

Dusky grouse

General information

Dusky grouse occur predominantly in mountainous areas in the western U.S. and Canada. They require forested cover, interspersed with herbaceous openings and shrub cover. Their nests are usually on the ground, often under shrubs or near fallen logs. Dusky grouse roost in forest edges near shrub vegetation where they forage.

Habitat requirements

Diet: soft mast, seeds, buds, forbs, and insects from spring to fall; needles of coniferous trees may be eaten in winter

Water: obtain necessary water from dew and diet

Cover: nest on the ground near forest edges, often under shrubs or next to fallen logs; roost and loaf in trees

Wildlife management practices

Control Nonnative Invasive Vegetation: when nonnative invasive vegetation begins to reduce habitat quality for dusky grouse

Edge Feathering: will increase nesting and foraging cover where woods are adjacent to openings

Field Borders: (in some ecoregions) may increase nesting and foraging cover if shrub cover is allowed to develop

Forest Management: *Forest Regeneration*, particularly *Group Selection* and *Single-tree Selection*, will increase herbaceous and shrubby cover for foraging near nesting and roosting areas; *Forest Stand Improvement* can be used in stands not ready for regeneration to increase herbaceous groundcover and shrubby structure

Livestock Management: should prevent areas from being grazed where dusky grouse nest

Plant Native Grasses and Forbs: particularly in agricultural fields going out of production

Plant Shrubs: to provide soft mast, buds, and nesting cover, especially near forest edges where lacking

Plant Trees: in relatively large open areas, coniferous trees may be planted to provide cover and a winter food source where needed

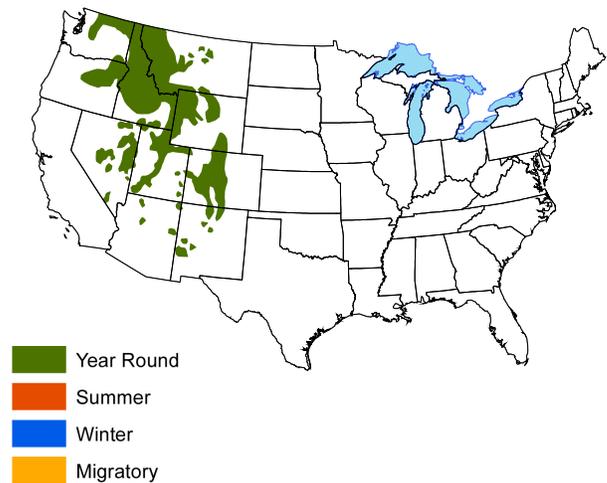
Set-back Succession: *Prescribed Fire*, *Chainsawing*, and *Herbicide Applications* can maintain herbaceous openings and shrub cover

Decrease Harvest: may be necessary when mortality from hunting harvest is additive or limiting population growth surveys show a decline in the local population

Wildlife or Fish Survey: call counts and autonomous recording units (ARUs) may be used to detect species occurrence and monitor dusky grouse populations



Todd Black



Eastern bluebird

General information

Eastern bluebirds are found across the eastern U.S. They use herbaceous openings, savannas, pastures, parks, backyards, edges of hayfields and cropfields, and other early successional communities well-interspersed with trees and shrubs, for perching, foraging and nesting (where cavities are available). Large open areas without interspersed hedgerows, fencerows, and scattered trees may not receive as much use by bluebirds as those areas with more structural diversity. Bluebirds forage in open areas, but typically near trees, shrubs, or a fence that provide perches. Insects dominate the diet during spring and summer, whereas various fruits are most prevalent during fall and winter. Eastern bluebirds nest in cavities, especially old woodpecker cavities, as well as nest boxes. Clutches are normally 3-6 eggs. Eastern bluebirds may have 1-3 broods per year. Nest box programs have had a major impact in restoring eastern bluebird populations.

Habitat requirements

Diet: insects, especially grasshoppers, crickets, adult beetles and larvae, as well as other invertebrates, such as spiders; various fruits, such as black cherry, sumac, blueberry, blackberry, blackgum, hollies, dogwoods, pokeweed, and hackberry

Water: necessary water obtained from diet, but may use free-standing water when available

Cover: nest in cavities of trees and fence posts

Wildlife management practices

Control Nonnative Invasive Vegetation: when nonnative invasive vegetation begins to compete with native vegetation and reduces habitat quality for eastern bluebirds

Edge Feathering: to increase foraging opportunities, perching sites, and potential cavity trees (if trees are killed and left standing) around fields

Field Borders: to increase foraging opportunities around crop fields

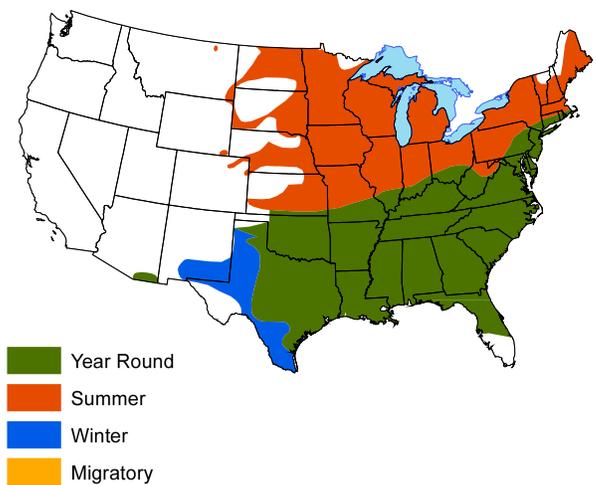
Livestock Management: livestock must be excluded from recently planted trees and shrubs

