DESIGN AND INSTALLATION GUIDE
Upland Wildlife Habitat Management - 645

Upland Wildlife Habitat Management shall be planned and applied in accordance with the Standard in the North Dakota Field Office Technical Guide (FOTG) Section IV. This document provides conservation planners with the parameters, procedures, and additional requirements for developing and applying site-specific plans for upland wildlife habitat management for a variety of species or habitat types. Where appropriate, specific references are noted or hot linked to provide detailed information needed for a successful design.

All land provides habitat for some wildlife species. Cropland, pastureland, woodland, and rangeland all produce and support wildlife by providing some or all of the basic habitat elements. Habitat value depends on the quality, quantity, and interspersion of food, water, cover, and living space. To provide complete habitat, all requirements for the target species must be found within its home range.

Planning alternatives for wildlife will be based on a habitat appraisal. The NRCS Wildlife Habitat Appraisal Guides will generally be used. These guides evaluate habitat for overall wildlife species diversity and are found in Section I of the NRCS Field Office Technical Guide. When a habitat appraisal for a particular wildlife species is desired, the USDI, Fish and Wildlife Service Habitat Evaluation Procedure (HEP), or other NRCS approved methods, may be used. Contact the NRCS State Biologist for the appropriate model and training as needed.

NRCS planning assistance generally involves wildlife habitat appraisal and recommendations for habitat development and management. Request assistance for direct wildlife population management from local North Dakota Game and Fish Department (NDGFD) biologists, or for migratory birds and Threatened or Endangered Species, USDI, Fish and Wildlife Service (FWS) biologists. NRCS can help landowners monitor population trends for some wildlife species. Contact the NRCS state biologist for population trend survey methods if the landowner is interested in more intensive management of these species.

NRCS wildlife habitat planning assistance shall not adversely impact a federally listed Threatened, Endangered, or Candidate species or its habitat.

Habitat manipulation for a given species may adversely affect other wildlife species. Evaluate each planning unit, holistically, in the light of the larger landscape. Determine how management of the unit can benefit regional wildlife populations. It may not be beneficial to maximize habitat diversity on each planning unit. Ground nesting birds, for example, often need minimum edge and larger blocks of uniform herbaceous nesting cover to minimize predation.

This document provides minimum habitat requirements for a variety of North Dakota wildlife species and for specific land uses. To satisfactorily implement this practice, the habitat requirements for the planned kind(s) of wildlife must be available or created according to a planned management system or the landuse managed for general wildlife requirements.

Upland Wildlife Habitat Management is a resource management system—not a single practice. In order to accomplish the goals of the resource management system, a variety of NRCS practices can be employed to maintain and enhance wildlife habitat.

Planning assistance may apply to two levels of wildlife habitat management. The first is for situations where wildlife production is the primary goal of the land unit. The second applies to planning units where wetland wildlife is secondary.

All habitats will be planned and managed according to soil capabilities.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Each species of wildlife has a daily and seasonal home range. All of an animal's requirements for food, shelter, water, and living space must be found within this home range. Vegetative habitat components must be interspersed to provide feeding areas near escape, nesting, and thermal cover.

The planner's primary wildlife management tool is the manipulation of vegetative habitat components. Use the information in this section as guidance in the evaluation of existing habitat and for planning to improve existing cover or to establish needed cover.

Rangeland

Native prairie provides many wildlife species a portion or all of their necessary life requisites. However, prairie habitats have been significantly fragmented in modern agricultural landscapes. Species dependent upon large blocks of grassland have declined since settlement. Grassland nesting birds have shown steep and more consistent declines than any other bird group in North America (Knopf 1994).

- Use conservation practices 528 - Prescribed Grazing, 472 - Livestock Exclusion and/or 338 - Prescribed Burning, to provide high quality grass and riparian habitat. Grazing systems need to be designed to provide residual cover in order to be attractive to grassland nesting birds.
- Planting woody cover on native prairie requires prior review and approval by a NRCS biologist. If woody species are desired plant native shrubs in areas that would mimic natural habitat such as woody draws. Rangeland shall not be converted to a shelterbelt type planting to provide winter cover for resident wildlife species.
- See the appropriate Ecological Site Descriptions (ESD), Section II, FOTG for guidance on habitat manipulation. Also review the Plant Communities and Transitional Pathways diagram to determine potential changes in vegetative community due to planned manipulations.
- Consider using native grass or forb species for any landuse changes being planned adjacent to rangeland. See appropriate ESD for species to be planted on the site.

Introduced Grasses and Legumes

This group includes tame grasses and legumes such as tall wheatgrass, intermediate and pubescent wheatgrass, alfalfa, white and red clover, birdsfoot trefoil, and sweetclover. Avoid using any species considered invasive in North Dakota or at the county level.

1. When planted and managed specifically for wildlife, tame species have the potential to produce large numbers of some ground-nesting species.
   - Block plantings of at least 40 acres are recommended to reduce nest predation by red fox, skunks, badgers, raccoons, and other predators.
   - Non-rhizomatous forms of alfalfa, such as Ranger, are preferable to new and improved hay type varieties.
   - Plantings for wildlife will include mixtures of grasses and legumes/forbs that provide tall standing residue, at least 15 inches, in the fall. This cover will be maintained over winter to provide at least eight inches (where soils will support) of standing nesting cover the following April. Methods for establishing tame grasses and legumes are found in conservation practice 512 - Pasture and Hayland Planting.
   - Periodic management is necessary to maintain the quality of tame grass cover mixtures. Grazing, mowing, burning, or light discing may be used as appropriate. Avoid treating the entire area that is managed for wildlife at one time. Treating 25 percent of the cover per year is adequate.
   - Reed canary grass, phragmites, and creeping foxtail shall not be planted due to their tendency to create a monoculture, suppressing native plant succession.

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- Preferred plant materials for upland wildlife cover include:
  - Grasses: Tall, intermediate, and pubescent wheatgrass.
  - Legumes/Forbs: Alfalfa, birdsfoot trefoil, sweetclover.
  - Recommended Dense Nesting Cover Seed Mixture:
    - Tall wheatgrass at 6.1lbs. PLS/acre
    - Intermediate or Pubescent wheatgrass at 2.5 lbs. PLS/acre
    - Alfalfa at 1.3 lbs. PLS/acre
    - Sweetclover at 0.5 lbs. PLS/acre.

  On steep slopes, greater than 6percent, tall wheatgrass and intermediate/pubescent wheatgrass seeding rates maybe interchanged.

2. Management of tame pasture and hayland can include considerations for wildlife to achieve multiple use. Following are suggestions for meeting wildlife habitat quality criteria on tame species seedings:

- Delay haying on at least part of the fields until after the peak of the nesting season (after July 15). Select species that mature later in the growing season, allowing grassland-nesting birds to fledge before the first cutting operation.
- Avoid cutting hay by mowing around the field. Instead, mow back and forth from one end of the field to the other or mow from the inside of the field to the outside. Consider using a flushing bar on swathers and mowers.
- Leave unharvested strips around field borders or establish permanent field borders.
- Critical area seedings should include legumes or other forbs.

Planted Native Herbaceous Cover

Native plant materials are adapted to the local soils and climate and may persist longer than their non-native counterparts. Natives may take longer to establish from seed than introduced species, but generally require less maintenance over time.

