overflow, stock ponds, etc.). As with Mountain Plovers, curlews may be attracted to the short vegetation created by livestock near such water sources, rather than being attracted to the water itself. They often search for food in wet meadows or areas of moist soil, which may also explain the attraction to water sources. Winter habitat is open fields, grasslands, and shores of oceans, bays, and freshwater lakes.

Natural history: Nesting usually takes place in May and June, with most young birds leaving their nests during June and July. Most birds leave their breeding grounds by the end of August. Territories, which range from 15–35 acres in size, are often reused in subsequent years. Curlews will not re-nest if their nest is destroyed by predators or other causes, but instead will wait until the following year to try again.

Did you Know? The nest is often placed next to dried manure, probably to help hide the nest from predators, or to mask its scent.

Conservation need: Long-billed Curlews are one of the highest conservation priorities on the Great Plains. Their populations in the shortgrass prairie have declined 10% per year for several decades, probably because of the loss of suitable habitat as prairie is converted to cropland or urban developments.



Long-billed Curlew Distribution

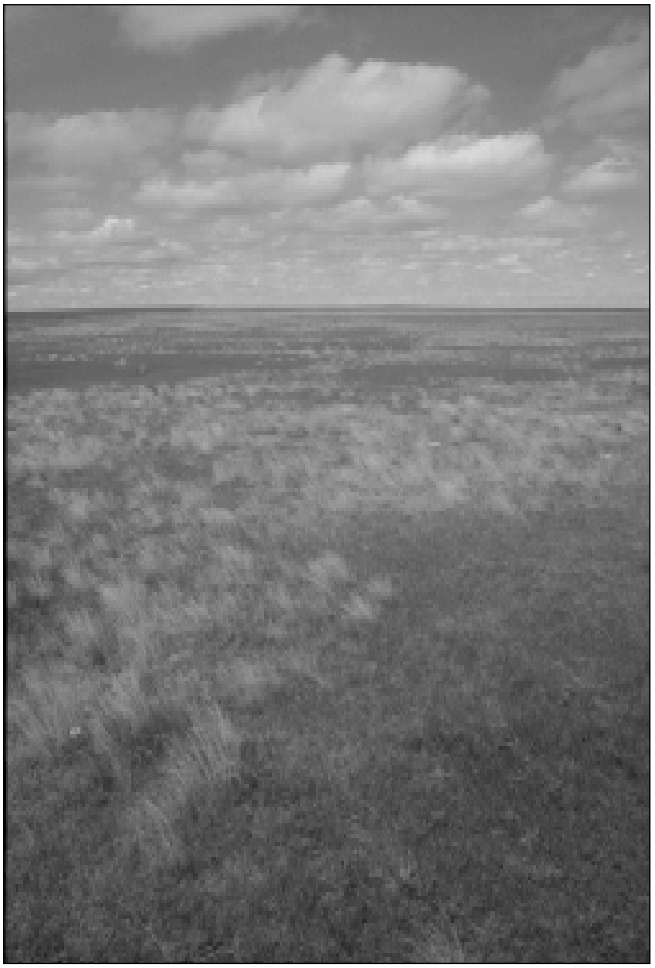
Associated species:

Other birds that may benefit from habitat management for Long-billed Curlews include Mountain Plovers and Horned Larks.

Management recommendations:

- Maintain a patchwork of pastures containing shortgrass, taller grasses, and scattered shrubs for foraging, nesting, and brood-rearing.
- Preserve native shortgrass prairie, as its conversion to cropland often renders it unacceptable to curlews.
- Avoid grazing sheep in shortgrass habitat occupied by nesting curlews. Sheep grazing may be more detrimental than cattle grazing, as sheep graze an area more completely and to a shorter height, and their habit of traveling in tight herds results more often in nest destruction.
- Plant native shortgrass species (blue grama and buffalograss), forbs, and legumes rather than taller, non-native species. Curlews will not nest in areas with tall grasses.
- Control non-native plants, including cheatgrass, leafy spurge, and knapweed, which do not provide the structure favored by curlews, and displace native shortgrass prairie plants.

Long-billed Curlew Habitat



- Avoid disturbance to curlews at known nesting sites by restricting activities such as oil and gas exploration, water well development, and other similar activities during the nesting season.
- Protect the area around known nest sites because some curlews will reuse nest sites in subsequent years and their offspring will return to nest near where they hatched.

Long-billed Curlew Summer Diet

Invertebrates (insects, worms, burrow-dwelling crustaceans, mollusks) 90%

Toads, eggs, nestlings 10%

Burrowing Owl

Burrowing Owl (*Athene cunicularia*)

Identification: These are small, long-legged owls, 8"–10" tall, brown with white spots on the back and wings, and dark brown barring on the light brown breast and belly. They are often seen in the daytime perched on fenceposts or on the ground in or near prairie dog colonies. They have the peculiar habit of bobbing up and down while looking at prey or other animals.

Nest: The nest is located underground at the end of a burrow 4'–12' long. The nest is usually lined with plants or dried manure, probably either to disguise its scent or to help absorb water.

Eggs: Usually 5–7 (but sometimes as few as 3 or as many as 10), 1 1/4 " long, white, almost round.

Habitat: Burrowing Owls nest in treeless areas with short vegetation (less than 4" tall), usually where there are prairie dogs. The owls nest underground in burrows dug by prairie dogs, badgers, or foxes. They successfully raise more young where there is a high density of prairie dogs, probably because the owls are less conspicuous to predators in areas with many prairie dogs, or because prairie dogs are good at spotting predators and barking to alert all residents of the colony including the owls. Burrowing Owls benefit from some areas of tall, dense vegetation (at least 12" tall), which provides habitat for insect and small mammal prey.