Nesting Structures: should be erected where a scarcity of natural cavities may be limiting the population; nest boxes should be approximately 5 feet high with an entrance hole 1½ inches in diameter; nest boxes should be placed no closer than 80 yards apart to limit territorial fighting among males

Plant Native Grasses and Forbs: to aid in establishing herbaceous groundcover where planting is necessary; forb component is important to attract insects



Dave Menke



Plant Shrubs: in relatively large open areas where perching sites or winter foods may be limiting

Plant Trees: in relatively large open areas where perching sites are limiting; may provide potential nest sites in distant future

Set-back Succession: *Prescribed Fire, Disking, Herbicide Applications, Mowing, Chaining, and Drum-chopping* can be used to maintain and rejuvenate early successional areas and prevent them from becoming dominated by young trees and shrubs; *Chainsawing and Root-plowing* can be used to convert forested areas to savannas and early successional communities; *Mowing* may be used to maintain foraging and loafing cover for eastern bluebirds in **Urban** areas

Wildlife or Fish Survey: point counts and autonomous recording units (ARUs) may be used to detect species occurrence and monitor bluebird populations; nest boxes should be checked to monitor use and nest success

Eastern meadowlark

General information

Eastern meadowlarks are medium-sized songbirds that live in grasslands throughout the eastern U.S. They have a bright yellow breast with a black chevron marking on the chest. They are often seen singing from fencepost, power lines, or hay bale perches during spring. Eastern meadowlarks are grassland obligates; that is, they require and are only found in grasslands. Males require grassy fields of at least 6 acres to establish territories and, even then, they may not be present if the surrounding landscape is forested. They may prefer native grasslands, but will use pastures and fields of nonnative grasses if the vegetation structure is suitable (1 - 3 feet tall) and not hayed or mowed or grazed too low during the nesting season. Eastern meadowlarks nest on the ground and the female builds the nest of dead grass leaves. Nests contain 2-7 eggs and eastern meadowlarks may have 2 broods per year. Females will usually abandon their nests if they are disturbed off the nest while they are incubating. Although males boldly sing in the spring, eastern meadowlarks are relatively shy, slinking away from intruders within the grass cover. Eastern meadowlarks primarily eat insects, but also consume various seed during winter. They forage while walking on the ground. Haying, overgrazing, and conversion of grasslands to row-crop agriculture or human development are major problems for reproductive success and population maintenance. Eastern meadowlark populations have declined 70 percent since 1970.

Habitat requirements

Diet: insects, especially grasshoppers, crickets, and caterpillars (moth larvae) and grubs (beetle larvae); various seed and grain in winter

Water: obtained in diet

Cover: grasslands at least 6 acres in size

Wildlife management practices

Conservation Easement: may protect relatively large tracts of grasslands in the eastern U.S. where habitat for eastern meadowlark is declining

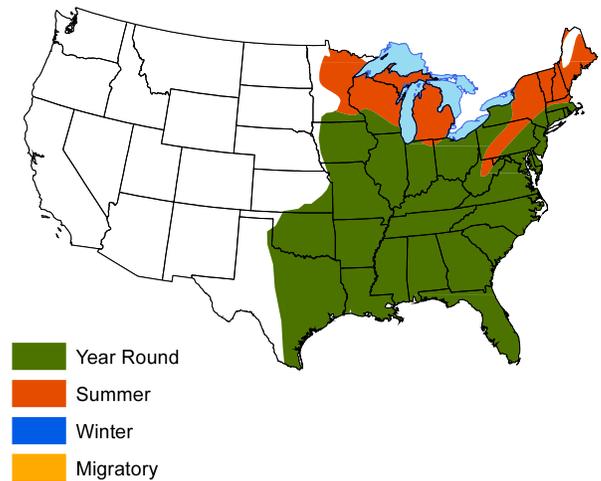
Control Nonnative Invasive Vegetation: when nonnative invasive vegetation begins to degrade habitat for eastern meadowlark

Livestock Management: grazing pressure should be managed to maintain an average grass height of at least 18 inches

Plant Native Grasses and Forbs: when grassland cover is limiting; little bluestem, broomsedge bluestem, and sideoats grama provide excellent nesting structure; native grasses and forbs should be planted when



James W. Arterburn



converting agricultural fields or forested areas to eastern meadowlark habitat to ensure optimum grass coverage and structure

Set-back Succession: *Prescribed Fire* is strongly recommended to maintain and rejuvenate grasslands; *Prescribed Fire* and *Herbicide Applications* can be used to reduce unwanted encroachment of woody species; *Chaining* can be used to reduce shrub cover; *Chainsawing*, *Dozer-clearing*, and *Root-plowing* can be used to convert forests to grasslands

Wildlife or Fish Survey: point counts and autonomous recording units (ARUs) may be used to detect species occurrence and monitor population trends

European starling

General information

European starlings are found throughout North America. They were introduced to the U.S. from Europe and are considered pests. They commonly cause damage to crops and in urban areas. They exclude native species from cavities and deplete food resources for native wildlife. As a consequence, wildlife damage management is necessary to reduce starling populations and exclude them from areas where they are causing damage. Starlings prefer older suburban and urban residential areas with large trees and shrubs interspersed with open areas, but also are abundant in agricultural areas. Starlings are cavity nesters and nest in large trees or old buildings. Starlings feed on the ground and eat a variety of insects, seeds, grain, and soft mast. Practices to attract or benefit starlings should not occur in any situation.