- Establishing native herbaceous plants will be completed in accordance the conservation practice 550 - Range Seeding.
- Attempt to establish a diversity of species and life forms including bunchgrasses, sod forming grasses, forbs, and where appropriate, shrubs. Include warm-season and cool-season species, when possible. Avoid tall shrubs and trees to benefit grassland-nesting birds. If tall shrubs are planted keep the shrubs on the outside perimeter to avoid fragmenting the herbaceous cover.
- Periodic management using grazing or fire may be necessary to maintain stand productivity and palatability for wildlife.
- Grazing management is critical to maintaining wildlife cover and food values. Deer may tend to avoid the pasture currently being grazed, but often make heavy use of fresh regrowth soon after the livestock are moved. Conservation practice 528 - Prescribed Grazing should be used to maintain high quality, vigorous grasses and forbs that provide residual cover over winter.
- <u>Plantings for wildlife will include mixtures of native grasses and legumes/forbs that provide tall, standing residue</u>. <u>This cover will be maintained over winter to provide at least eight inches of standing nesting cover the following April</u>. Methods for establishing native grasses and forbs are found in conservation practice 550 - Range Planting. Following are examples of native seed mixtures for wildlife (see Herbaceous Vegetation Establishment Guide, FOTG, Section I, Reference List, Plant Materials):

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- Saline soils: 30 percent Shoshone beardless wildrye, 20 percent slender wheatgrass, 10 percent blue grama, 30 percent western wheatgrass, 10 percent alsike clover, or fourwing saltbush.
- Wet and subirrigated soils: 25 percent big bluestem, 25 percent Indian grass, 15 percent western wheatgrass, 25 percent switchgrass, 10 percent maximillain sunflower.
- Loamy and silty soils: 25 percent green needlegrass, 15 percent slender wheatgrass, 25 percent western wheatgrass, 20 percent sideoats grama, 10 percent adapted forb or legume.
- Sandy soils: 15 percent western wheatgrass, 25 percent prairie sandreed, 25 percent sand bluestem, 25 percent sideoats grama, 10 percent adapted forb or legume.
- Sands soils: 15 percent western wheatgrass, 25 percent green needlegrass, 30 percent sand bluestem, 25 percent sideoats grama, 10 percent adapted forb or legume.
- Overflow and run-on soils: 25 percent big bluestem, 20 percent green needlegrass, 20 percent sideoats grama, 25 percent switchgrass, 10 percent maximillain sunflower
- Thin upland and shallow soils: 20 percent blue grama, 25 percent little bluestem, 30 percent sideoats grama, 15 percent prairie sandreed, 10 percent adapted forb or legume.
- Wetland soils: Temporary zone: 30 percent prairie cordgrass (Spartina pectinata), 10 percent fowl bluegrass (Poa palustris), 20 percent western sloughgrass (Beckmannia syzigachne), 10 percent fox sedge (Carex vulpinoides), 10 percent Canada wildrye (Elymus canadensis) 10 percent switchgrass (Panicum virgatum), 5 percent forbs (swamp verbena (Verbena hastata), etc.). Seasonal Zone: 40 percent whitetop (Scolochloa festucacea), 30 percent slough sedge (Carex atheroides), 10 percent western sloughgrass (Beckmannia syzigachne), 20 percent American mannagrass (Glyceria grandis).

Planted Woody Cover

Deciduous and evergreen trees and shrubs provide thermal, reproductive, and escape cover for many wildlife species as well as food in the form of seeds, fruits, nuts, buds, catkins, twigs, and leaves. Woody plantings will be planned and applied according to conservation practice 380 - Windbreak/ Shelterbelt Establishment, 612 - Tree/Shrub Establishment or 422 - Hedgerow Planting. Use tree and shrub species recommended for the desired wildlife species. Improve or renovate decadent woody plantings by applying 650 - Windbreak/Shelterbelt Renovation. Refer to the document titled “Tree and Shrub Characteristics” in FOTG Section I, Reference Subjects, Windbreaks and Woodland subfolder, for recommended wildlife trees and shrubs. For adaptation of woody plants to specific soils and climate, refer to the FOTG, Section II, Windbreaks and Forest, “Windbreak Suitability Groups" subfolder, by county.

Woody plantings for wildlife diversity should contain a variety of forms, heights, and flowering/fruiting phenology. They should provide dense areas (thickets) of suckering shrubs or conifers, especially spruce and juniper for winter thermal protection. Evergreen trees and shrubs are critical for winter cover. The more shrubs and the greater the variety, the more value to wildlife.

- Woody plantings shall consist of 3 or more rows or a random design equivalent to 3 rows. Winter cover plantings should be a minimum of 15 rows.
- The windward row must contain shrubs, juniper or spruce to provide a dense barrier from the ground level to the entire plant height.
- The leeward row shall be juniper or shrub species. Fruit-bearing shrubs should be used to provide a winter food source.
- Between-row spacing shall not exceed 16 ft.
- Within-row spacing: shrubs 3 - 6 ft., conifers 6 - 12 ft., trees 6 - 16 ft.

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- Planting woody cover on native prairie requires prior review and approval by a NRCS biologist. If woody species are desired, plant native shrubs in areas that would mimic natural habitat such as woody draws. Rangeland shall not be converted to a shelterbelt type planting to provide winter cover for resident wildlife species.
- Establish a snow trap 50-100 feet upwind to prevent snow from covering the food sources and shelter areas. Trees and shrubs are preferable however tall grasses or standing corn can also be used.
- Establish a secondary windbreak to protect food and cover from storms from the south or east.
- Connect isolated plantings together and provide travel corridors by extending windbreaks for the additional distance or by installing a 422 - Hedgerow Planting (conservation practice in FOTG Section IV) between the windbreaks.
- Consider orientating the woody planting east and west when possible to provide a southern exposure for increased winter thermal cover.
- Provisions will be made for long-term control of weeds and other herbaceous competition with planted trees and shrubs.
- Opportunities exist for planting shrubs for wildlife in and around cropland. American plum thickets, for example, can be planted in odd areas between fields. Field windbreaks add habitat diversity to cropland monoculture. Use at least two rows of shrubs in field windbreaks to better accommodate wildlife.
- Tall trees, which provide raptor perching and hunting sites, should not be used near wetland wildlife habitat.
- Woody plantings should be avoided adjacent to or within large blocks of native grassland. Woody plantings in these landscape settings contribute to habitat fragmentation by creating additional edge. Most grassland birds are edge-sensitive. The addition of more edge has a negative impact on their breeding ecology and introduces more nest parasitism.
- Connect native prairie habitats to other grassland habitats with herbaceous corridors instead of woody corridors.

Grain and Seed Crops

Preferred grain and seed crops include, but are not limited to, corn, wheat, barley, oats, millet, sorghum, sunflowers, lentils and winter peas. Soybeans, buckwheat, flax, rye, and sudangrass, may also be used as food plots but are less preferred by most wildlife species.

- When planted specifically for wildlife, these crops can provide food with limited nesting, roosting, and winter cover.
  - <u>Food plots will be at least one-half acre in size and should not exceed 5 acres in size</u>. One pheasant needs approximately 1 bushel of corn for a 5-month winter feeding period. One deer needs approximately 8 bushels. Within these two extremes design food plot size according to known or anticipated wildlife populations.
  - <u>Food plots will be located adjacent to or less than one-quarter mile from winter cover,</u>
  - Select food plot species that are lodge-resistant where snow accumulations are significant.
  - Following are suggested annual crop species seeding rates and dates. Corn, sunflowers and millet usually provide available food source above the snow. Consider stacking small grains to provide available food during heavy snow periods.

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CROP	RATE	DATE*
Corn	12,000-18,000 plants/acre	May 20
Sunflowers (oil type)	12,000-18,00 plants/acre row crop	June 5
	4-6 lbs. /acre solid-seeded	
Soybeans	56 pounds/acre row crop	June 10
Millet (Proso)	15-30 pounds/acre	June 25
Sorghum (Grain)	15-30 lbs. /acre solid-seeded	May 25
Barley	60-90 lbs. /acre	May 31
Buckwheat	50-60 lbs. /acre	May 20
Flax	35 lbs. /acre	June 10
Oats	50-80 lbs. /acre	May 31
Rye	60-90 lbs. /acre	September 30
Wheat	60-90 lbs. /acre	May 31
Sudangrass	15-30 lbs. /acre solid-seeded	May 20
Lentil	40 - 70 lbs.	May 20
Winter Peas	100 - 180 lbs. /acre	May 20

**Planting dates will vary with location, the crop variety and weather conditions.*

Consideration should be given to perennial food plots such as maximilian sunflower at 1 # PLS./acre or stiff sunflower at 3 # PLS/acre.

