

APPENDIX H HABITAT DESCRIPTIONS

HIGH STRUCTURE GRASSLANDS

Management Indicator Species: Plains Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)

The plains sharp-tailed grouse is selected as a management indicator species for the biological community most often found in grasslands with a diversity of structural stages, including an abundance of high structure grasslands. Interspersed shrubs and shrub communities also contribute to habitat suitability for this species and many other wildlife species. Habitats that are grazed lightly by livestock and/or periodically rested from annual livestock grazing generally benefit sharp-tailed grouse and many sensitive species including but not limited to short-eared owl, upland sandpiper, and long-billed curlew. Several species of upland nesting waterfowl also respond favorably to high structure levels resulting from lighter grazing intensities and periodic rest from annual grazing. A more complete list of other wildlife species that typically benefit from management for high vegetation structure, structurally diverse grasslands, and maintenance and enhancement of shrubs on grasslands is provided in the supporting FEIS.

Northern Mixed Grass Prairie

Hens on northern mixed grass prairie tend to select areas with the tallest and densest cover available for their nests in the spring. Most nest-site selection and initiation occurs in April and early May before or just as spring green-up is beginning. At this time most of the available cover is residual from previous growing seasons. In addition to being the primary cover available at the onset of nesting, residual cover also helps to offset the negative effects of a lack of current-year nesting cover during drought years when new vegetative cover is reduced or unavailable.

Cover height and density at nest sites in the spring frequently exceed average visual obstruction readings (Robel et al. 1970) of 6 inches. Average visual obstruction readings (VORs) of 11 inches have been reported at nest sites in some study areas. Hens frequently select clumps of herbaceous cover taller than the surrounding vegetation for their nest sites. Although it's dependent on the uniformity of livestock grazing within an area, average VORs of 4 inches or more across pastures or range sites in the spring typically provide patches of suitable cover for nest sites. Average VORs of 3 inches or more in the spring will provide suitable cover for a few nest sites but only if forage utilization by livestock has been patchy rather than uniform. If cover levels are being monitored in the fall or early winter after livestock grazing, loss of cover over the winter to wind, snowpack and other natural factors has to be considered to reasonably predict nesting cover conditions the following spring. Long-term monitoring of over-winter loss of cover will help better determine the relationships between fall and spring cover levels.

Another important consideration in the management of nesting cover for this species is the size of the grassland patches providing quality cover for nest sites. If quality nesting habitat occurs as small islands in a sea of moderately to heavily grazed habitat with relatively low and uniform cover levels, predation may reduce nesting success in the quality habitat. Under these conditions, nest densities may also be substantially lower than what could be expected where quality habitat is provided across a higher percentage of the landscape. Within sharp-tailed grouse habitat, at least 25% of the area around display grounds or across potential habitat should be managed as quality nesting cover to establish or maintain populations. To maximize sharp-tailed grouse populations, approximately 80% or more of an area should be managed as quality nesting habitat. Most nests are located within 1 mile of display grounds. Individual patch sizes of quality nesting cover across pastures or range sites should be at least 160 acres in size.

Quality nesting cover on mixed grasslands occurs where mid and/or tall grass species are dominant, and ungrazed or lightly grazed cover has accumulated over a few years. On more productive grasslands (17 or more inches of average annual precipitation) where mid and/or tall grass species are dominant, hens commonly find quality cover on upland sites. On less productive mixed-grass prairies that receive an average of 14 to 16 inches of precipitation, less quality nesting cover is typically found on upland sites and the taller and denser cover patches in run-in sites and along drainages become more important for nesting. Where long-term grazing has reduced the composition of mid and/or tall grass species, quality nesting cover is sometimes unavailable regardless of the grazing intensity.

Although residual cover is an important factor influencing sharp-tailed grouse productivity, maintaining adequate levels of current-year vegetation as nesting and brood cover is also critical. Also, a diversity of plant species composition and cover levels across the landscape helps provides quality brooding habitat. This diversity should include conditions that favor forb production and a full range of cover levels within pastures or grazing allotments, including substantial areas with relatively high vertical grassland structure remaining through August as escape cover from predators, especially raptors.