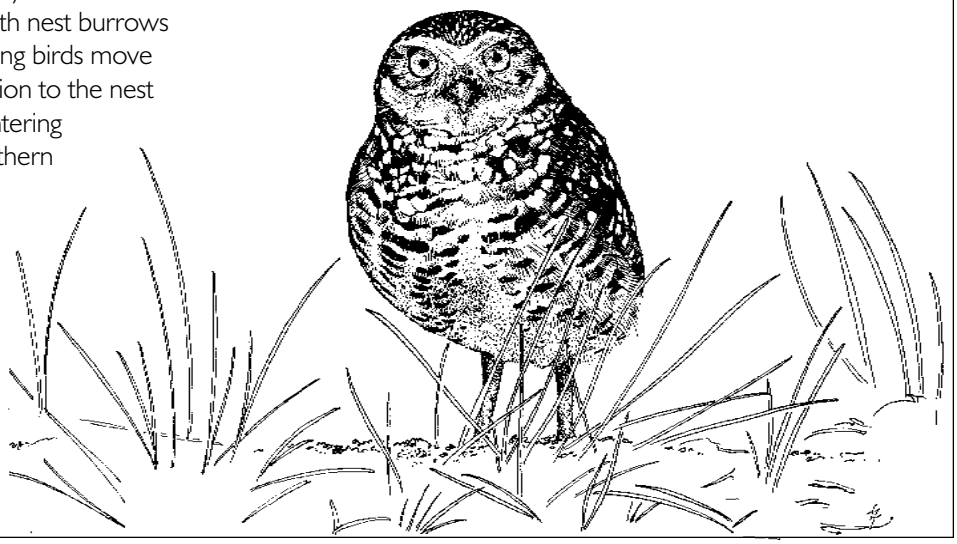
Natural history: Northern birds leave their wintering grounds in March and April, arriving on the northern breeding grounds as late as May. They begin laying eggs in late March in the southern part of the range, and mid-May in the north. Burrowing Owls nest in loose colonies, with nest burrows about 100 yards apart. The adults and young birds move around and use "satellite" burrows in addition to the nest burrow. Northern birds leave for their wintering grounds by mid-October, while more southern birds remain year-round. Unlike many other owls, Burrowing Owls will hunt during the day. This is when they capture insects near the nest burrow and in other areas of short vegetation. They also hunt at night, capturing small mammals in areas of taller vegetation. Contrary to popular belief, they do not share their burrows with prairie dogs or rattlesnakes.

Burrowing Owls rely on prairie dogs to maintain the burrows that they use for nesting and resting. Without prairie dogs, burrows remain usable to owls for only 1–3 years, depending on the soil type. Although they will do minor excavating, the owls are unable to dig new burrows or clear out a collapsed burrow.

Did you know? Zuni Indians called the Burrowing Owl the "Priest of the Prairie Dogs."

Conservation need: Significant range contractions and population declines have occurred in some areas, especially Canada and California, where 60% of the breeding birds disappeared in the 1980s and 1990s. Over the past 100 years, Burrowing Owl populations in British Columbia, Alberta, California, Nevada, Colorado, and New Mexico have dropped by more than 50%. In Saskatchewan, the population declined 88% between 1988 and 1997. Causes include loss of habitat (due to urbanization and conversion of native grasslands to croplands or to taller, non-native grasslands), and removal of ground squirrels (in California) and prairie dogs.

Associated species:
Other birds that may benefit from habitat management for Burrowing Owls include Swainson's Hawks, Red-tailed Hawks, Ferruginous Hawks, Rough-legged Hawks, Golden Eagles, Mountain Plovers, and Horned Larks.



Management recommendations:

• Retain populations of the principal insect prey species (grasshoppers, crickets, beetles) at levels compatible with economic activities on the land. Insecticides have direct (poisoning) and indirect (loss of prey) effects on the birds. If insecticides are necessary, postpone their use until after the young owls have left the care of their parents (i.e., after the end of July).

• *Control* rather than *eradicate* prairie dogs. Retain populations of prairie dogs at levels compatible with economic activities on the land because Burrowing Owls are heavily dependent on prairie dogs for nest burrows. Consider the use of barrier fences to control the distribution of prairie dogs.

• Poison only active prairie dog burrows if you use chemical controls.

• Don't poison burrows used by Burrowing Owls. These burrows can often be identified by the presence of feathers and white droppings around the burrow entrance, or livestock manure lining the burrow. However, these signs are not always present, especially when the young are using satellite burrows. A safer alternative is to fumigate burrows in the spring before the owls arrive, or bait in the fall after the owls have left.

• Leave inactive burrows open to provide roosting sites and future nesting sites for owls.

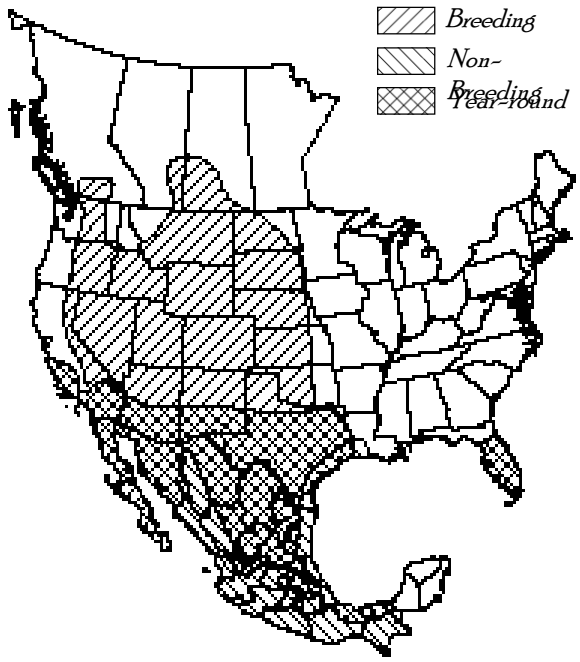
• Educate varmint hunters about the owls, and instruct them to be sure of their targets. Given the owls' habit of perching on the ground outside a burrow entrance, some owls could be mistaken for prairie dogs or ground squirrels.

• Protect known nest burrows because the owls will often reuse the same burrow in subsequent years.

• Maintain a buffer zone of 100–300 yards (up to 1/2 mile, if possible) around owl nest burrows, within which insecticide applications, rodent control, and other human disturbances are limited.

• Graze areas of shortgrass prairie used by owls, to maintain a low vegetation profile and provide manure for owl nests.

Burrowing Owl Distribution



• Maintain areas of taller vegetation, such as weedy fallow fields or fencerows, within 1 1/2 miles of known owl nest burrow, to provide habitat for the owls' prey species.

• Drive slowly by colonies to avoid collisions with owls—vehicles often hit owls when they fly low over roads in search of prey.