Habitat requirements

Diet: insects, soft mast, seeds, earthworms, grain, human garbage, and even dog and cat food

Water: require freestanding water during warm seasons

Cover: nest in tree cavities, old buildings

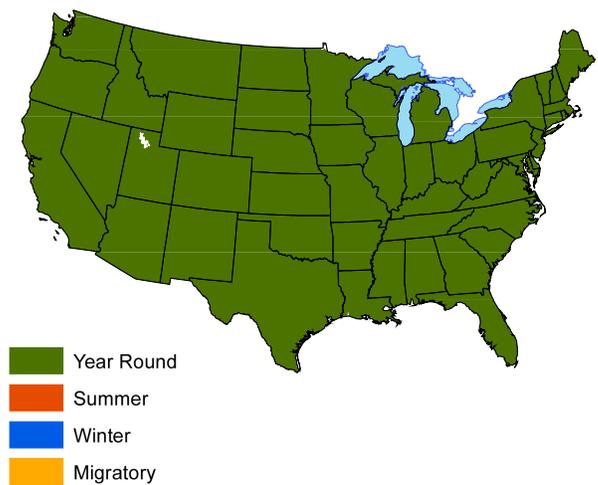
Wildlife management practices

Wildlife Damage Management: exclusion practices to prevent access to buildings and other areas where they are not wanted; food, water, and cover available to starlings around buildings should be removed; various harassment practices may be effective; trap and euthanasia are appropriate to reduce starling populations

Wildlife or Fish Survey: observation counts, point counts, and wildlife damage management questionnaires are used to monitor starling populations



Thomas G. Barnes



Ferruginous hawk

General information

The ferruginous hawk is the largest hawk in North America. There are 2 common color phases of ferruginous hawks. Some display a light phase with mostly white heads, rufous shoulders, backs, and legs, and pale underparts. Dark-phased individuals are dark brown with a whitish tail and wing tips. Ferruginous hawks' legs are feathered to the toes. Ferruginous hawks are found in open country. They nest in trees, usually along riparian areas or on steep slopes. They primarily prey upon small mammals.

Habitat requirements

Diet: rabbits, ground squirrels, prairie dogs

Water: necessary water obtained from diet

Cover: open plains and shrublands; nest in trees

Wildlife management practices

Control Nonnative Invasive Vegetation: when nonnative invasive vegetation begins to reduce habitat quality for ferruginous hawks or their prey

Livestock Management: when overgrazing begins to degrade habitat for prey

Plant Native Grasses and Forbs: where groundcover is limited and planting is necessary

Plant Trees: along riparian areas where trees are not present to create nest sites

Set-back Succession: *Prescribed Fire* and *Herbicide Applications* can be used to maintain early successional communities that support prey; *Chaining*, *Root-raking*, and *Drum-chopping* may be used to set-back succession in areas dominated by shrubs where more open space is needed

Soil Conservation Agriculture: to facilitate hunting prey when waste grain is available

Wildlife or Fish Survey: observation counts are used to estimate trends in populations



John Cholod



Gambel's quail

General information

Gambel's quail are upland gamebirds found in arid regions of Arizona, New Mexico, southern Colorado, Utah, southern Nevada and California. Gambel's quail are usually found in brushy and thorny vegetation with scattered grasses and forbs, typical of southwestern deserts. Gambel's quail are also found along the edge of agricultural fields, especially those adjacent to arroyos and irrigation ditches. Dense shrubs and cacti intermingled with small open areas also are used. The amount of late winter and early spring precipitation largely determines the quality and quantity of spring foods. In essence, more rain equals more quail.

Habitat requirements

Diet: succulent green plants; seeds of forbs (especially legumes), grasses, shrubs and trees; saguaro, cholla and prickly pear cacti fruits; a variety of soft mast and insects

Water: require freestanding water during warm seasons if succulent green plants are not available for food; will usually not travel more than one-third mile for water

Cover: nest in the thickest shrub and/or herbaceous vegetation available; roost in tall shrubs and trees, such as mesquite, scruboak, desert hackberry, cholla, one-seed juniper, littleleaf sumac, catclaw acacia, and various yuccas; shrubs provide important cover for loafing during the day

Wildlife management practices

Control Nonnative Invasive Vegetation: when nonnative invasive vegetation begins to reduce habitat quality for Gambel's quail

Leave Crop Unharvested: to provide additional food resource in fall/winter

Livestock Management: over much of the area where Gambel's quail are found, there are few wildlife management practices considered practical for improving food other than proper livestock grazing management; grazing management is important to ensure enough residual herbaceous vegetation is available for nesting cover

Plant Food Plots: grain plots can provide additional food and cover; best when located next to high-quality cover

Plant Shrubs: where shrubby cover is lacking

Water Developments for Wildlife: guzzlers, catchment ponds, windmills, and spring developments can be beneficial where water is limiting

Decrease Harvest: may be necessary when surveys show a decline in the local population and mortality from hunting harvest is additive or limiting population growth



Gary Kramer



Wildlife or Fish Survey: call counts and flush counts are used to estimate trends in Gambel's quail populations