To provide quality nesting and brooding habitats, herbaceous vegetation and litter should be allowed to accumulate over a period of years. However, to maintain optimum breeding and foraging habitats over time requires periodic burning or intensive grazing once every 3 to 5 years to maintain vigor of native grasses and forbs. This interval should be extended when drought conditions occur.

Preferred winter habitats include structurally diverse grasslands with interspersed shrubs. Tree buds and fruits of buffaloberry, rose, snowberry, and juniper are common winter foods in many areas. Small grains and croplands on intermingled private croplands are also heavily utilized when available.

Sandhills Prairie

Much of the information presented above can be used to describe quality sharp-tailed grouse habitat in the Nebraska Sand Hills. However, some adjustments are needed in the recommended VORs for quality nesting cover. Because sandhill prairies are more characteristic of a bunchgrass community with patchy vegetation and frequent bare ground in the hills, VORs are typically less than those from sod-forming grasslands with more continuous vegetative cover.

The average VOR of residual cover in the general vicinity of nest sites in the sandhills most often exceeds 3 inches. Nests are frequently positioned against or within clumps of little bluestem or sand lovegrass. Suitable patches of residual cover for nest sites in the spring are usually provided by maintaining average VORs of 2 inches or more across the steeper hills (sands and choppy sands range sites). If cover levels are being monitored in the fall or early winter after livestock grazing, loss of cover over the winter to wind, snowpack and other natural factors has to be considered to reasonably predict nesting cover conditions the following spring. Long-term monitoring of over-winter loss of cover will help better determine the relationships between fall and spring cover levels. Quality nesting habitat conditions across 25% or more of an area is generally needed to maintain grouse populations over time. Resting approximately 15% of an area from annual livestock grazing is also recommended for enhancing sharp-tailed grouse habitat and populations in the sandhills.

Maintaining cover through July as shade for broods is also critical since surface temperatures on the sandy soils during the brooding season can be extreme.

Preferred winter habitats include grasslands with moderate and heavy amounts of herbaceous cover interspersed with shrub and forb patches for foraging. Fruits of snowberry, rose, juniper, and poison ivy are common winter foods. Insects including beetles and grasshoppers are also common food items throughout much of the year.

HIGH STRUCTURE GRASSLANDS

Management Indicator Species: Greater Prairie Chicken (*Tympanuchus cupido pinnatus*)

The greater prairie chicken is selected as a management indicator species for the biological community most often found in grasslands with a diversity of structural stages, including an abundance of high structure grasslands. A list of other wildlife species that typically benefit from management that emphasizes high grassland structure and structurally diverse grasslands is provided in the supporting FEIS. Some of these species include sharp-tailed grouse, short-eared owl, upland sandpiper, and long-billed curlew and Dakota skipper. Several species of upland nesting waterfowl also respond favorably to higher grassland structure levels resulting from lighter livestock grazing intensities and periodic rest from annual grazing.

Northern Mixed Grass Prairie

Hens on mixed-grass prairie tend to select undisturbed (no livestock present) areas with the tallest and densest cover available for their nests. Most nest-site selection and initiation occurs in April and early May, and the availability of sufficient quality and quantity of residual cover at that time is critical. Residual cover also helps to offset the negative effects of a lack of current year nesting cover during drought years when new growth to serve as cover is reduced or unavailable.

Like sharp-tailed grouse, prairie chicken hens frequently select clumps of herbaceous cover taller than the surrounding vegetation for their nest sites. Average VORs at prairie chicken nests on the Fort Pierre National Grassland generally exceed 6 inches and may exceed 10 inches at some nests. Average VORs of 4 inches or more across the more productive range sites in the spring typically provide suitable cover for nest sites. If cover levels are being monitored in the fall or early winter after livestock grazing, loss of cover over the winter to wind, snowpack and other natural factors has to be considered to reasonably predict nesting cover conditions the following spring. Long-term monitoring of over-winter loss of cover will help better determine the relationships between fall and spring cover levels.

Another important consideration in the management of nesting cover for this species is the size of area providing quality nesting cover. If quality nesting habitat occurs as small islands in a sea of moderately to heavily grazed habitat with relatively low and uniform cover levels, predation may reduce nesting success in the quality habitat. Under these conditions, nest densities may also be substantially lower than what could be expected where quality habitat is provided across a higher percentage of the landscape. A range of 30 to 50% of the habitat around display grounds or across potential prairie chicken habitat should be managed as quality nesting cover to establish or maintain populations. Most nests are located within 1 mile of display grounds. Individual patch sizes of quality nesting cover across pastures or range sites should be a minimum of 160 acres.