Burrowing Owl Habitat

Burrowing Owl Summer Diet

Invertebrates (mostly grasshoppers) 88%

Small mammals and birds 12%

Loggerhead Shrike

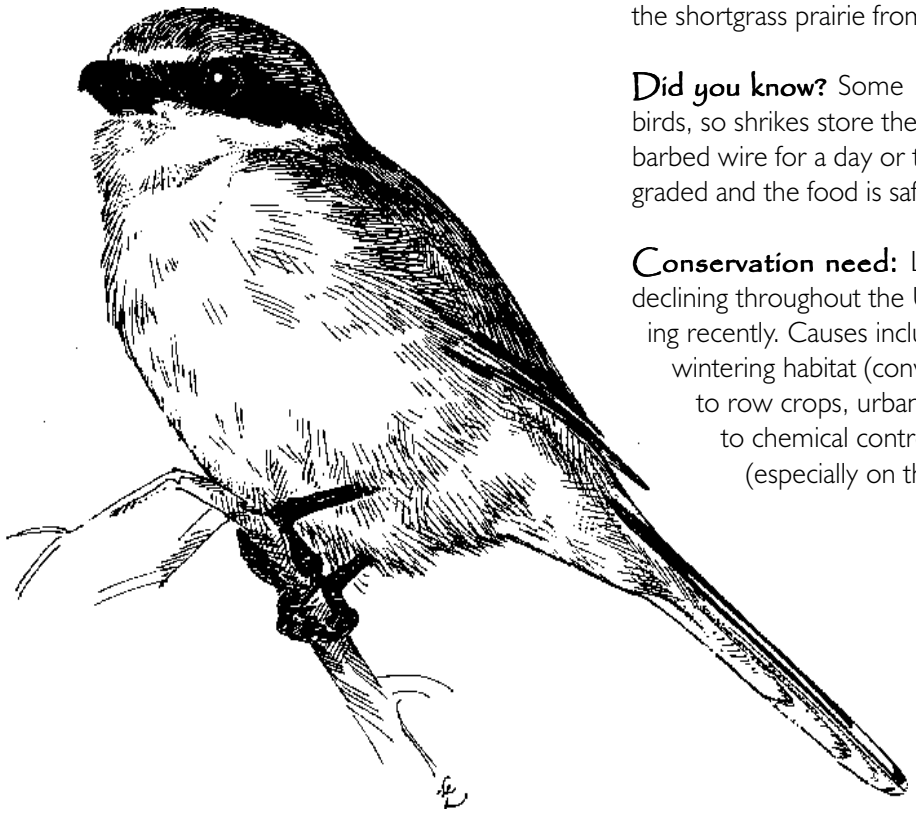
LOGGERHEAD SHRIKE (*Lanius ludovicianus*)

Identification: Slightly smaller than a robin, gray with black wings and tail, white throat and breast, white patches on the wings (especially visible when the bird is flying), and a black mask across the eyes. At close range, the hooked beak can be seen.

Nest: A bulky nest of small twigs and bark strips, placed in tall shrubs or small trees (especially those with thorns) in open country.

Eggs: 4 or 5 (sometimes as many as 7), 1" long, creamy white with light brown and gray blotches.

Habitat: Loggerhead Shrikes require areas with scattered or clustered trees and shrubs in open country, with a mix of short (less than 4") and tall (more than 8") grasses. They avoid large expanses of very short grass, such as heavily grazed pastures—probably because there is less food there. On the plains, suitable nesting sites include fencerows, shelterbelts, stream bottoms, and abandoned farmsteads. Popular shrubs for nesting include greasewood, saltbush, and sagebrush; popular trees include hackberries, hawthorns, and red cedar. Shrikes hunt from elevated perches, such as utility lines and poles, fences, trees, shrubs, even tall weeds. They sometimes impale their prey on barbed wire or large thorns to store it for later consumption, or to hold it while they eat.



Natural history: Loggerhead Shrikes that breed in the north leave their wintering grounds in early April and May; other birds remain in the south year-round. They are early nesters, beginning their nesting activities as early as February in the south and late April in the north. Young birds usually leave the care of their parents in June. Northern birds leave for their wintering grounds by October. An almost identical species, the Northern Shrike, moves into the shortgrass prairie from northern Canada each winter.

Did you know? Some insects are naturally toxic to birds, so shrikes store these toxic bugs on thorns or barbed wire for a day or two until the toxins have degraded and the food is safe to eat.

Conservation need: Loggerhead Shrikes are declining throughout the U.S., with the declines accelerating recently. Causes include the loss of both breeding and wintering habitat (conversion of pastures and hayfields to row crops, urbanization), loss of insect prey due to chemical controls, and pesticide contamination (especially on the wintering grounds).

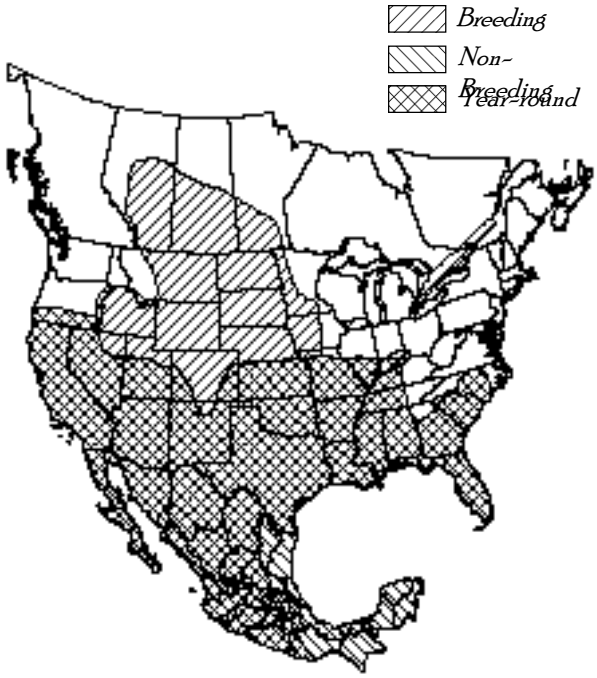
Associated species:

Other birds that may benefit from habitat management for Loggerhead Shrikes include Swainson's Hawks, American Kestrels, Burrowing Owls, Long-eared Owls, Northern Shrikes, and Northern Mockingbirds.

Loggerhead Shrike Habitat

Shrikes prefer areas with scattered or clustered trees and shrubs like this barbed wire fencerow.

Loggerhead Shrike Distribution



Management recommendations:

• Avoid heavy grazing (especially in areas where grass is naturally short or sparse)—tall vegetation, more than 8", provides habitat for prey.

• Retain populations of the principal insect prey species (grasshoppers, crickets, beetles) at levels compatible with economic activities on the land. Insecticides have direct (poisoning) and indirect (loss of prey) effects on shrikes.

• Protect known nest trees and shrubs from browsing or rubbing by livestock and from destruction by fire, herbicides, or other causes.

• Preserve tall grasses, shrubs, and other vegetation along fencelines and other areas within 200 yards of known nest trees because they provide habitat for prey.

• Preserve hedgerows and windbreaks because they provide nesting sites, hunting perches, and habitat for prey species. Where appropriate, establish new thickets with thorns.

Loggerhead Shrike Summer Diet

Invertebrates (mostly grasshoppers) 72%

Small mammals 14%

Birds 14%

Cassin's Sparrow

CASSIN'S SPARROW (*Aimophila cassinii*)

Identification: The Cassin's Sparrow measures 5"–6" from beak to tail, with brown and gray streaking on the back, a pale gray throat and breast, and a white belly. The face is light gray. The brownish-gray central tail feathers have conspicuous dark brown bands; white corners on the tail are obvious when the bird is flying. The male frequently flies up about 20' above his territory, then sets his wings and glides down while singing.

Nest: A deep cup made of weeds and grasses, lined with fine grasses or hair, placed on the ground in bunchgrass or near the base of a shrub or cactus, or a few inches off the ground in a shrub or cactus.