If pesticides are used read and follow the pesticide label for application rates, authorized use information and Federal, State or local restrictions.

- Where wildlife is a secondary land use, grain and seed crops can provide food and cover for some species. If food plots are not planted, waste grain is essential to many wildlife species during fall and winter. To provide wildlife habitat on cropland:
  - Leave crop stubble standing using conservation tillage. Minimize or eliminate fall tillage of crop residue to increase available food for resident wildlife species.
  - Include winter wheat or winter rye in the rotation instead of spring grains where feasible.
  - Leave strips of unharvested crop adjacent to winter cover.
  - Delay spring tillage of fallow fields as long as possible. Substituting herbicides for the first spring tillage saves bird nests as well as soil moisture.
  - Establish tall wheatgrass barriers and/or field windbreaks.
  - Implement contour strip cropping.
  - Develop wildlife cover on odd areas between crop fields.
  - Leave at least 4 weeks between tillage passes to allow ground-nesting birds to raise a brood.

Native Shrublands

Important wildlife shrubs include big sagebrush, silver buffaloberry, serviceberry, chokecherry, hawthorn, western snowberry, willow, and many others. The acreage of big sagebrush-grassland has decreased in North Dakota due to conversion to cropland, and brush control. Sage grouse, Brewer's sparrow, pronghorn antelope, and other species are dependent on this habitat.

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- Brush control **for improved wildlife habitat** should only be done after review from an NRCS biologist.
- Brush control for increased forage production needs to be planned with wildlife habitat impacts in mind.
- Conservation practice 528 - Prescribed Grazing will be used considering the effects on upland and riparian shrub communities and target wildlife species. When properly applied, grazing systems can have a positive impact on native shrublands.

Native Forestland

- Forestland represents a potentially significant source of income for private landowners as well as habitat for many wildlife species. These values are compatible if total resource planning is combined with proper management.
- Uneven-aged, mixed species forests maximize habitat diversity for the greatest number of wildlife species. Selective harvest methods can maintain this diversity.
- Lack of forest management can result in low habitat diversity, although dense stands of timber may be valuable for big game hiding cover. Some wildlife species, such as the goshawk and chickadee depend on relatively old-growth forestland.
- Young, even-aged conifer stands provide important hiding cover for big game and other wildlife. Such stands can be provided throughout a timber harvest rotation.
- Large, uniform conifer forests may be improved for wildlife by creating small, irregularly shaped openings.
- Over mature trees, snags, and downed logs provide important habitat for cavity nesting birds, raptors, and a variety of mammals. Cavity nesting birds, such as woodpeckers, chickadees, nuthatches and others help control forest insects.
- Conservation practice 528 - Prescribed Grazing will be used considering the effects on upland and riparian shrub communities and target wildlife species. When properly applied, grazing systems can have a minimal or positive impact on a woodland resource. Livestock will be managed in such a way that they do not damage trees and shrubs by excessive browsing or rubbing. The timing and duration of grazing will be such that hoof action will not increase soil compaction or result in root or root crown damage. Avoid grazing under wet soil conditions as damage to woody plants can happen quickly with long lasting effects.

Wetland Plants

Herbaceous and woody plants adapted to moist or wet sites provide valuable habitat for many upland wildlife species. Cattails, bulrushes, sedges, and willows provide important winter cover for pheasants, white-tailed deer, and other upland wildlife.

- Wetland plant communities can be manipulated for wildlife using fire, grazing, mowing, or water level control.
- Establishment of wetland plants often occurs naturally from seed reserves and seed transported by wildlife and livestock. Seed is commercially available for many species. Establishment from sprigs or plugs collected near the site is usually very successful.
- Any wetland manipulation for upland wildlife must be done after careful consideration to impacts to wetland dependent species. See Conservation Practice 644—Wetland Wildlife Management for more information.

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Interspersion of Habitat Elements: Edges, Ecotones, Corridors, and Habitat Fragmentation.

"Edge" refers to the interface or point where two or more vegetation or cover types meet or where structural conditions within plant communities come together. The area influenced by this transition between communities or conditions is called an "ecotone." Edges and their ecotones are usually richer in wildlife than are the adjoining plant communities or structural conditions. As a result, they are an important consideration in the management of habitat. Examples of wildlife species that thrive along habitat edges include the white-tailed deer, red-tailed hawk, great horned owl, pheasant, and robin.

Too much habitat edge can be detrimental for some "area-sensitive" wildlife species. For example, since predators often concentrate their activities along edges, some species avoid predation by nesting in the relative safety of larger blocks of uniform habitat. Fragmentation of large patches of habitat into small, isolated patches, characterized by abundant edge, can modify spatial conditions or microclimate required by a given animal or plant, make a species more vulnerable to predation or nest parasitism, and split a wildlife population into isolated segments which may not be viable. Fragmentation of native grasslands has adversely impacted populations of grassland birds.

- When general wildlife habitat diversity is the goal, attempt to intersperse the edge between adjoining plant communities or structural conditions in a mosaic pattern. This will maximize edge effect.
- When establishing nest cover for waterfowl, gamebirds, and other ground-nesting birds, minimize edge effect by planting in large, rectangular blocks as opposed to narrow, irregularly shaped strips.
- Corridors can be used to connect wildlife habitats and reduce the impact of habitat fragmentation. Corridors can be herbaceous, woody or a combination of herbaceous and woody vegetation. The wider the corridor the more habitat it will provide. Refer to Part 614.4 Conservation Corridor Planning at the Landscape Level, National Biology Handbook for more information.
- Look at the conservation-planning unit from a landscape perspective. Evaluate the unit in the context of the surrounding landscape. Obtain input from local state and federal game management biologists to determine the effects of proposed alternatives on various wildlife species. Inform the landowner of the potential effects of alternatives under consideration.

Ring-necked Pheasant *(Phasianus colchicus)*

General Habitat Requirements

The average home range for pheasants includes an area within approximately 2 square miles. All habitat requirements must be provided within the home range.

- Optimum pheasant habitat consists of 5 - 10 percent undisturbed cover in a combination of the following cover types:
  - Dense nesting cover, or other idle lands with grass-legume mixtures;
  - Patches of sweetclover, sun-flowers, or other seed-producing forbs;
- 10 - 20 percent grasslands consisting of
  - Wetlands with tall, emergent vegetation;
  - Hayland, pastureland, road right of ways, unharvested until after July 15.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

- 5 percent woody cover consisting of
  - Brushy draws
  - Shelterbelts with species such as American plum, chokecherry, snowberry, silver buffaloberry, rose, Russian olive, juneberry, and juniper.
- In addition, 60 to 85 percent of the land is cultivated with:
  - 60-85 percent in cereal grains with stubble retained through the winter, unharvested strips or food plots left adjacent to uncultivated areas;
- The diversity and interspersion of cover types are the key to pheasant survival. The more cover types within an area, the greater the habitat values. Places where three or more cover types come together are especially valuable because many habitat needs are provided within a small area. Irregular borders between cover types increase the amount of edge available, which supplies more of the pheasant's habitat requirements.