Minimum grassland areas for prairie chicken populations is considered several thousand acres, but this figure shouldn't be assumed to support viable prairie chicken populations. In the northern part of the chickens range, over 13,000 to 26,000 acres of quality nesting, brooding, wintering and roosting habitat are likely needed to support a viable prairie chicken population.

Nesting cover for early nests is initially provided by residual herbaceous cover but quality nesting cover, both residual and current year, is important throughout the nesting and brooding season. A diversity of plant species composition and cover levels across the landscape helps provide quality brooding habitat. This diversity should include conditions that favor forb production and a full range of cover levels within pastures or grazing allotments, including substantial areas with relatively high, vertical grassland structure remaining through August as escape cover from predators, especially raptors.

To provide quality nesting and brooding habitats, herbaceous vegetation and litter should be allowed to accumulate over a period of years. However, to maintain optimum breeding and foraging habitats over time requires disturbances including burning or intensive grazing once every 3 to 5 years to maintain vigor of native grasses and forbs. This interval should be extended when drought conditions occur.

Preferred winter habitats include grasslands with heavy cover for roosting and interspersed shrub patches for winter foraging. Fruits of buffaloberry, rose, snowberry, and juniper are common winter food items. Small grains on intermingled private croplands are also heavily utilized and are especially important.

Sandhills Prairie

Quantitative information on the height and density of residual cover at prairie chicken nests in the sandhills is limited, and it's assumed that quality nesting habitat descriptions presented for prairie chicken in mixed grass prairie habitats would largely apply to prairie chicken nests in sandhill valleys. However, average spring VORs of 3 inches or more across the more productive range sites typically provide suitable nesting cover in the large valleys.

Greater prairie chicken nests occur in the hills, valleys and meadows. Prairie chicken nests on the Valentine National Wildlife Refuge in the Nebraska Sand Hills are commonly found in tall and dense subirrigated meadow vegetation. Because more cover can be produced in the valleys than in the hills, higher nest densities are more likely in the valleys, but the hills still should not be discounted as nesting habitat.

The nesting seasons for greater prairie chicken in the sandhills coincides with that of the sharp-tailed grouse with most nest-site initiation beginning in mid April. Residual cover provides most of the nest concealment for the first part of the nesting season. The importance of residual cover is further emphasized during drought years when current year cover is reduced or unavailable.

A diversity of plant species composition and cover levels across the landscape provides quality brooding habitat. This diversity should include conditions that favor forb production and a full range of cover levels within pastures or grazing allotments, including substantial areas with relatively high vertical grassland structure remaining through August as escape cover from predators, especially raptors. The heavier cover is especially critical in the sandhills where soil surface temperatures on the sand can be extreme during the brooding season. The heavier cover provides critical shade for broods.

Preferred winter habitats include grasslands with moderate and heavy amounts of cover interspersed with shrub and forb patches for foraging. The forb patches occur primarily where livestock congregate. Fruits of snowberry, rose, juniper, and poison ivy are common winter foods. Insects including beetles and grasshoppers are also common food items throughout much of the year.

SAGEBRUSH HABITATS WITH TALL, DENSE AND DIVERSE UNDERSTORIES

Management Indicator Species: Greater Sage Grouse (*Centrocercus urophasianus*)

The sage-grouse is selected as a management indicator species for sagebrush habitats that have tall, dense and diverse herbaceous understories. These areas typically have a history of lighter livestock grazing intensities. A list of other wildlife species that typically favor these habitat conditions is provided in the supporting FEIS. Some of these species include sage thrasher, Brewer's sparrow, pronghorn and sage vole. Several species of upland nesting waterfowl also respond favorably to these habitat conditions that result from lighter grazing intensities and periodic rest from annual grazing.

Sagebrush stands with relatively tall and dense sagebrush and an abundance of residual herbaceous cover are preferred by sage-grouse for nesting. Nest success and sage-grouse productivity have been reported to increase with increased sagebrush height and residual cover levels in the herbaceous understory. Once again, the importance of residual cover is noted, and its importance undoubtedly increases during drought years when current year herbaceous cover is reduced or unavailable.