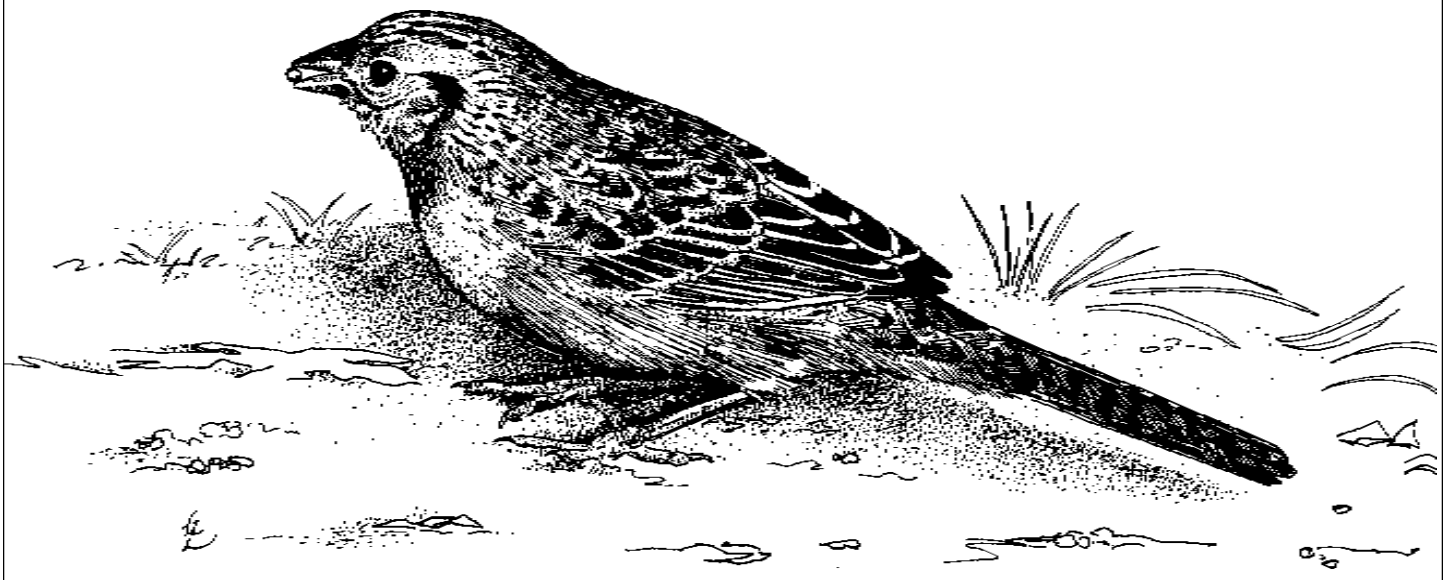
Eggs: Usually 4 (sometimes 3 or 5), 3/4" long, plain white.

Habitat: Cassin's Sparrows inhabit shortgrass prairie with scattered shrubs or other vegetation (including bunchgrasses, sagebrush, yucca, rabbitbrush, mesquite, oaks, and cactus). In some areas, they are found in fairly dense shrublands with scattered grassy openings. The taller plants are used as song perches and for nest cover. Their territories typically contain 20%–35% bare ground, 40%–80% total cover of shortgrass and mixed-grass, and at least 5% shrub cover. They will accept a wide range of shrub cover densities as long as some grass is also present. The winter habitat is similar to that of summer.

Natural history: Nesting begins as early as March (in Texas) and continues as late as early September (in Arizona). Nesting begins in the latter half of May in Kansas, Colorado, and Oklahoma. Clusters of breeding pairs often nest close to each other. Most birds have left for their wintering grounds by late September.

Did you know? Each male's song is unique and so unlike his neighbors' songs that individual birds can be identified by careful study of their songs.

Conservation need: Cassin's Sparrow populations have been declining nationwide for decades, probably a result of habitat loss due to conversion of native prairie to cropland, urbanization, planting of non-native grasses, fire exclusion leading to overly dense woody vegetation, and brush control on the breeding and wintering grounds.



Management recommendations:

• Avoid grazing in areas where the vegetation is already sparse, such as sparse shortgrass and desert grasslands. Cassin's Sparrows usually respond negatively to grazing in such areas probably because of their need for some tall vegetation for nest protection and as song perches, and because of the habitat needs of their insect prey.

• Provide a patchwork of grassland parcels of different heights and densities. Cassin's Sparrows change nest sites from year to year, probably in response to changes in plant growth, grass seed production, and insect populations. Providing a diversity of habitat types provides Cassin's Sparrows options for establishing breeding sites each year.

• Preserve suitable shrub/grass habitat (grassland with at least 5% shrub cover).

• Avoid disturbance of nesting birds, as the adults are easily disturbed at the nest, and visits by humans often result in nest failure.

Cassin's Sparrow Distribution

Cassin's Sparrow Habitat

Associated species:

Other birds that may benefit from habitat management for Cassin's Sparrows include Scaled Quail, Loggerhead Shrikes, Lark Buntings, and Western Meadowlarks.

Cassin's Sparrow Summer Diet

Invertebrates (mostly beetles, grasshoppers, crickets, caterpillars) 80%

Seeds 20%

Lark Bunting

LARK BUNTING *(Calamospiza melanocorys)*

Identification: These birds are 6 1/2" from the tip of the beak to the end of the tail. In summer, the males are black with bold white wing patches, while the females are mostly brown, with white wing patches, dark brown streaks on a white breast and cream-colored corners on the tail. During winter, males resemble females, but are darker, with a black throat. Beginning in early spring, males fly up above their breeding territory, then slowly glide down across it while singing an exuberant song of whistles and trills. This handsome species is Colorado's state bird.

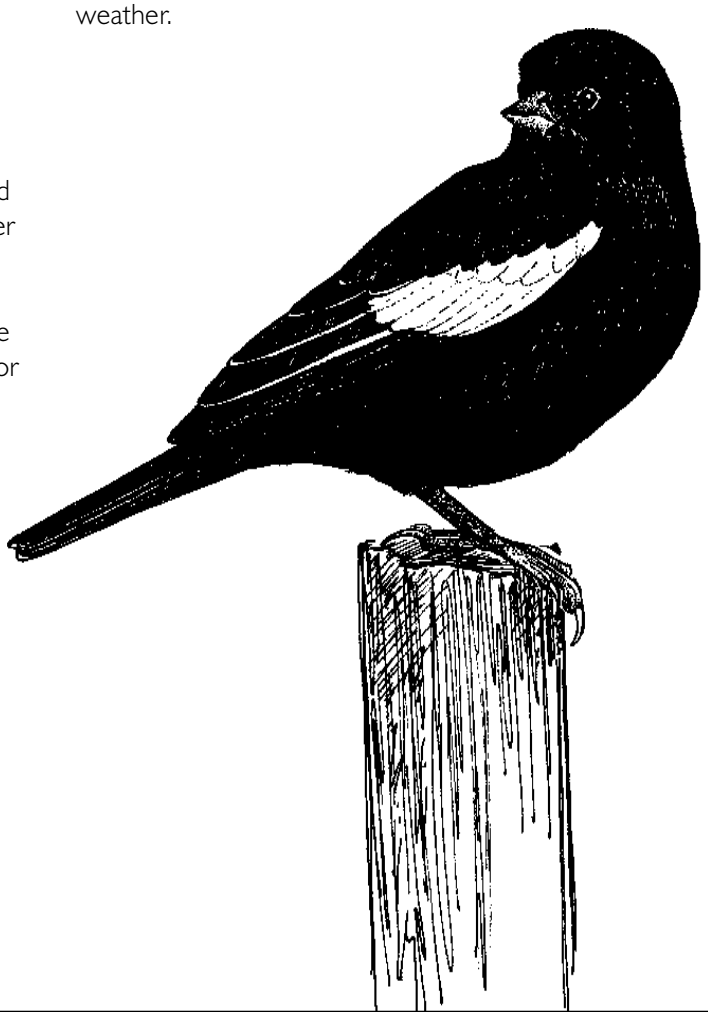
Nest: A cup of fine grasses placed on the ground, inside diameter about 2 1/2", with the rim at ground level, usually partially concealed with grasses or other vegetation. It is often placed next to a shrub or other tall vegetation. Neighboring nests are sometimes just 10–15 yards away.