Nesting Cover

- Nesting cover consists of undisturbed grass-legume mixtures, hay fields where mowing is delayed until after July 15, or winter wheat. Since pheasants initiate nesting in early spring, residual grass cover is essential to conceal nests prior to spring green-up and growth;
- Nesting cover should be no further than 1.5 miles from winter cover.
- Nesting cover seedings should be established in blocks, as opposed to narrow, linear configurations to reduce nest predation and should be at least 40 acres in size. Except where site conditions are limiting, use at least two species of grass—sod-former plus bunchgrass—and one forb or legume species.
- Occasional mowing, grazing, burning, disking or chiseling may be required to maintain the productivity of pheasant nest cover. These treatments should not occur on the entire area being managed for nesting cover. Limit disturbance to no more than 25 percent of the area. If possible avoid disturbance during the peak nesting period from April 15 to August 1. Avoiding nesting cover disturbance during this period is one of the most important and simplest actions a landowner can take to benefit pheasant and other ground-nesting bird populations. Loss of cover at this time results in hen pheasants abandoning their nests, forcing them to re-nest in hay fields where later mowing may cause heavy losses if portions of the nesting cover are not left undisturbed.

Species recommended for nesting cover are included in the **Introduced Grasses and Legumes or the Planted Native Herbaceous Cover** section of this specification.

Winter and Roosting Cover

Winter cover consists of cattail marshes, tall grass/legume mixtures, woody draws, riparian areas and multi-row shelterbelts. Tall shrubs and trees provide snow-free cover during severe storms. Tall grain stubble and weedy patches are marginal winter cover.

Winter thermal cover is likely the most limiting factor for North Dakota pheasant populations. It consists of shrubs, shrub and tree combinations or tall `on such as emergent aquatic vegetation, sweetclover or annual weeds.

- Windbreaks that are established for winter cover will be established as per guidance found in **Planted Woody Cover** section of this specification. Herbaceous seedings established for winter cover will be at least 5 acres in size and located adjacent to other winter cover. Herbaceous winter cover plantings will be established as per guidance found in **Introduced Grasses and Legumes or Planted Native Cover** section of this specification.
- Winter cover must be protected from mowing, grazing, fire, etc. until spring.

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- Roosting cover is fairly open to allow escape from predators—tall grain stubble, grass-legume stands, and area marsh vegetation are examples. Nesting cover consists of herbaceous vegetation (preferably grass-legume mixtures) that provides new growth and/or standing residue at least eight inches tall from mid-April through July 15.
- Roosting and loafing cover consists of tall - at least ten inches - dense herbaceous plant residues. Unplowed stubble, standing grain, cattail marshes, tall grass-legume mixtures, and tall weedy patches are examples.
- Use conservation practice 528 - Prescribed Grazing and/or 472 - Livestock Exclusion to provide high condition riparian habitat.

Food

- Food requirements for adult pheasants consist primarily of grains, weed seeds, insects, and succulent green plants; young birds rely heavily on insects throughout the summer following hatching. Barley, corn, sorghum, and, to a lesser extent, wheat are preferred foods. Sunflowers, millet, and a variety of annual weed seeds are also eaten. Waste grain and food plots that are protected from snow cover are critical food sources in winter. Persistent fruits of shrubs, listed above, supply survival food during harsh weather.
- Avoid fall tillage of grain stubble.
- Food plots and unharvested grain strips will be no farther than one-quarter mile from winter cover but preferably within or immediately adjacent to winter cover. Plant food plots as outlined in the **Grain and Seed Crops** section of the specification.
- Avoid use of insecticides in areas where pheasant broods are present.

Water

- Water is essential for survival, but is usually not limiting to pheasant populations because it is available from dew, succulent fruits, green vegetation, and insects. Shallow water areas are beneficial to pheasant habitat.

Habitat Management

- Develop large blocks of undisturbed nesting cover
- Provide for large woody blocks (natural or planted) for winter cover
- Provide winter food protected from drifting snow and located adjacent to winter cover
- Let strips along fencerows, ditchbanks, roadsides, and field corners revert to natural cover.
- Cut hay at slower speeds in a back-and-forth pattern or center to outside pattern.
- Cut hay fields with highest nest densities last, after the peak of the nesting season.
- Avoid fall tillage of grain stubble and implement conservation tillage.
- Seed ditch banks and roadsides to perennial grasses and legumes.
- Implement 528 - Prescribed Grazing to maintain grassland and riparian vegetation as quality cover.
- Encourage diverse rotations of small grains with legumes.
- Seed highly erodible cropland to perennial grasses and legumes.

For more information on management of habitat for grassland nesting birds see Fish and Wildlife Habitat Management Leaflet Number 10 Ring-necked Pheasant at ftp://ftp-fc.sc.egov.usda.gov/WHMI/WEB/pdf/RINGNECKphea1.pdf.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Gray (Hungarian) Partridge *(Perdix perdix)*

General Habitat Requirements

One of the smallest gamebirds, the gray partridge occupies a very limited home range. All habitat requirements must be found within an area of about one-fourth to one square mile. Duplicating cover and food requirements once for each 40 acres of land will provide highest populations. Cover is often the limiting factor for gray partridge in an agricultural landscape. Idle areas, such as fencerows, abandoned farmsteads, ditch banks, and other "odd areas" are critical for nesting, roosting, escape, hiding, and winter cover. Brushy areas and shelterbelts are used throughout the year, most often during winter. The size of the cover patch is less important than the lack of disturbance from cultivation, grazing, pesticide spraying, etc. Interspersion of cover patches in a mosaic pattern within agricultural landscapes increases habitat value. Intensive agriculture and heavy grazing reduces cover needed by gray partridge.

Optimum gray partridge habitat consists of

- 5 - 10 percent undisturbed cover in a combination of the following cover types:
  - Dense nesting cover or other idle lands with grass-legume mixtures;
  - Weedy patches of sweet clover, sun-flowers, and other seed-producing forbs;
- 20 - 40 percent grasslands consisting of
  - Wetlands with tall, emergent vegetation;
  - Hayland harvested after July 15, pastureland, road right of ways, etc.
- 1 - 5 percent woody cover consisting of
  - Shelterbelts with species such as American plum, chokecherry, snowberry, silver buffaloberry, rose, Russian olive, serviceberry, and juniper.
  - Brushy draws
- 45 to 70 percent of the land is cropped with:
  - 50 - 80 percent in cereal grains with stubble retained through the winter and unharvested strips or food plots left adjacent to uncultivated areas.

Nesting Cover

- <u>Maintain medium height herbaceous vegetation of high or medium density such as fencerows, field borders, and other odd areas in an undisturbed condition during the nesting season</u> (<u>May 1 to July 15</u>). Residual plant material from the previous year is critical cover for birds nesting early in the growing season.
- Implement grazing management that provides residual herbaceous cover on rangelands during the early nesting season.

Winter Cover

- Maintain shrub thickets, windbreaks or other snow free areas of tall herbaceous vegetation such as emergent aquatics, sweetclover, and annual weeds. These areas may be quite small in size less than 5 acres. Avoid fall tillage of grain stubble.
- Conservation practice 528 - Prescribed Grazing should be used to maintain high quality, vigorous grasses and forbs that provide residual cover over winter. Implement grazing systems that maintain or improve cover in riparian areas and woody draws.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Food Supply

- Waste grain and weed seeds are the primary food items year-round. Succulent green plant parts are used during the growing season. Insects such as ants, ant eggs, grasshoppers, crickets, and beetles are critical for chick survival, especially during the first three weeks after hatching. Certain weed seeds, like knotweed, contain high levels of some nutrients compared to waste grain, and may be necessary for a balanced diet. Winter wheat appears to be preferred over spring grains.
- Postpone pesticide spraying until late July to maintain adequate food resources for recently hatched gray partridge. Implement Integrated Pest Management to minimize pesticide use.
- Avoid fall tillage of grain stubble.
- Provide food sources—waste grain, weed seeds—adjacent to winter cover. Plant food plots as outlined in the **Grain and Seed Crops** section of the specification.