Golden eagle

General information

The golden eagle is one of the largest birds of prey in North America. Its agility and speed coupled with a strong beak and talons allow it to capture a variety of prey items and fiercely protect its kills from other, often larger predators. In North America, golden eagle occurs almost exclusively in the western half of the United States, primarily in the mountain and inter-mountain regions from Canada southward into Mexico. They occupy tundra, shrublands, grasslands, coniferous forests, farmlands, and riparian areas along rivers and streams. Adults are dark brown with gold feathers on the back of their head and neck. Adults weigh 7 to 13 pounds with a wingspan of 6 ½ to 7 feet. Females are about one-third larger than males. They prefer partially open country, especially open lands adjacent to rough terrain, such as hills, mountains, and cliffs. A pair of adult golden eagles can be monogamous (stay together as a pair) for several years and in some cases remain together for life. Golden eagles are protected by federal legislation. It is against the law to harass, harm, pursue, trap, or capture them. Only the United States Department of Interior can grant exceptions for killing golden eagles (for specific purposes, such as scientific studies, Native American religious ceremonies, and livestock depredation).



Dave Menke

Habitat requirements

Diet: birds and small mammals, including jackrabbits, cottontails, prairie dogs, and ground squirrels; sometimes larger animals, such as deer and pronghorns and occasionally livestock (especially lambs, kid goats, and calves), are attacked and consumed

Water: water requirements are met through consumption of prey

Cover: roost and nest in large, tall trees, rock formations in mountainous regions and on tall cliffs; they may use the same nest for several years, adding additional structure (such as sticks, limbs) every year

Wildlife management practices

Conservation Easement: may protect habitat for golden eagle and prey, especially where urban development is encroaching

Control Nonnative Invasive Vegetation: when nonnative invasive species begin to degrade habitat for prey

Livestock Management: when overgrazing begins to degrade habitat for prey

Set-back Succession: *Prescribed Fire* and *Herbicide Applications* can be used to maintain early successional communities that support prey



Wildlife Damage Management: livestock depredation permits may be issued in severe cases with control activities carried out by federal agency personnel

Wildlife or Fish Survey: observation counts are used to estimate trends in populations

Golden-cheeked warbler

General information

The golden-cheeked warbler has been listed as a federally endangered species since May 1990. It is a songbird about 5 inches long and is mainly black with a bright yellow face divided by a black eye stripe. Golden-cheeked warblers are found exclusively in central Texas during the breeding season. They nest in mature Ashe juniper (commonly referred to as “cedar”) and oak woodlands. Nests contain 3 to 4 eggs and are made of shredded Ashe juniper bark (usually from mature trees that are 20+ years old) and spider webs. Nesting is more successful within mature forest stands of 250 acres or more. Mating pairs are monogamous and a male will typically defend a territory of about 10 acres. By July, these birds migrate south to southern Mexico, Honduras, Nicaragua, and Guatemala to spend the winter. Urbanization and agricultural practices have reduced the amount of tall juniper and oak woodlands golden-cheeked warblers rely on for nesting cover. In addition, the development of large man-made lakes has caused flooding in areas traditionally used by these warblers. Nest parasitism by brown-headed cowbirds also contributes to a decrease in reproductive success, but the extent is unknown. Within Texas, the golden-cheeked warbler traditionally inhabited more than 40 counties, but this area has shrunk to 25 counties or fewer. The largest contiguous habitat is maintained on Fort Hood by the U.S. Army.

Habitat requirements

Diet: primarily feed upon insects and spiders on trees; caterpillars (moth larvae) are an important food source for young warblers

Water: although usually found near streams or intermittent streams, water requirements are met through the diet

Cover: mature (17-20 feet) Ashe juniper for nesting and oak woodlands for foraging insect larvae in the canopy; mixed deciduous and evergreen forest, often dominated by pines during winter

Wildlife management practices

Conservation Easement: can protect critical habitat from development

Control Nonnative Invasive Vegetation: when nonnative invasive species begin to compete with native vegetation and degrade habitat

Forest Management: in pure stands of juniper, selective thinning is a *Forest Stand Improvement* practice that can be useful for encourage oak regeneration

Plant Trees: Ashe juniper and oak may be planted in



Steve Maslowski



suitable areas where trees are lacking

Set-back Succession: *Herbicide Applications* may be used to prevent encroachment of undesirable woody species or to remove some trees in solid juniper stands; *Chainsawing* may be used when converting areas to Ashe juniper and oak woodlands

Wildlife or Fish Survey: point counts and autonomous recording units (ARUs) can be used to detect species occurrence and monitor population trends

Golden-fronted woodpecker

General information

Golden-fronted woodpeckers occur in central Texas, into southwest Oklahoma, and the Texas panhandle. They are most commonly found in mesquite woodlands, but also occur in cottonwood, willow, and cypress riparian areas, as well as mixed oak-juniper-mesquite woodlands. Golden-fronted woodpeckers also take advantage of urban sprawl, using fence posts, utility poles, and various ornamental tree species.

Habitat requirements

Diet: an omnivore that eats large numbers of grasshoppers, as well as corn, acorns, wild fruits, and berries

Water: obtains water from food

Cover: nests in mesquite woodlands as well as utility poles, fence posts, and ornamental tree species; nests generally constructed near the ground up to about 30 feet; golden-fronted woodpeckers build cavities and will use existing cavities

Wildlife management practices

Control Nonnative Invasive Vegetation: when nonnative invasive vegetation is competing with native vegetation and reducing habitat quality

Plant Trees: in large open areas lacking sufficient woody cover to create future habitat

Set-back Succession: *Prescribed Fire, Herbicide Applications, and Chainsawing* (girdle-and-spray) can be used to create scattered snags for foraging and nesting

Wildlife Damage Management: woodpeckers occasionally damage wooden homes, fences, and other structures. Harassment techniques may be used to limit damage.