Eggs: Usually 4 or 5 (but as few as 3 or as many as 7), 3/4"–1" long, pale blue or greenish-blue, sometimes with reddish-brown spots.

Habitat: Lark Buntings nest in open grasslands with a mixture of short and tall grasses and scattered shrubs, and in sagebrush shrublands with grassy openings. They prefer to nest in areas with 60%–70% low grass cover and 10%–15% bare ground. Also important is 10%–30% cover of shrubs, tall grasses, or other plants taller than the blue grama and buffalograss (tall vegetation is necessary for protecting nests from the hot prairie sun). They will not nest in areas with less than 30% grass cover or more than 60% bare ground. Other nest sites include fallow fields with weeds and residual stubble, Conservation Reserve Program lands with tall grasses, and unmowed alfalfa and other hayfields, but they avoid mowed hayfields. Winter habitat is similar to summer habitat, although they will inhabit areas without shrubs.

Natural history: Birds leave the wintering grounds in early March, arrive on their breeding grounds in April and May, and begin nesting in May and June. Young birds leave the nest during June and July. Migration to the winter grounds occurs by late September, although some birds may stay over the winter in the southern parts of their range. The birds are most common in Mexico from August to April. During migration, large flocks of Lark Buntings are often seen in weedy roadsides. During migration and in winter, flocks may contain many hundreds of birds. Most of their food is picked off the ground, although they sometimes catch insects in flight.

Did you know? In the early 1900s, some farmers waited for the arrival of Lark Buntings each spring before planting, as the arrival of the birds generally coincided with more settled and favorable spring weather.



Conservation need:

Ornithologists first began reporting range contractions and population declines in the 1800s, and the situation has not changed since. Lark Bunting populations are declining significantly across their range.

Associated species:

Other birds that may benefit from habitat management for Lark Buntings include Chestnut-collared Longspurs and Western Meadowlarks.

Management recommendations:

- Avoid heavy summer grazing of shortgrass on the breeding grounds. This removes grass cover needed by prey (especially grasshoppers) and taller vegetation needed to shade nests.
- Graze shortgrass lightly in summer or heavily in winter.
- Graze at moderate to heavy intensity in the northern and eastern parts of the species' range where grasses are taller (12" or more) to improve Lark Bunting habitat by reducing vegetation height and density.
- Use short-term rotational grazing rather than long-term grazing in shortgrass prairie to maintain the tall vegetation these birds need.
- Delay mowing until mid-July, when young birds should be out of their nests.
- Use a flush bar or similar device if you must mow earlier than mid-July.
- Retain shrubs, cacti, and other tall vegetation, which is needed by Lark Buntings for perching and for shading nests.
- Preserve the taller, weedy vegetation found along fencerows as habitat for migrating buntings.

Lark Bunting Distribution

Lark Bunting Habitat

Lark Bunting Summer Diet

Baird's Sparrow

BAIRD'S SPARROW (*Ammodramus bairdii*)

Identification: Baird's Sparrows measure 5"–5 1/2" from beak to tail. The overall cover scheme is black and chestnut, with buff-colored head with black markings, white breast with dark brown "necklace," and plain white belly. They often run along the ground rather than fly.

Nest: A cup of grasses, on the ground in dense grass or herbaceous vegetation, under a grass tuft. Nests are often well-hidden by overhanging vegetation.

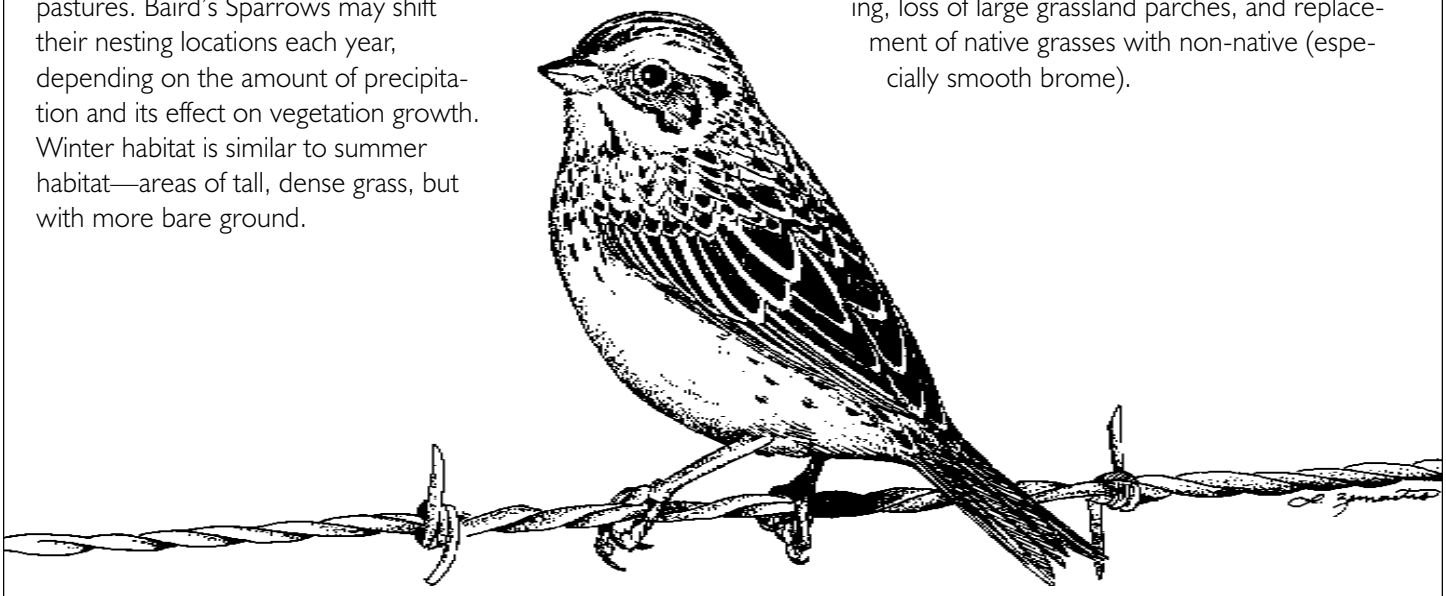
Eggs: 3–5 (sometimes 6), 3/4" long, buff-colored with reddish brown speckles and blotches.