Water

- Water availability does not limit gray partridge populations. Consuming green vegetation and insects can satisfy water requirements.

Sharp-Tailed Grouse *(Tympanuchus phasianellus)*

General Habitat Requirements

Seasonal range of the majority of yearly sharptail activities occurs within a one-mile radius of the spring breeding ground (*lek*). However, the seasonal range can be up to 4 square miles

- Preferred sharptail habitat is high condition native rangeland occupying 60- 90 percent of the sharptail range with interspersed woody cover with a high proportion shrubs such as brush-filled draws, 10 - 40 percent. Quality habitat is a mix of mid and tall grasses, associated shrubs, and a scattering of cropland. Habitat quantity is important but it is usually the quality of nesting and brood-rearing cover that limits grouse populations. Sharptails adapt to modern agriculture within limits. Although cropland is not required, during winter they readily feed on grain in stubble and in feed yards and will use grain fields for loafing cover.
- Since sharptails occupy a diversity of plant communities, species composition is not necessarily a prime factor in measuring quality of grouse habitat. The height and density of vegetation present are more important factors in determining habitat quality. Sharptails prefer less dense vegetation than ring-necked pheasant.
- Sharptail diets may include over 300 food items, but the majority of food consists of less than a dozen plant species. Use of grain crops is greatest during fall and winter. Other winter foods include buds, seeds, and persistent fruits. Adult grouse are primarily vegetarians consuming buds, leaves and flowers of succulent plants, dry seeds, and fleshy fruits. Examples include prickly lettuce and dandelion greens, silver buffaloberry and snowberry fruits, and a variety of grass and weed seeds. Insects are critical to chicks for several weeks following hatching and are taken by adults during summer and early fall.
- Winter cover requirements center around woody/shrubby areas. Species of brush are less important than condition. Woody draws and shelterbelts are critical as winter cover.
- Sharptails require high condition grasslands and shrublands with residual grass cover from previous years for successful nesting. Most nests are found within a one-half mile radius of the spring breeding ground.
- Sharptails can obtain adequate water from fruits, green vegetation, and insects. Free water is not limiting factor for grouse populations.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Nesting Cover

Nesting cover consists of residual and/or growing herbaceous plant material at least eight inches tall in blocks of at least 60 acres.

Grazing management is the key to improvement and maintenance of sharptail habitat. Conservation practice 528 - Prescribed Grazing will be implemented to ensure adequate residual spring cover for nesting birds.

Winter Cover

Conservation practice 528 - Prescribed Grazing will ensure that woody vegetation in draws, shelterbelts, and other areas is represented by a variety of size and age classes so that winter cover and food sources are available to sharptails.

Windbreaks that are established for winter cover will be established as per guidance found in **Planted Woody Cover** of this specification. Include species beneficial to sharptails such as silver buffaloberry, American plum, rose, chokecherry, hawthorn, sumac, Rocky Mountain juniper, western snowberry, juneberry and blue spruce. These species will not only offer winter thermal cover but also fall and winter food sources.

Food

Perennial food plots can include any of the woody species listed above. Annual food plots will be at least one-half acre in size and located within one-quarter mile of winter cover. Plant food plots as outlined in the **Grain and Seed Crops** section of the specification.

Grassland Nesting Birds

Loss of grassland has had a significant, negative impact on grassland nesting bird habitat. Fragmentation of native prairie caused by the introduction of woody tree plantings also has a negative impact on grassland nesting birds. Species dependent upon large blocks of grassland, such as grassland nesting birds, have shown steep and more consistent declines than any other bird group in North America (Knopf 1994). These birds are dependent on large contiguous tracts of herbaceous cover. The planting of herbaceous cover through programs such as the Conservation Reserve Program has provided much needed grassland habitat.

- Avoid introducing trees and shrubs into habitats that cause further inappropriate fragmentation of the grassland habitat.
- If woody habitat is being planted to benefit other species, locate the planting on the edge of the herbaceous habitat. Select short shrub species such as rose or snowberry.
- Implement conservation practice 528 - Prescribed Grazing to maintain or improve grassland habitat on managed rangelands. Residual vegetation provides nest cover for most grassland nesting birds. Overgrazing benefits a limited number of grassland nesting birds.
- Grass plantings can be introduced or native grasses. Use species as outlined in **Introduced Grasses and Legumes or Planted Native Herbaceous Cover** of this specification.
- Grass and forbs seeds and insects provide food.

For more information on management of habitat for grassland nesting birds see Fish and Wildlife Habitat Management Leaflet Number 8 Grassland Birds ftp://ftp-fc.sc.egov.usda.gov/WHMI/WEB/pdf/GRASS1.pdf.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Sage Grouse *(Centrocercus urophasianus)*

General Habitat Requirements

The spring strutting ground, or lek, is the center of sage grouse activities. Most nesting and brood rearing occur within two miles of a lek. Some grouse populations migrate considerable distances from breeding and summering areas to suitable winter habitat. Other populations are sedentary, remaining near the lek year-round.

Sage grouse are sagebrush-grassland obligates; they must have sagebrush as a year-round habitat component. Sagebrush-grassland component should occupy 80 - 100 percent of the sage grouse range. 0 - 20 percent of the sage grouse range could be forage crops such as alfalfa. Optimum habitat consists of extensive stands of big sagebrush (artemisia tridentata) or silver sage (artemisia cana) in combination with vigorous grass and forb communities. Most sage grouse activities throughout the year occur in stands ranging from 20 to 30 percent sagebrush canopy cover. Wet meadows, streamside areas, and forb-dominated openings are critical habitat components from spring through late summer.

Nest cover consists of sagebrush stands with a canopy cover of 20 to 40 percent. Sage grouse hens usually select the tallest sagebrush plants as a nest location. Research has shown that hens nesting under a sagebrush plant have a 50 percent chance of success while hens nesting under other plants have only a 20 percent chance. The herbaceous understory is equally important to successful nesting. The chance of success may increase by 30 percent if the sagebrush nest site also has grass-forb residual cover at least eight inches tall. Sage grouse broods often feed in moist meadows and areas with lower sagebrush canopy cover and rest in stands with higher canopy cover.

Winter cover consists of sagebrush stands of varying heights and canopy coverage's. Sage canopy cover of at least 20 percent is required.

Unlike other North Dakota game bird species, sage grouse do not have a muscular gizzard to grind seeds. Their diet is limited to soft foods. Sagebrush leaves are essentially the only food consumed from October through April. In May through September, the diet is dominated by succulent forb leaves and insects. Important forb species include dandelion, salsify, clover, sweetclover, alfalfa, prickly lettuce, yarrow, and milkvetch. Insects are critical for sage grouse chicks for several weeks after hatching. Commonly consumed insects include grasshoppers, beetles, and ants. Sagebrush leaves are still an important food item throughout the spring and summer.

COVER

Conservation practice 528—Prescribed Grazing will be implemented to maintain vigorous sagebrush and herbaceous plant communities and to provide residual grass cover in sage grouse habitat.

Brush control projects commonly have a detrimental effect on sage grouse habitat. Technical and/or financial assistance for brush control in sage grouse habitat should be done using the following guidelines:

- Obtain information about locations of leks, winter habitat, etc. from all available sources.
- No brush control work will be considered where live sagebrush cover is less than 20 percent, or on steep (20 percent or more) upper slopes with skeletal soils where big sagebrush is 12 inches or less in height.
- Brush control within two miles of a lek or within known sage grouse winter habitat will be done only under a conservation plan developed with input from NRCS state biologist.
- No brush control will be done along streams, meadows, secondary drainages, aspen stands, or willow thickets. A strip of living sagebrush, at least 150 yards wide, will be retained along each edge of meadows and drainages.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

- When brush control projects are implemented, all treatment measures will be applied in irregular patterns using topography and other habitat considerations to minimize adverse effects to sage grouse.
- When herbicides are used, spraying will be done with a helicopter or ground rig. No spraying will be done when wind velocity exceeds six miles per hour. Diesel carriers will not be used.
- Avoid complete kill of the treated sagebrush stand whenever possible. Prescribed fire and low rates of Tebuthiuron are examples of ways to achieve a partial kill.