Wildlife or Fish Survey: point counts and autonomous recording units (ARUs) can be used to listen for the distinctive drumming or for vocalizations during the mating season



Thomas G. Barnes



Golden-winged warbler

General information

The golden-winged warbler is a ground-nesting songbird that requires herbaceous groundcover with scattered shrubs and young trees. They breed during summer in the Appalachian Mountains from north Georgia to southern New York and their winter range is in Central America and northern South America. Golden-winged warbler populations have been declining 2.3 percent per year since the 1960s, which can be attributed to loss of habitat through forest maturation and competition and hybridization with the blue-winged warbler. The USDA-NRCS included golden-winged warblers in its Working Lands for Wildlife Initiative in 2012. Successful recruitment is dependent on habitat above 2,000 feet elevation to avoid areas where blue-winged warblers occur. During the breeding season, golden-winged warblers are found in relatively small areas (1-12 acres) of young regenerating forest, reclaimed mine land, emergent wetlands, and old-fields within a landscape of contiguous forest (>70 percent of the landscape).

Habitat requirements

Diet: insects

Water: necessary water obtained from diet

Cover: forest openings with scattered shrubs and young trees with herbaceous groundcover for nesting and foraging; nests usually located at the base of forbs and brambles (such as goldenrod and blackberry) near thickets of shrubs and young trees; perches are important for males to establish territories through song displays

Wildlife management practices

Conservation Easement: can protect critical habitat from development

Control Nonnative Invasive Vegetation: sod-forming grasses, such as tall fescue, and other invasive species may limit coverage of more desirable forbs

Edge Feathering: will create a soft edge of forbs, brambles, shrubs, and young trees between openings or agricultural fields and the forest

Forest Management: *Forest Regeneration*, especially *Clearcut*, provides young forest (approximately 3-10 years old) structure desired by golden-winged warblers. Retaining single trees or groups of trees (10-15 trees per acre) for song perches is desirable. The more interspersed the retained trees are, the more breeding territories can be established in the recently harvested stand.

Livestock Management: may be necessary where livestock are present to prevent grazing nesting and shrub cover



Laurie Smaglick Johnson



Plant Shrubs: may be needed where there is a lack of interspersed shrub cover (or developing shrub cover) in an opening

Plant Trees: may be needed where there is a lack of interspersed trees (or young trees developing naturally) in an opening for song perches, or in large open areas where trees are lacking

Set-back Succession: *Prescribed Fire, Herbicide Applications, Chainsawing, and Dozer-clearing* can be used to create and maintain herbaceous groundcover and scattered shrubs and young trees in openings

Wildlife or Fish Survey: point-count surveys and autonomous recording units (ARUs) can be used to detect species occurrence and monitor population trends

Grasshopper sparrow

General information

Grasshopper sparrows are migratory songbirds that prefer grasslands that may contain scattered shrubs and bare ground interspersed throughout the area. Areas with more than 35 percent shrubby cover constitute poor habitat for grasshopper sparrows. Nests are well concealed on the ground with overhanging grasses and a side entrance. Nests are constructed of dead grass leaves in the shape of a cup and contain 3-6 eggs. Grasshopper sparrows forage on the ground, making bare ground within native grass cover important for mobility and searching for prey (grasshoppers). Grasshopper sparrows are found throughout the Great Plains, Midwest, and Mid-South during the breeding season. They winter in the Deep South, Mexico, and Caribbean. Grasshopper sparrows are declining throughout their range because of habitat loss and fragmentation of once-contiguous grasslands. Grasshopper sparrows are aptly named with their insect-like song and a diet dominated by grasshoppers.



Habitat requirements

Diet: diet shifts dramatically through the year; in spring and summer (breeding season) insects comprise 60 percent of the diet; not surprisingly, given the bird's name, grasshoppers account for 30 to 40 percent of the diet during this time; during fall and winter, diet shifts to 70 percent seeds

Water: water requirements are unknown but probably obtained through diet

Cover: Perennial grasses and forbs are used for escape and nesting cover; nest on the ground, usually in overhanging native warm-season grasses

Wildlife management practices

Conservation Easement: can protect critical habitat from development

Control Nonnative Invasive Vegetation: although grasshopper sparrows may successfully nest in a variety of grassland types, sod grasses, such as tall fescue and bermudagrass, may limit mobility and bare ground. Nonnative invasive vegetation should be controlled when it begins to compete with native vegetation and degrade habitat.