Habitat: Preferred habitat is prairie where the vegetation is 8"–40" tall, with scattered shrubs (<5% shrub cover), no more than 10% bare ground, moderately deep litter (up to 1 1/2"), and abundant residual cover. The shrubs are used as singing perches. In shortgrass prairie, suitable habitat is found in depressions or low-lying areas where grass is taller and denser. Typical habitat is ungrazed or lightly grazed mixed-grass prairie. Other habitats occasionally used include weedy fallow fields, hayfields, Conservation Reserve Program lands, lightly grazed tallgrass, and tall grasses near wetlands. Research shows that nesting success is higher in grassland patches of at least 155 acres, possibly because nests are harder for predators to find in large pastures. Baird's Sparrows may shift their nesting locations each year, depending on the amount of precipitation and its effect on vegetation growth. Winter habitat is similar to summer habitat—areas of tall, dense grass, but with more bare ground.

Natural history: Birds leave the wintering grounds as early as late February or as late as mid-May, and arrive on the breeding grounds in late April and May, with some arriving as late as mid-June. Nesting begins in late May and continues until mid-August, with a peak in June and July. Pairs sometimes nest near other pairs. The birds begin leaving for the wintering grounds in August (but some linger until October), with the first migrants arriving on the wintering grounds by mid-August.

Did you know? Each spring, male Baird's Sparrows battle for prime territories. An early naturalist described the battles: "Rival males leap up from the concealing grass like jack-in-the-boxes, face to face, wings pumping rapidly and claws raking wildly." This continues for several days until the males sort out ownership of the territories, which average 1 or 2 acres in size.

Conservation need: Baird's Sparrows have all but disappeared from some areas where they were formerly abundant. In the Canadian prairie provinces, their populations declined 35%–55% from 1970–1985, but appear to have stabilized since then. They are sensitive to disturbances on the breeding grounds, and will sometimes abandon them in response to mowing or grazing. The declines are probably due to habitat loss, including conversion of native prairie to cropland, overgrazing, loss of large grassland parches, and replacement of native grasses with non-native (especially smooth brome).



Management recommendations:

- Control by burning or mechanical removal where woody plants exceed 5% cover.
- Graze lightly or for short duration. Heavy or continuous grazing can remove too much cover, especially where grass cover is already short and sparse.
- Graze native pastures in fall or winter, and tame pastures in winter or spring.
- Rejuvenate dense grasses by burning every 8-10 years, or longer if necessary, to allow litter to accumulate between burns.
- Delay mowing until mid-August to allow the birds to complete their nesting cycle.
- Use a flush bar or similar device if you must mow before mid-August.
- Retain fairly dense residual cover preferred for nesting.

Baird's Sparrow Distribution

Baird's Sparrow Habitat

photo courtesy of Stephanie Jones

Associated species:

Other birds that may benefit from habitat management for Baird's Sparrows include Sprague's Pipits, Savannah Sparrows, Grasshopper Sparrows, Chestnut-collared Longspurs, and Western Meadowlarks.

Baird's Sparrow Summer Diet

Invertebrates 61%

Seeds 39%

Grasshopper Sparrow

GRASSHOPPER SPARROW (*Ammodramus savannarum*)

Identification: Grasshopper Sparrows are 4"–5" long. The back is chestnut and gray with some dark brown markings. The throat is white or off-white. There is a buffy tinge on the breast and sides with faint brown streaking, and a plain white belly. The males sing an insect-like buzz—the origin of the bird's name. When approached by a human, Grasshopper Sparrows often run along the ground rather than fly.

Nest: A simple cup on the ground, made of grasses, often at the base of grass clumps or other dense vegetation. The nest is concealed by overhanging vegetation.

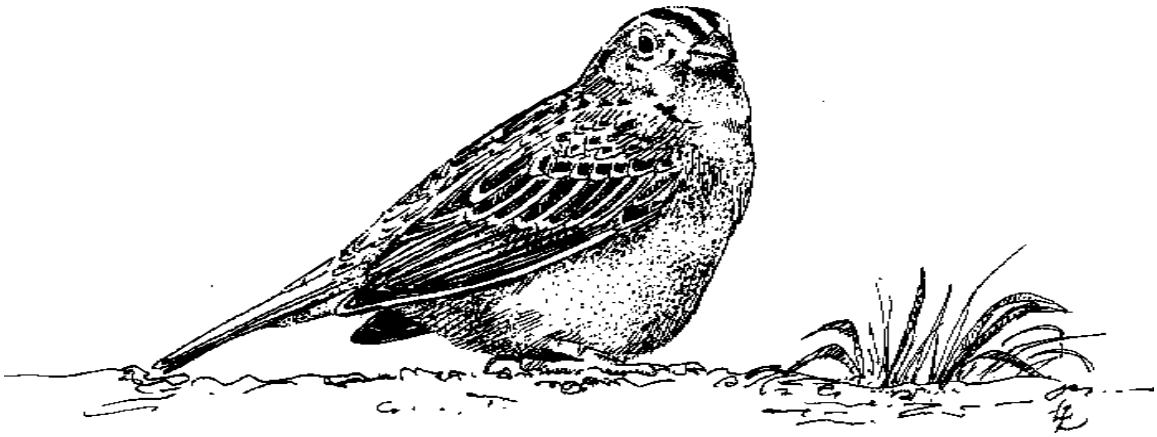
Eggs: Usually 4 or 5 (sometimes 3 or 6), 3/4" long, white with reddish-brown blotches heaviest on the large end.

Habitat: Grasshopper Sparrows are found in most types of grassland, especially tallgrass and mixed-grass prairies, but also shortgrass, especially where scattered shrubs, trees, or other tall plants are present, and in Conservation Reserve Program lands, which provide the only suitable habitat in some parts of the shortgrass prairie. In addition to native grasslands, they will nest in fallow fields with tall weeds. Grasshopper Sparrows require some areas of bare ground, up to 35% of their territory, since they forage on the ground. In general, they prefer sites where much of the vegetation is at least 4" tall. These birds are highly territorial and prefer areas with tall forbs or scattered trees or shrubs to use as singing perches. However, they avoid areas with more than 35% shrub cover. During winter, they can be found in areas of dense grass with scattered low shrubs, and in weedy fields.