Food

- Avoid use of insecticides in sage grouse brood habitat.
- Include forbs in range seedings implemented within or near sage grouse habitat. Important forbs include alfalfa, sanfoin, sweetclover, birdsfoot trefoil, and rabbitbrush.
- Winter food is exclusively sagebrush.
- Implement conservation practice 528—Prescribed Grazing to improve or maintain range condition and to enhance the forb component.

Ruffed Grouse *(Bonasa umbellus)*

General Habitat Requirements

Optimum ruffed grouse habitat consists of fairly dense cover of mixed deciduous trees and shrubs. Aspen forests in North Dakota hold the majority of ruffed grouse populations. Maintaining the aspen forest in a dynamic state by managing for different age classes will provide ruffed grouse habitat. Valuable species include birch, aspen, chokecherry, snowberry, serviceberry, and hawthorn. Brushy stream bottoms are particularly important. Vigorous aspen stands provide prime ruffed grouse habitat. Downed logs are a key habitat feature as male ruffed grouse use these logs for “drumming” displays during the breeding season. Males are usually found within one-half mile of drumming logs. Ruffed grouse eat a variety of fruits, berries, buds, green vegetation, and insects.

Cover

Grazing of prime ruffed grouse habitat should be avoided. Light grazing may be used to maintain healthy shrub communities. Cattle can reduce or eliminate snowberry, for example, while seeking succulent grasses in stream bottoms during late summer and fall. If grazed, conservation practice 528 - Prescribed Grazing will be used to maintain or improve ruffed grouse habitat. Grazing will not be allowed for 10 years after aspen has been sheared or clear-cut.

- Where dense stands of early seral woody vegetation are lacking, use clear cutting to create dense stands of saplings and shrubs. These plants supply food in the form of buds, catkins, hips, and berries as well as cover. The ideal is shrub cover with a density of 2,800 to 9,700 stems per acre or deciduous tree saplings density with a density of 20,000 to 40,000 stems per acre the first year after treatment. Preferred canopy height is 22 to 32 feet. Intersperse these blocks throughout the forest management unit at a spacing of 440 to 480 feet to optimize ruffed grouse habitat. Forest undisturbed for 30+ year's declines in value for ruffed grouse as plant community succession progresses and age diversity is lost. Up to 1/4 of the acreage can be clear cut every 10 years to maintain a mosaic of age classes. On old (over 50 - 60 years) stands of aspen, clear-cut 1/3 to 1/2 of the acres in small blocks every 5 years to spread the harvest over as long a time as the age and condition of the forest will allow. If the stand is over 60 years old and in poor condition, clear-cut the entire tract leaving scattered blocks or strips uncut for wildlife cover. In these cases, ruffed grouse life requests will need to be meet in adjacent forests. Use conservation practice 666 - Forest Stand Improvement to renovate existing aspen stands for ruffed grouse habitat.
- The most effective method of rejuvenating decadent aspen stands appears to be bulldozing or logging old trees to stimulate regeneration to rejuvenate the aspen stand.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Food

- Preferred foods are fruits, buds, leaves, seeds, or catkins of aspen, hazelnut, dogwood, oak, chokecherry, willow, hawthorn, juneberry, plum, pin cherry, highbush cranberry, and ironwood. Clovers are also used.
- Ruffed grouse chicks depend on insects as food for several weeks. Maintain early seral forest stands adjacent to mature forest canopy

Water

- Free drinking water is not required except during periods of drought when dew is lacking.

Greater Prairie Chicken *(Tympanuchus cupido americanus)*

General Habitat Requirements

The greater prairie chicken is not considered a native species of North Dakota. It did not occur in North Dakota prior to the late 1870's (Stewart, 1975). The greater prairie chicken became abundant in North Dakota with the advent of settlers moving to the state. At one time it is believed that prairie chicken population in North Dakota totaled over 400,000 birds.

The prairie chicken is an obligate to tall grass prairies. Fragmentation of tall-grass prairie has reduced available habitat to the Sheyenne National Grassland area in southeastern North Dakota and Prairie Chicken WMA in northwestern Grand Forks County. Stocking of prairie chickens into these two areas has been undertaken to maintain a viable population.

Prairie chicken preferred habitat includes 60 - 90 percent native or permanent grassland. Manage tall grassland to maintain species diversity and residual cover. Planted herbaceous introduced grasses can be a substitute if located in proximity to existing prairie chicken habitat. Cropland can occupy up to 20 percent of the range with wetland vegetation occurring on 5 - 10 percent and woody vegetation from 2 - 5 percent.

The seasonal range is about four square miles, where year-round needs are met. Therefore, their needs should be provided or duplicated at least once in every four square miles. Lightly used tall grassland on relatively flat or rolling topography is essential to prairie chicken.

Booming grounds are generally located on short or mowed areas of permanent vegetation situated on knolls, flats or wetlands.

Nesting Cover

Nesting cover consists of mid to tall grasses or wetland vegetation of medium density. Occasional nesting can occur in alfalfa; however, mowing needs to be delayed until after July15 to be successful.

Grazing management is the key to improvement and maintenance of prairie chicken habitat. Conservation practice 528 - Prescribed Grazing will be implemented to ensure adequate residual spring cover for nesting birds.

Other Cover

Winter cover is not a prime need because prairie chicken's ability to snow-roost. Winter cover consists of relatively large (five acres or more) of open areas with tall, coarse grass. Conservation practice 528 - Prescribed Grazing will be implemented to ensure adequate winter cover.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Prairie chickens will roost in grasses or wetland vegetation that are dense and medium to tall in height. When herbaceous cover is filled with snow, they snow-burrow or roost in snowdrifts. Prairie chickens will also roost on the edge of shrub thickets.

Tall and medium height herbaceous vegetation is used for escape cover.

Food

Prairie chickens prefer green leaves of grasses, sedges, soybean, clovers, alfalfa, wetland vegetation and many forbs.

Water

- Free drinking water is not required except possibly during drought periods when dew is lacking.

Wild Turkey *(Meleagris gallopavo)*

General Habitat Requirements

Wild turkeys are not native to North Dakota, although they represent one of the most successful wildlife introductions and are now found across the state in suitable habitats. Wild turkeys are not found throughout North Dakota but are found where substantial amounts of woody cover exist.

Turkey home range size averages about two square miles, but is variable depending on habitat quality. Home ranges can vary from 1 to 4 square miles. Relatively long movements to winter habitat occur in some areas. Highest populations are maintained where year-round cover, food and water requirements are provided on every square mile of woodland.

Wild turkey range consists of 70 - 80 percent woodland with openings of cropland or other type of habitats occupying 20 - 30 percent of the range.

Wild turkey habitat is found in woodland with a good interspersion of grassy openings. Woody draws interspersed with native range or cropland and hayland provide habitat where native vegetation has been converted to other land uses. A mosaic of vegetation types that maximizes edge effect is important. Optimum habitat consists of dense woods approaching maturity with shrubs saplings or dense trees with low branches. Riparian habitats allow turkeys to expand their range away from forested areas to access prairie edges and crop fields. Large cottonwood trees are often used as roost sites near ranch headquarters and grain fields.

Wild turkeys prefer to nest on slopes of about 30 percent grade with 60 percent tree canopy cover and fairly dense horizontal cover within a five to seven foot radius of the nest. Overstory canopy within four feet above the nest usually exceeds 80 percent. Downed logs, tree limbs, and slash tops are often used as nest sites. Hardwood draws and riparian bottoms are also used for nesting.

Roost trees are a critical component of wild turkey habitat. Roost trees average 64 feet tall and at least 15 inches dbh with spreading, horizontal limbs spaced about 24 inches apart. Most are found on southeast exposures.

Wild turkeys eat a variety of nuts, seeds, fruits, tubers, flower heads, green leaves, and insects. Ponderosa pine nuts, oak, grape, snowberry, hawthorn, serviceberry, plum, chokecherry, and rose hips are important food sources. Insects are critical for poults during the weeks after hatching. Waste grain and livestock feed grounds sustain wild turkey populations during winter.

Cover

- Implement conservation practice 528 - Prescribed Grazing to promote all age and size classes of trees and shrubs in woody draws and stream corridor habitat.
- Preserve roost trees and maintain at least a 130-foot protected buffer zone around roost sites. Leave clumps of roost trees on the upper third of the slope. Ideal roost sites have greater than 80 square feet of basal area per acre with five or more trees larger than 12 inches dbh. Attempt to maintain two to six roost sites per square mile.
- Maximize diversity within and between woody habitats. Uneven-age management, using individual tree selection harvest is ideal. Under even-age management, maximum harvest unit size should not exceed 20 acres. Small openings can be provided using group selected harvest techniques, prescribed fire or cultivation. Minimize activity in turkey habitat during the April to July nesting season. Limit cutting to 10 percent of the stand at any one time.

Food

- Conservation practice 528 - Prescribed Grazing will be used to ensure that livestock do not reduce herbaceous and woody food production for wild turkeys. Herbaceous ground cover in openings should be at least 70 percent with a minimum height of 10 inches.
- Use thinning to stimulate herbaceous and shrubby food plants where necessary.
- Re-seed roadsides and other disturbed sites with suitable food plants such as alfalfa, clovers, and large-seeded perennial grasses.
- Where food supplies are limiting, establish food plots within one-quarter mile of winter cover as outlined in the **Grain and Seed Crops** section of this specification.

Water

- Provide at least one water source per square mile adjacent to suitable woodland habitat.

For more information on management of habitat for grassland nesting birds see Fish and Wildlife Habitat Management Leaflet Number 12 Wild Turkey at ftp://ftp-fc.sc.egov.usda.gov/WHMI/WEB/pdf/WILDturkey1.pdf.

Waterfowl *(Upland Ground-Nesting Species)*

General Habitat Requirements

Habitat requirements for breeding waterfowl are described in the conservation practice 644—Wildlife Wetland Habitat Management.

Upland nesting cover is required by many dabbling duck species including mallards, pintails, teal, widgeon, shovelers, gadwalls, and others. Tall, very dense vegetation is necessary to optimize nest cover for these species, especially where the acreage of cover is limited (pintails and teal tend to nest in somewhat shorter, more open cover). Fallen-over vegetation and abundant litter are prerequisites for quality dense nesting cover. The stand should be dense enough to make walking difficult. Nesting hens should be so concealed by the vegetation and litter as to not be visible at distances of two to three feet. Blocks of cover at least 40 acres in size are recommended to reduce excessive nest predation. Nests in cover patches smaller than this will probably suffer heavy losses to red fox, raccoons, skunks, and other predators. An exception to this may occur in large blocks of rangeland where human-adapted predator populations are relatively low. Here, native nest cover may be sparse compared to that described above, but patch size is large enough and predator populations low enough to allow high nest success. Studies also show that ducks will use winter wheat especially in areas containing high densities of wetlands but limited nesting cover. (Duebbert).

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Nest Cover

- Management for dabbling ducks requires both upland and wetland habitats.
- Nesting cover consists of residual herbaceous material that will provide new growth and/or standing residue at least eight inches tall from mid-April through July 15.

Recommended seed mixtures for introduced dense nesting cover and native nesting cover are included in the **Habitat Development** section of this document.

Waterfowl pair and brood habitat will be located within one-half mile of nest cover. See FOTG Section IV Conservation Practice 644—Wildlife Wetland Habitat Management.

Pronghorn *(Antilocapra americana)*

General Habitat Requirements

Pronghorn home range size is variable, depending on habitat quality. They rely on speed to evade predators and therefore prefer open areas with a long range of visibility. Winter ranges are often 5 to 10 miles in diameter. Relatively long migrations between summer and winter ranges may occur. Optimum pronghorn habitat consists of open, level to rolling terrain with no major physical barriers to movement. Landscape irregularities, such as drainage's and ridges, provide shelter from inclement weather, as well as hiding cover. Pronghorn occupy areas ranging from about 11 to 15 inches of annual precipitation. Good winter ranges seldom accumulate snow depths greater than 10 to 15 inches for prolonged periods.

Shrubs mainly provide cover. Antelope range comprises 70 - 100 percent sagebrush-grassland and grassland communities with 1 - 30 percent cropland, tame hay or pasture. Optimum cover height is about 18 inches—no greater than 24 inches. Big sagebrush-grasslands are the most important cover type. Silver sagebrush, snowberry and rabbitbrush are also used for cover. A commonly used plant community composition (canopy cover) is:

- 10-20 percent sagebrush
- 5-15 percent other shrubs
- 25-35 percent forbs
- 40-60 percent grasses

Variety and diversity of plant communities and successional stages is important to meet seasonal habitat needs. Recent burns, prairie dog towns, intermittent lakebeds, and meadows are examples.

Antelope need about one gallon of water per day during hot weather. They can do well on succulence alone.

Cover

- Discourage conversion of sagebrush-grassland to the extent possible. Conversion to cropland has decreased the quality of pronghorn habitat. Quality native rangeland can produce sustained livestock and wildlife-related recreational products indefinitely.
- Brush management projects will consider pronghorn habitat needs.
- Maintain 5 to 45 percent sagebrush and other shrub cover in pronghorn habitat.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Food

Food habits vary seasonally. Browse, particularly sagebrush, dominates the fall and winter diet. Other important browse species include rubber rabbitbrush, fringed sagewort, winterfat, and Gardner saltbush. Forbs are most important in spring and summer diets. Choice forb species include prairie clovers, dotted gayfeather, milkvetches, alfalfa, salsify, prickly lettuce, and scurfpea. Grasses are taken during spring green-up and average less than ten percent of the yearly diet

- Implement Conservation Practice 528 - Prescribed Grazing to provide a variety of plant community successional stages and to maintain vigorous sagebrush-grasslands.
- Manage for at least 5 percent canopy cover of desirable succulent forb species on pronghorn spring and summer range and 5 to 45 percent sagebrush and other desirable shrub canopy cover on fall and winter range.

Water

- Provide permanent water sources spaced no more than three miles apart. See Conservation Practice 648 - Wildlife Watering Facility.

White-Tailed Deer *(Odocoileus virginianus),*

General Habitat Requirements

Home range size for white-tailed deer varies widely, depending on habitat quality and landuse. Woodland, including planted windbreaks, woody draws, snowberry, etc. can occupy from 30 - 90 percent of the home range. Likewise, grassland, wetland or cropland can also vary form 10 to 70 percent within the home range. Management of the type of cover available will determine the deer populations. Livestock grazing, forest stand improvement, haying, etc. can improve the quantity, quality, and interspersion of forage areas, cover, and water sources to maximize use of a given area by deer.

Deer make use of topography and the arrangement and juxtaposition of different vegetation types to meet their seasonal needs. For example, moderately steep, south-facing slopes are used during winter because of warmer temperatures and less snow. Corridors of woody vegetation interspersed with grassland are consistently used because they provide thermal cover and protected travel lanes. Deer tend to make heavier use of areas within close proximity to water. Riparian areas are especially important because they provide water, forage, thermal and hiding cover as well as habitat for rearing fawns.