Most nesting in Wyoming occurred in sagebrush cover of 20 to 40 percent, which is comparable to what is reported in other states. Other investigators suggested that sage cover over 30 percent may be too thick, and nesting suitability for sage-grouse may begin declining beyond that level. Quality habitat is described as a sagebrush stand with 15 to 25% canopy cover of sagebrush and a tall and dense understory of native grasses and forbs. The tallest sagebrush available on Wyoming sites is reported as being preferred for nesting and is also valuable as winter habitat. Tall (>7 inch height) and dense residual herbaceous cover of native grasses and forbs from the previous growing season provides the cover available at the onset of the nesting season when most nest sites are selected and egg-laying and incubation begins. Most nests are within 2 to 3 miles of display grounds.

Brooding habitat is found in sagebrush communities of 10 to 30 percent sagebrush cover with small grassland openings or intermingled meadows that support an abundance of bugs and forbs like dandelions and yarrow for foraging by young grouse. Like other prairie grouse species, grasshoppers and other insects are also important diet items, especially for broods.

PRAIRIE DOG COLONIES AND LOW STRUCTURE GRASSLANDS

Management Indicator Species: Black-tailed Prairie Dog (*Cynomys ludovicianus*)

The black-tailed prairie dog is selected as a management indicator species for low structure grasslands and the biological community associated with prairie dog colonies. A list of other wildlife species that typically benefit from management for low structure grasslands and maintenance or expansion of prairie dog colonies is provided in the supporting FEIS. Some of these species include burrowing owl, ferruginous hawk, and mountain plover. Average VORs across prairie dog colonies are typically less than 1 or 2 inches.

Black-tailed prairie dogs occupy prairies (shortgrass and mixed grass) and shrublands dominated by sagebrush on the northern plains. Most soils on the NFS lands in the planning area are suitable for prairie dog burrowing. Some of the sandy soils in the valleys of the Nebraska sandhills can support burrowing activities. Even soils with shallow bedrock are known to support prairie dog colonies. Some soils may be preferred by prairie dogs but few soils in the planning area preclude prairie dog burrowing.

Forested and wetlands vegetation types are considered unsuitable for prairie dogs. Grassland vegetation types including those with minor shrub components are considered preferred habitat. Since black-tailed prairie dogs also occur in shrublands and modify shrublands by removing shrubs in and around their colonies, shrublands are considered secondary but, none-the-less, potential habitat.

Slopes with suitable soils and vegetation that are less than 10 percent slope are considered preferred habitat. Slopes ranging from 10 to 30 percent are classified as secondary or suitable habitat. Areas with average slopes exceeding 30 percent are identified as unsuitable.

All water and wetlands are classified as unsuitable for prairie dog colonization. Areas with shallow water tables are also classified as unsuitable.

On mixed grass prairie and to a lesser extent on shortgrass prairie, colonies frequently originate on sites that have been disturbed from previous farming or other soil disturbances and on areas grazed by livestock. Heavily grazed sites where livestock concentrate are more likely to be colonized by prairie dogs. Soil disturbances in the form of water developments, pipelines, range ripping and furrowing, and past cultivation are also good predictors of suitable prairie dog habitat and potential sites likely to be colonized by prairie dogs.

OPEN MATURE AND LATE SUCCESSIONAL PONDEROSA PINE FORESTS

Management Indicator Species: Pygmy Nuthatch (*Sitta pygmaea*)

The pygmy nuthatch is selected as a management indicator species for open mature and late successional ponderosa pine forests that have a relative abundance of snags and large tall trees. A list of other wildlife species that typically benefit from management for these forest conditions is provided in the supporting FEIS. Some of the species on this list include Lewis woodpecker and merlin.

Quality habitat for this yearlong resident is simply described as open mature and late successional (structural stages 4a, 4b and 5) ponderosa pine forests with snags and relatively large and tall trees. Ideal habitat includes tall pines with broken-off branches or tops (towering stubs). Pygmy nuthatches generally use stands with less than 70% canopy cover. This species is a primary cavity nester preferring soft snags, but they occasionally use deserted woodpecker cavities.

This species is primarily insectivorous with bark and leaf beetles being some of the important diet items.

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