Natural history: Birds start leaving the wintering grounds as early as March. Nesting begins in May and June, and most young are out of their nests by the end of July. Most birds have migrated off the breeding grounds by late September. Grasshopper Sparrows sometimes nest close together, and populations in a particular location can vary widely from year to year, as the birds move around in response to changes in their habitat.

Did you know? Grasshopper Sparrow singing is unusual in the bird world: the males sing two completely different songs (one is the insect-like buzz, the other more musical), and the females sing a trill to attract males.

Conservation need: Like several other grassland bird species, Grasshopper Sparrow populations are declining wherever they are found. Causes include loss of habitat by urbanization, conversion of native grassland to cropland, and overgrazing.



Management recommendations:

• Provide pastures and grassland parcels of at least 30 acres because Grasshopper Sparrows prefer large tracts of suitable habitat. Nests in smaller tracts are more likely to be found and destroyed by predators.

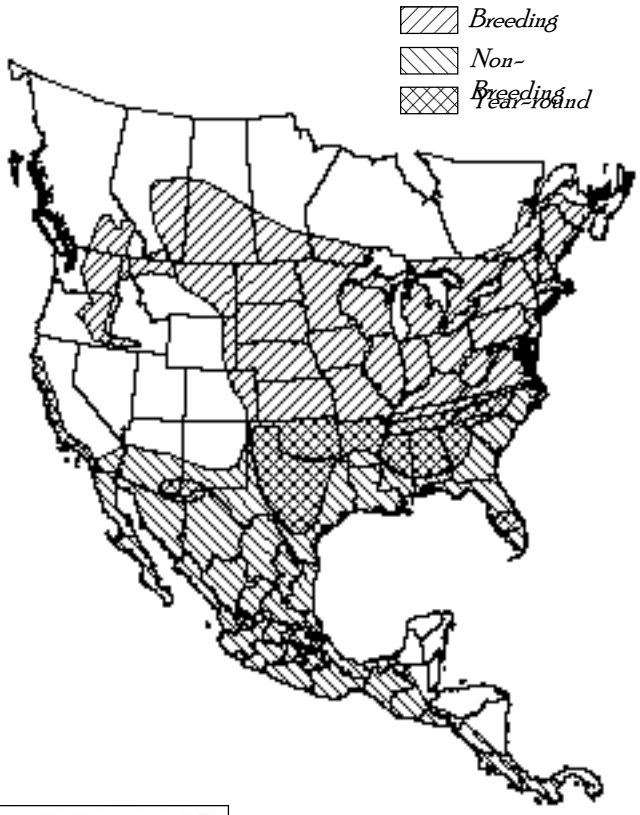
• Avoid grazing shortgrass, or delay grazing until after the end of nesting (the end of July), because the grazed vegetation often becomes too short and sparse to suit Grasshopper Sparrows.

• Delay mowing until after nesting, i.e., usually the end of July (mowing operations often destroy nests placed in hayfields, or expose them to predators).

• Use a flush bar or similar device if you must mow before mid-July.

• Avoid burning shortgrass habitats, as the tall vegetation and shrubs needed by Grasshopper Sparrows take several years to reach heights suitable for the birds.

Grasshopper Sparrow Distribution

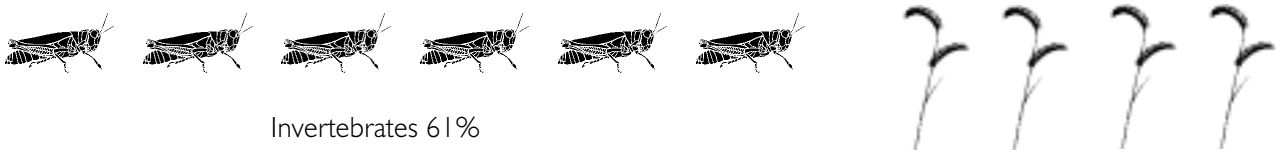


Grasshopper Sparrow Habitat

Associated species:

Other birds that may benefit from habitat management for Grasshopper Sparrows include Ring-necked Pheasants, Upland Sandpipers, Vesper Sparrows, and Western Meadowlarks.

Grasshopper Sparrow Summer Diet



McCown's Longspur

McCown's Longspur (*Calcarius mccownii*)

Identification: These birds are 5"–6" long from beak to tail. The male in summer has a gray face with black crown and "moustache," gray back with black streaking, white throat, black across the breast, and white belly. Chestnut-colored "shoulders" are especially noticeable in flight. An inverted "T" can be seen in the tail in flight, formed by a black band across the end of the tail, black central tail feathers, and white outer tail feathers. The female is similar to the male, but the colors are muted. In winter, the black on the male's head is brown, and the black on the breast is not as noticeable, while the female looks like she does in summer. The male displays by flying up above his territory, then floating down on outstretched wings while singing his territorial song.

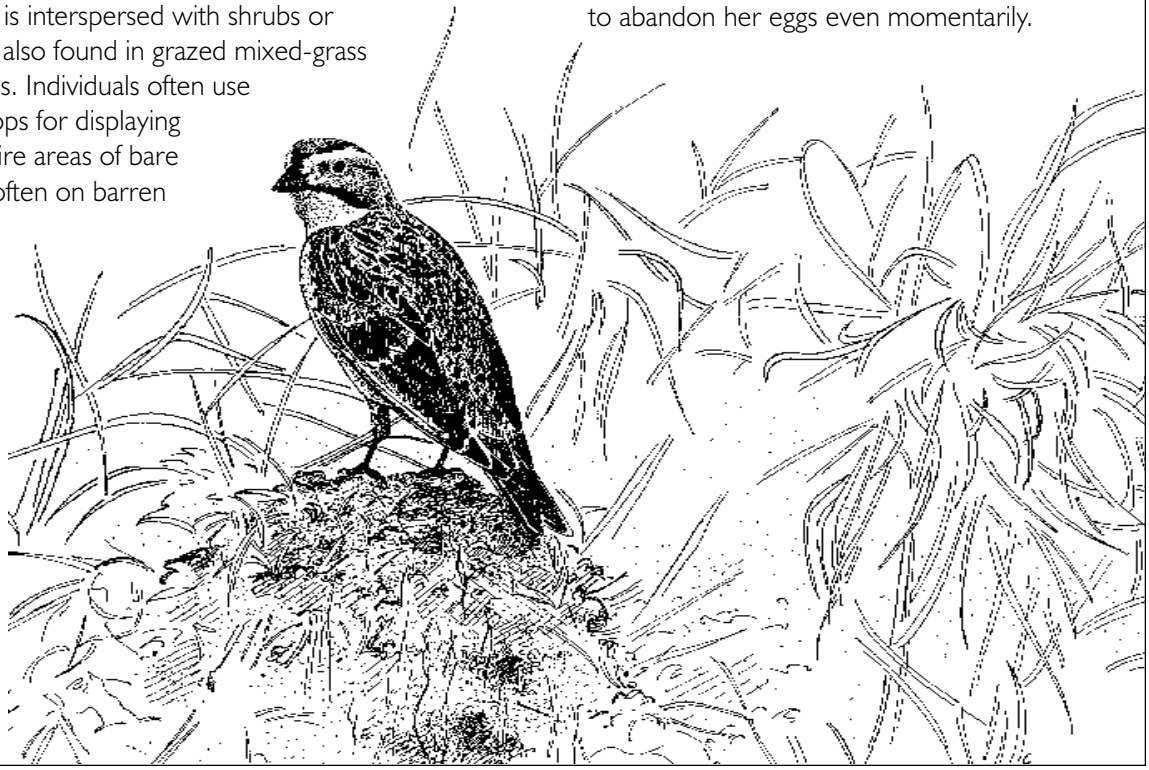
Nest: A simple grass structure, the rim level with the ground, placed next to a grass tuft, cactus, or small shrub, in an area of very sparse plant cover.