Livestock Management: is crucial to prevent overgrazing; overall average grass height should not be grazed below 18 inches

Plant Native Grasses and Forbs: where necessary to provide habitat, especially when converting agricultural fields previously row-cropped and wooded areas to grassland

Set-back Succession: Prescribed Fire can enhance habitat by rejuvenating grasslands, controlling woody cover, and creating patches of bare ground; Herbicide Applications may be used to control unwanted encroachment of woody species; Chainsawing, Dozer-clearing, and Root-plowing can be used to convert wooded areas to grassland

Wildlife or Fish Survey: point-count surveys and autonomous recording units (ARUs) can be used to detect species occurrence and monitor population trends

Great horned owl

General information

The great horned owl is a large, thick-bodied gray-brown bird with a white patch on the throat and characteristic ear-like tufts on its head. It is found throughout North America in a wide variety of environments, including forests, woodlands, farm woodlots, orchards, deserts, rocky canyons, grasslands, wetlands, and city parks. The great horned owl is mostly nocturnal, evident by its large eyes, and roosts during the day in trees or on sheltered rocky ledges. As a large raptor, it has large talons used to capture prey during a dive. The great horned owl's call is a familiar, and deep, 4 to 5 hoots. These owls nest in larger trees where they find cavities or previously used nests, laying 1 to 4 eggs. They are monogamous breeders and usually establish a territory near a nest site before laying eggs. The great horned owl remains abundant and widespread, most likely because of its ability to live in a wide range of environments.

Habitat requirements

Diet: extremely varied, but commonly includes small-to medium-sized mammals including rabbits, skunks, squirrels, and others, as well as reptiles, amphibians, large insects, and fish

Water: water obtained from diet

Cover: nest in abandoned nests of hawks, crows, or herons, and in large tree cavities, stumps, caves, and ledges

Wildlife management practices

Control Nonnative Invasive Vegetation: when nonnative invasive species begin to compete with native species and degrade habitat for prey

Edge Feathering: to increase usable space for prey around fields

Field Borders: to increase usable space for prey around crop fields, hayfields, and pastures

Forest Management: *Forest Regeneration* in large areas of mature forest may provide additional cover for a variety of prey species; *Forest Stand Improvement* can encourage understory development and enhance habitat for a variety of prey species; trees >12" diameter that are killed may be left standing to provide potential cavities for nesting and roosting

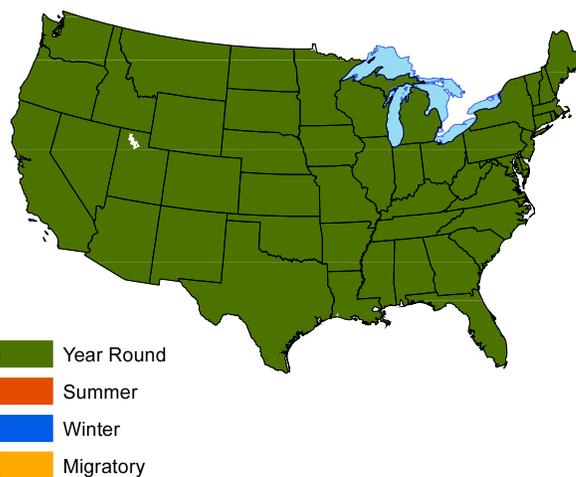
Livestock Management: where overgrazing may be limiting cover for prey

Plant Shrubs: where shrub cover is lacking and needed to enhance habitat for prey, especially cottontails

Plant Trees: where perching sites are limited and where nesting cover does not exist



Dave Menke



Set-back Succession: *Prescribed Fire, Disking, Herbicide Applications, Chaining, Root-plowing, Drum-chopping, and Mowing* may be used to create or maintain early successional communities that provide habitat for a variety of prey species; *Chainsawing* can be used to clear trees and/or create openings where needed (beyond *Forest Stand Improvement*) to enhance habitat for several prey species; *Prescribed Fire* can be used to stimulate understory development for prey and reduce dense midstory development to facilitate hunting prey in forests

Soil Conservation Agriculture: will facilitate hunting prey when waste grain is available

Wildlife Damage Management: may be necessary where an owl is killing poultry

Wildlife or Fish Survey: call counts and autonomous recording units (ARUs) can be used to detect species occurrence and monitor population trends

Greater prairie-chicken

General information

Greater prairie-chickens require very large tracts of native rangeland containing diverse grass and forb communities free of tall vertical structures (including trees). They prefer flat to gently rolling terrain with some cropland, which can provide seasonal foods. Less than 25 percent of the landscape should be composed of crops. Low areas with dense vegetation of grasses, forbs, and low-growing shrubs are used for roosting year-round. Prairie-chickens require sites with short vegetation that offer good visibility for breeding displays. They gather on these sites in the spring, and the males display in front of females to win a mate. These areas are called “booming grounds.”

Habitat requirements

Diet: seeds, grains, insects and herbaceous greens; during the first few weeks after hatching, the young eat insects

Water: water is obtained from diet

Cover: thick, tall grass cover is used for nesting and winter cover; if not periodically disturbed, grasses often become too thick and are less valuable for nesting cover

Wildlife management practices

Conservation Easement: can protect critical habitat from development

Control Nonnative Invasive Vegetation: sod grasses and other nonnative invasive vegetation should be controlled when habitat quality begins to decline

Field Borders: to increase usable space around row crop fields

Leave Crop Unharvested: unharvested grain can provide a supplemental food source for prairie-chickens

Livestock Management: should ensure the entire prairie or grassland is not uniform in structure or plant composition; areas of dense nesting cover adjacent to insect-rich areas with forbs are ideal; some areas should be left ungrazed during the nesting season (May through June)

Plant Food Plots: grain food plots can provide a supplemental food source for prairie-chickens, especially when native foods may be lacking

Plant Native Grasses and Forbs: needed where large expanses of high-quality grassland are not available and planting is necessary

Set-back Succession: fire is an essential aspect of prairie ecology and must be applied to the landscape for long-term stability of prairie-chickens; *Prescribed Fire* every 3 to 5 years improves plant vigor and reduces excessive buildup of old vegetation in areas not grazed; *Chaining*, *Prescribed Fire*, and *Herbicide Applications* can revert shrubland to grassland; *Chainsawing* can be used to



Dave Menke



remove trees

Soil Conservation Agriculture: to leave grain stubble in fall where croplands are adjacent to grasslands

Decrease Harvest: may be necessary if population is declining and data suggest mortality from hunting is additive or limiting population growth

Wildlife or Fish Survey: observation counts on booming grounds are commonly used to estimate trends in prairie-chicken populations

Greater roadrunner

General information

The greater roadrunner is a long-legged bird, 20 to 24 inches in length, with a wingspan of 17 to 24 inches. Adults have a bushy crest on their heads and a long, thick, dark bill. They are called roadrunners because of their habit of running down the road and darting to safety within brush and trees adjacent to the road. They can run up to 20 mph to chase down prey. They will beat larger captured prey items against the ground or a rock to kill them. Although they are capable of flying, roadrunners spend most of their time on the ground. Threats to roadrunners include predation by feral cats, urbanization, and habitat loss.

Habitat requirements

Diet: omnivorous; principal food items include insects, fruits, and seeds, but small reptiles, mammals and birds, bird eggs, and carrion is also eaten; some quail hunters believe roadrunners kill and eat recently hatched quail chicks, but that has never been documented

Water: water is largely obtained from diet, but roadrunners will drink freestanding water if available

Cover: arid deserts to semi-arid shrubby areas; open or disturbed areas adjacent to shrubland; in the eastern portion of their range, roadrunners inhabit dry sandy upland sites with patches of bare ground interspersed with low-growing shrubs and trees.

Wildlife management practices

Control Nonnative Invasive Vegetation: when invasive nonnative grasses and shrubs begin to compete with native plant cover and degrade habitat

Forest Management: in the eastern forested portion of the greater roadrunner's range, *Forest Stand Improvement* can encourage shrub cover can enhance cover and support food where understory vegetation has been shaded out

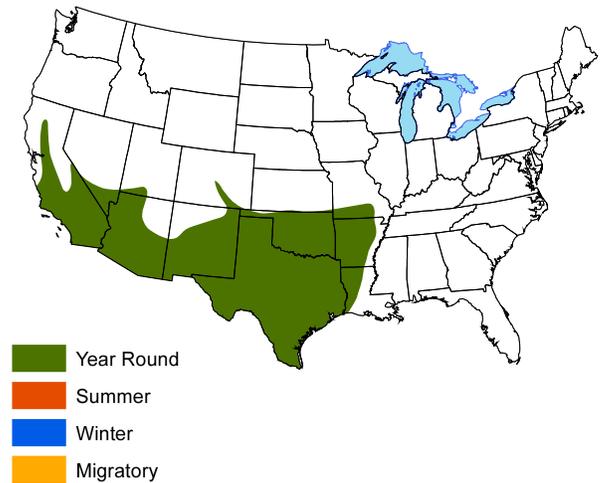
Plant Shrubs: low-growing shrubs can provide cover and food where lacking

Set-back Succession: *Prescribed Fire, Disking, Herbicide Applications, Chainsawing, Chaining, and Drum-chopping* can be used to renovate or maintain shrubby cover when trees begin to dominate or where additional bare ground is needed

Wildlife or Fish Survey: roadside counts are used to estimate roadrunner populations



Robert Burton



Greater sage-grouse

General information

The greater sage-grouse is a ground-dwelling gamebird of the American West that uses very large tracts of sagebrush-dominated rangeland. Sage-grouse populations have declined over many areas as a result of habitat loss and fragmentation related to land conversion, energy development, conifer encroachment, and invasive species (particularly cheat grass). Sage-grouse currently occur throughout much of the **Intermountain** ecoregion. A diverse plant community of native grasses, forbs, and especially sagebrush are critical for sage-grouse. Male sage-grouse display and compete for females on leks, which are small open areas surrounded by sagebrush. The USDA-NRCS included greater sage-grouse in its Working Lands For Wildlife initiative.

Habitat requirements

Diet: spring and summer – insects and green forbs; late fall and winter – sagebrush

Water: water requirements are obtained through diet, but sage-grouse will use free-standing water if available

Cover: nests are constructed on the ground, often under sagebrush; sagebrush is critical for thermal and escape cover during winter

Wildlife management practices

Conservation Easement: can protect critical habitat from development

Control Nonnative Invasive Vegetation: when nonnative invasive species begin to compete with the native plant community and reduce habitat for sage-grouse

Livestock Management: grazing should be prescribed at a level that maintains an adequate grass and forb component for nesting and brood-rearing cover. Improper grazing can increase the sagebrush canopy to the point there is inadequate understory and shift the plant community to species of lesser value, which removes important cover for sage-grouse and decreases forage for livestock.

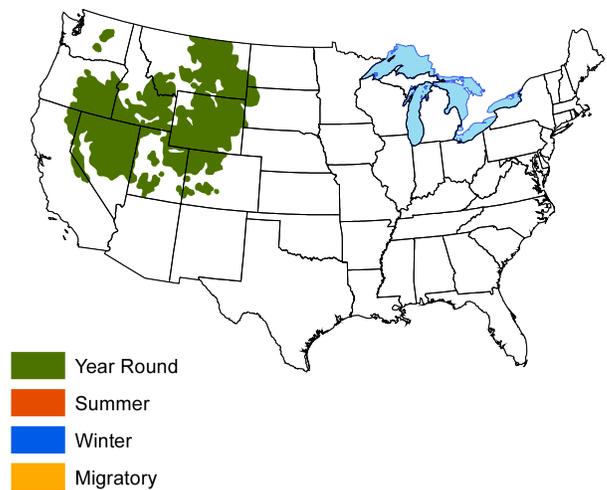
Plant Shrubs: in areas with less than 15 percent sagebrush cover that are used for nesting or winter cover

Decrease Harvest: may be necessary if the local population is declining and data suggest mortality from hunting is additive or limiting population growth

Wildlife or Fish Survey: lek counts are conducted to monitor populations and evaluate management effectiveness, especially since sage-grouse are in decline.



Stephen Ting



Special: identify and mark fences where sage-grouse collisions are likely, such as near leks (open areas surrounded by sagebrush for courtship displays) to reduce accidental mortality caused by fence strikes. Sage-grouse typically use the same leks every spring. Leks are maintained in herbaceous groundcover for long periods of time because of gravelly or wet soils or because of feeding and watering activities of livestock.

Hairy woodpecker

General information

Hairy woodpeckers are medium-sized woodpeckers with a bill almost as long as their head. They forage primarily on tree trunks, but also on stumps, snags, downed logs, and on the ground. Hairy woodpeckers are most commonly found in mature forest, but also may frequent younger developing forests, wooded riparian areas, woodlands, backyards, and parks. They nest in cavities, which are usually in dead trees or in dead limbs of live trees. Nests contain 3-6 eggs.

Habitat requirements

Diet: insects such as ants, beetle larvae, caterpillars, and adult beetles; diet is supplemented with hard and soft mast, as well as various seeds, including sunflower seeds

Water: obtained from diet

Cover: cavity nesters; holes are excavated in mature and dying trees and snags; management efforts should focus on maintaining or creating areas with large mature and dying trees, especially in open areas; within wooded areas, at least one large snag per acre should be available

Wildlife management practices

Control Nonnative Invasive Species: when nonnative invasive species begin to negatively impact tree regeneration or reduce the ability of hairy woodpeckers from foraging along tree trunks

Forest Management: *Forest Stand Improvement* can provide increased dead trees by girdling and spraying softwood species that are 6" diameter for foraging (insects) and potential nest cavities where standing dead trees are limited

Livestock Management: livestock either should be excluded from forests and riparian areas or managed so that grazing pressure is not limiting tree regeneration

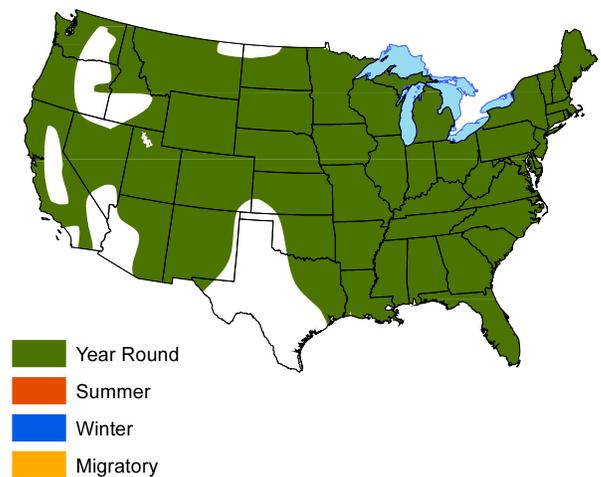
Plant Trees: especially softwood deciduous trees where trees are lacking for potential nesting cavities

Wildlife Damage Management: when woodpeckers are causing damage to human structures

Wildlife or Fish Survey: call counts and point counts are used to estimate population trends



Donna Dewhurst



House finch

General information

House finches are native to the western U.S., but were introduced in the eastern U.S. in 1940. Since, they have spread throughout the eastern U.S. and have become one of the most common birds in the U.S. They are found in a wide variety of urban, suburban, and agricultural areas that have trees, shrubs, and some herbaceous openings. They also are found in canyons and semi-arid regions in the western part of the country. House finches nest in a variety of locations and make a nest from weed stems, small branches, and leaves. House finches are vegetarians and eat a variety of seeds, soft mast, and buds, both from the ground and in trees.



Gary Kramer

Habitat requirements

Diet: soft mast, buds, and weed seeds; in the warm season, house finches eat some insects

Water: free-standing water is needed daily in the warm season

Cover: nest 5 feet to 7 feet aboveground on low branches of trees, branches of bushes, in natural cavities, old holes excavated by woodpeckers, and any projection or ledge they can find on houses and buildings

Wildlife management practices

Plant Native Grasses and Forbs: to provide forb seed in rural areas where forbs are lacking

Plant Shrubs: for nesting and hiding cover adjacent to open areas where shrubs are lacking

Plant Trees: for nesting cover in areas where trees are lacking

Set-back Succession: *Mowing* may be used to maintain foraging and loafing cover for house finches in **Urban** areas

Water Developments for Wildlife: birdbaths and pans of water can be provided, or a low area in the yard can be filled with water; do not place water in areas where cats can catch birds; cats should be removed

Wildlife or Fish Survey: point counts and autonomous recording units (ARUs) may be used to detect species occurrence and monitor population trends

Artificial Feeders: may be used to attract finches in **Urban** areas; millet and sunflower seeds are favorites