Food Habits

- White-tailed deer prefer green, herbaceous forage, including a variety of grasses, forbs and agricultural crops, but use browse heavily when these are not available. Choice browse species include aspen, oak, pine, cottonwood, beaked hazel, serviceberry, chokecherry, snowberry, dogwood, hawthorn, bearberry, rabbitbrush, winterfat, and juniper berries. Herbaceous species include alfalfa, beggarticks, sunflower, clover, buckwheat, waste and sprouted grains, succulent new growths of bluegrass, burreed, milkweed, smartweed, sedges and bluestems.

- Where food supplies are limiting, establish food plots within one-quarter mile of winter cover as outlined in the Grain and Seed Crops section of the specification. Corn or sunflower would be the preferable winter food source.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Cover Requirements

- Thermal cover is critical to protect big game animals from both cold and hot temperature extremes. Combinations of topography and vegetation provide thermal cover for deer. Deer often use a combination of small conifers and tall shrubs. Where thermal cover is lacking follow guidelines as outlined in **Planted Woody Cover** section of this specification.
- Escape or hiding cover is also a critical component of deer habitat. Escape cover consists of vegetation capable of hiding 90 percent of a standing adult deer. Cover for young during the first few weeks of life may be fairly open. However, fawning cover must contain all life requirements within a relatively small area. Quality fawning habitat for deer includes low shrubs or small trees from two to six feet tall under a tree over story of approximately 50 percent crown cover. Succulent forage is required to provide lactating does with adequate nutrition. The estimated optimum size of a deer fawning area in a forest environment is one to five acres.
- Implement Conservation Practice 528 -Prescribed Grazing to maintain or improve mule deer habitat on managed rangelands. Uncontrolled grazing degrades white-tailed deer habitat by removing cover and nutritional components. Well-planned grazing systems can improve and enhance deer habitat by providing an adequate supply of high quality forage. A rotation of full forage use followed by long enough rest to allow forage plants to fully recover has been effective in providing a high quality nutritional plane and in maintaining woody cover. Well-managed livestock grazing is the most practical tool for manipulating forage over large areas. Remember that maintenance of shrub and forb components is critical to white-tailed deer. This requires variety in successional stages represented on forest and rangelands.
- Shelterbelts can provide cover and travel lanes to increase white-tailed deer use of cropland. Plant at least two rows, including a shrub row to provide a protective corridor for deer movement.

Water

- White-tailed deer prefer drinking water. Provide permanent water sources spaced no more than one mile apart. See Conservation Practice 648 - Wildlife Watering Facility.

Mule Deer *(Odocoileus hemionus)*

General Habitat Requirements

Home range size is variable depending on habitat quality. Summer home ranges may be as small as one square mile in suitable habitat. Mule deer will remain in the same area year-round if all habitat requirements are present, but long movements between seasonal ranges occur where habitat components are dispersed.

Mule deer are most adapted to rugged, steep terrain where their “stotting” (bouncing) gait allows them to outrun predators. Typical habitat is characterized by rough, rocky topography including a complex of river breaks, grassland and shrublands benches, coulees, brushy draws, and open woodland. Mule deer prefer open, broken country where they can detect danger from afar. Complex topography provides warm, south slopes for winter foraging as well as cool, north exposures, which provide shade and mesic foraging areas during hot weather. This complex of natural plant communities provides high quality forage year round.

As a rule of thumb, a ratio of about 40 percent cover to 60 percent forage area is optimum. Prime mule deer habitat contains a mosaic of plant communities and topographical conditions that make up about 60 percent forage areas, 20 percent hiding cover, 10 percent thermal cover, and 10 percent fawning and fawn-rearing habitat.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

Mule deer consume a variety of plant foods. Browse is important year round, but particularly during winter. Important browse plants include big sagebrush, rubber rabbitbrush, buckwheat, skunkbush sumac, chokecherry, serviceberry, mountain maple, red-osier dogwood, currant, bitterbrush, and Rocky Mountain juniper. Woody plants commonly make up 60 percent of yearly mule deer diets. During spring green-up, grasses are consumed. Forbs are important spring through fall. Prairie clovers, milkvetches, alfalfa, American vetch, and many other forbs are eaten. Agricultural crops are readily consumed when available.

Mule deer cover requirements are complex—depending on the season. Hiding cover is provided by rugged topography and woody vegetation. Tree canopy with a shrub understory is best. Thermal cover is also provided in part by rough topography in the form of warm, south exposures during winter and cool, north slopes in summer. Tall shrubs and trees are necessary to break the wind and minimize radiant heat loss. Fawning areas require hiding cover closely interspersed with water sources and high quality forage.

Cover and Food

Implement Conservation Practice 528 -Prescribed Grazing to maintain or improve mule deer habitat on managed rangelands. Uncontrolled grazing degrades mule deer habitat by removing cover and nutritional components. Well-planned grazing systems can improve and enhance deer habitat by providing an adequate supply of high quality forage. A rotation of full forage use followed by long enough rest to allow forage plants to fully recover has been effective in providing a high quality nutritional plane and in maintaining woody cover. Well-managed livestock grazing is the most practical tool for manipulating forage over large areas. Remember that maintenance of shrub and forb components is critical to mule deer. This requires variety in successional stages represented on forest and rangelands.

- Give special consideration to riparian habitat when planning for grazing management. Woody riparian vegetation must be represented by a variety of size and age classes to meet mule deer cover and food requirements.
- In planning units where deer depend on livestock water facilities, water should still be available after livestock have left the pasture.
- Brush control projects can degrade mule deer habitat by replacing critical cover and browse resources with large expanses of grass. Quality deer habitat requires a mixture of grasses, forbs, shrubs, and trees. The success of any brush management project should be measured by impacts on all resources.
- Shelterbelts can provide cover and travel lanes to increase mule deer use of cropland. Plant at least two rows, including a shrub row, to provide a protective corridor for deer movement.

Water

- Mule deer regularly use drinking water. Provide permanent water sources spaced no more than one mile apart. Refer to Conservation Practice 648 - Wildlife Watering Facility.

Habitat Management

The following addresses management for general habitat diversity. It is important to remember that habitat management to favor one species may be detrimental to another. The landowner should be clear about the species to be managed and obtain input from wildlife biologists before implementing specific management actions.

- Grazing management is the key to maintaining and improving riparian habitats as well as upland grasslands and shrublands. Implement Conservation Practice 528 - Prescribed Grazing to provide vigorous shrub and herbaceous cover and residual vegetation for ground-nesting birds. Grazing may also be used to promote a variety of plant community successional stages.

NOTE: Underlined items are required for meeting the FOTG Practice Standard 645-Upland Wildlife Habitat Management.

- Always provide small animal escape ramps in stockwater tanks.
- Limit timber harvest in riparian habitats. Coarse woody debris, in the form of fallen logs, is crucial to maintaining fish habitat structure. Leaves supplied by riparian vegetation fuel the food chain in headwater streams. Do not remove fallen logs from streams. On the other hand, do not allow green slash from timber harvesting to fall into streams because its decomposition may lower dissolved oxygen levels.
- Manage forests to provide a continuous supply of large, old trees. These trees provide diverse habitat structure for many wildlife species and serve as a supply of future snags, standing dead trees. Maintain some mature trees regardless of the timber harvest method used. The goal is to always have large, old trees - living and dead - standing above the general forest canopy. Provide clumps of snags and potential snags when possible since many woodpecker species may use more than one tree per year. Attempt to space snags fairly evenly across the landscape since many species are territorial and will not tolerate others of their kind nearby.
- Provide snags in various stages of decay. Some cavity-nesting birds can excavate holes in hard snags, but others must have soft (fairly decayed) wood in order to excavate nest cavities.
- Use artificial nest boxes—where tree cavities are limited—to favor such diverse species as mountain bluebirds and wood ducks.

References:

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