Eggs: 3–4 (but sometimes as many as 6), 3/4" long, buff-colored with faint brown blotches.

Habitat: McCown's Longspurs breed in shortgrass, especially where vegetation cover is sparse due to soil moisture or grazing, or is interspersed with shrubs or taller grasses. They are also found in grazed mixed-grass prairies and stubblefields. Individuals often use sparsely vegetated hilltops for displaying and nesting. They require areas of bare soil, and nest sites are often on barren hillsides. Early in the breeding season, nests are often placed on south-facing slopes. Nesting territories usually include 45%–80% grass cover and 15%–25% bare ground, with little or no cover by forbs, woody plants, or cactus (although nests started late in the season are more likely to be in denser vegetation or near shrub cover, perhaps for protection from the sun's heat). Longspurs breed in loose colonies. Winter habitat is similar to that of summer, with the addition of freshly plowed and bare fields.

Natural history: Longspurs leave the wintering grounds in late February and March, arrive on the breeding grounds in late March and April, and often linger into November. Nesting begins by mid- to late May, with most young out of the nest by mid-July. Paired birds are strongly attached to each other and stay close together, even walking side by side when foraging.

Did you know? The nests are difficult for predators (and humans) to find because the female sits tightly on her nest until practically stepped upon, relying on her superb camouflage to avoid detection. Females also have a strong instinct to protect the eggs: one researcher who wanted to count eggs in the nest of a particularly protective mother had to first lift her off the nest because she refused to abandon her eggs even momentarily.



Conservation need: The population is down and the range has contracted since at least the early 1900s, probably because of loss of breeding and wintering habitat through fire exclusion and conversion of native prairie to cropland and urbanization.

Management recommendations:

- Retain populations of the principal insect prey species (especially grasshoppers) at levels compatible with economic activities on the land.
- Graze at moderate to heavy intensity to improve McCown's Longspur habitat by reducing vegetation height and density.
- Graze in summer, rather than winter.
- Preserve or create native shortgrass prairie because longspurs cannot nest successfully in croplands or in tall non-native grasses.
- Control non-native plants, including cheatgrass, leafy spurge, and knapweed, which do not provide the vegetation structure preferred by longspurs, and displace native shortgrass prairie plants.
- Protect the area around known nest sites because some longspurs will return to nest in subsequent years.

McCown's Longspur Distribution

McCown's Longspur Habitat

Associated species:

Other birds that may benefit from habitat management for McCown's Longspurs include Mountain Plovers, Long-billed Curlews, Burrowing Owls, and Horned Larks.

McCown's Longspur Summer Diet

Chestnut-collared Longspur

CHESTNUT-COLLARED LONGSPUR (*Calcarius ornatus*)

Identification: Chestnut-collared Longspurs are 4 1/2"–6" long. The male in summer is dark brown overall with some lighter brown streaking on the back. He has a black crown with black and white on the face and pale yellow on the throat and face up to the eye. The nape of the neck is chestnut. The female in summer has brown streaks on the back and crown, a white throat, a brown "necklace," white belly with faint brown streaks on the sides. In winter males, brown replaces the black on the head and breast, and the chestnut on the back of the neck. The female doesn't change much from summer to winter, although her overall coloration in winter is paler. Like the McCown's Longspur, the male Chestnut-collared Longspur sings while flying over his territory.

Nest: A nest of fine grasses placed in an area of sparse vegetation, the rim below or level with the ground, placed under grass tufts.

Eggs: 3–5 (sometimes 6), 3/4" long, white with dark brown speckles and blotches.

Habitat: Chestnut-collared Longspurs prefer shortgrass or grazed mixed-grass prairie with scattered shrubs. In dry areas with sparse vegetation, they seek out wet meadows and other low, moist areas where the vegetation is taller and denser. They appear to prefer a mix of short and tall grasses, especially bunchgrasses, and usually avoid the tall dense cover common to some Conservation Reserve Program lands. They will nest in mowed hayfields and grazed pastures, provided some vegetation is 8"–12" tall, but they avoid cultivated fields for nesting. They prefer native pasture over tame, and they avoid areas with dense litter. The territory is usually centered on a large rock, fencepost, or shrub, which is used as a singing post. Some research has shown them to nest most successfully in grassland patches of at least 140 acres. Winter habitat is similar to that of summer—grasslands with vegetation less than 20" tall, also croplands and mowed hayfields.

Natural history: Birds arrive in mid-April and begin nesting in May, with most young out of their nests by mid-June. However, because some pairs nest a second time, young can be found in nests as late as mid-August. After the end of the nesting season, the birds forage in large flocks. Most birds migrate south by September or October. The male vigorously attacks and drives away other birds and ground squirrels if they get too close to the nest.

Did you know? Unlike many songbirds that live in forests, Chestnut-collared Longspurs and other grassland birds do not hop on the ground, but walk or run. The elongated claw of the backward-facing toe may aid in this—it is this elongated claw that gives the bird its name, "longspur."

Conservation need: The breeding range has contracted, and the population has declined. For example, Chestnut-collared Longspurs were common breeders in western Kansas in the late 1800s, but they no longer nest there. Significant declines have also been recorded in Minnesota and Saskatchewan. Causes for the declines include loss of native prairie due to its conversion to cropland and urbanization.

Management recommendations:

- Protect known nesting sites because the birds will nest in the same areas year after year.
- Graze lightly or moderately in shortgrass prairie, leaving some areas of vegetation at least 6" tall—longspurs are more abundant in properly grazed grassland than in ungrazed grassland.
- Use a twice-over rotation system, which creates more suitable habitat than either season-long or short-duration grazing.
- Preserve native prairie because longspurs will not nest in croplands.

Chestnut-collared Longspur Distribution

Chestnut-collared Longspur Habitat

Associated species:

Other birds that may benefit from habitat management for Chestnut-collared Longspurs include Lark Buntings and Western Meadowlarks.

Chestnut-collared Longspur Summer Diet

Invertebrates (mainly beetles, grasshoppers, spiders) 72%

Seeds 28%

Notes: