

NATURAL RESOURCES CONSERVATION SERVICE

FIELD BORDER

UPLAND BIRD HABITAT DESIGN PROCEDURES

(386DP)

Field Borders shall be planned and applied in accordance with the 386 standard detailed in Section IV of the Field Office Technical Guide (FOTG). This document describes the definition, purpose, and conditions where a Field Border applies, as well as criteria, considerations, and operation and maintenance for developing site-specific plans.

This design procedure provides information on field borders specifically intended to provide habitat for upland birds, including Northern bobwhite quail.

**1. Scope**

- a. Field borders in a cropland-dominated landscape can serve as habitat for upland birds including Northern bobwhite quail, other upland game birds, and wildlife species in general. These field borders provide areas of undisturbed habitat which supply nesting, brood-rearing, loafing, feeding, and winter cover for bobwhite quail. They can also provide secondary benefits to soil and water conservation on cropland.
- b. Information is provided in Appendix A on the range of Northern bobwhite quail in Nebraska and other bird species determined to be a priority due to their prominence as a game species or being identified as a priority according to the Nebraska Natural Legacy Project. Field borders can be used in areas outside of bobwhite quail range to benefit these other wildlife species.

2. Size and Width

- a. Optimal habitat for upland birds will be provided when a total of five acres or more of field border is established within the planning unit. In some circumstances, smaller patches of habitat dedicated to field borders may still be desired to enhance the overall condition of the planning unit.
- b. Field borders must be a minimum of average width of 30 feet with no portion less than 20 feet wide to provide suitable habitat for upland birds.

3. Herbaceous Seeding – Site Preparation and Species Selection

- a. Refer to Herbaceous Design Procedures (550DP) for requirements on establishment of herbaceous vegetation including site preparation, cover crops or other appropriate cover, planting methods, and timing.
- b. Refer to Range Planting (550) or Pasture and Hay Planting (512) Standards/Specifications for species adaptation and selection. Additional information can be found in Certified Perennial Grass Varieties Recommended for Nebraska in Section II of the FOTG - Pasture and Hayland Interpretations.
- c. All herbaceous seedings for this purpose must meet the following requirements:

- A minimum of three grass species plus at least two forbs or legumes is required. In order to provide optimal benefits to an array of wildlife species, ten or more species (grasses, forbs, and legumes) should be used.
- A minimum of 20% of the mix (by PLS/ft²) must consist of legumes or forbs in order to provide for adequate brood-rearing cover.
- At least one bunchgrass must be included within the mix and comprise at least 25% (by PLS/ft²) in order to provide an open “understory” at the ground level. (See Table 1)
- On lands subject to erosion, the seeding mixture must contain a minimum of 25% sod-forming grass.
- In order to provide suitable pollinator habitat, a minimum of 9 native forbs must be included with a minimum of 3 flowering species in each bloom period (early, middle, and late). Refer to pollinator habitat criteria in Upland Wildlife Habitat Management (645) standard for additional information.

Table 1. Bunchgrass Species Recommendations

| <u>Bunchgrass Species</u> | <u>Origin</u> | <u>Season</u> |
|----------------------------------|----------------------|----------------------|
| Little Bluestem | Native | Warm-Season |
| Sideoats Grama* | Native | Warm-Season |
| Porcupinegrass | Native | Cool-Season |
| Prairie Junegrass | Native | Cool-Season |
| Canada Wildrye | Native | Cool-Season |
| Orchardgrass | Introduced | Cool-Season |
| Timothy | Introduced | Cool-Season |

* - Sideoats grama is a sod-forming grass with bunchgrass characteristics due to short rhizomes.

- d. Aggressive sod-forming grass species are not suited for use in herbaceous seedings for this purpose. This includes smooth brome, tall fescue, reed canarygrass, and creeping foxtail. Existing herbaceous vegetation that provides poor habitat conditions can be enhanced by using the techniques noted in Operation and Maintenance.
- e. Examples of suitable seeding mixtures are located in Appendix B at the end of this document.

4. Herbaceous Seeding – Seeding Rates

- a. If the potential for erosion does not exist, a reduced seeding rate with a minimum of 10 PLS/ft² is preferred as outlined for brood-rearing cover within the Upland Wildlife Habitat Management – Upland Game Bird Habitat Design Procedures (645DP). For treatment of small areas within the field border that are subject to erosion, it is possible to “double seed” these segments to address erosion and sedimentation concerns.
- b. For most other instances, standard seeding rates found within the Range Planting (550) or Pasture and Hay Planting (512) Standards/Specifications may be used (20 PLS/ft² and 30 PLS/ft², respectively).
- c. When sedimentation from adjacent cropland is expected, seeding rates and other requirements of the Filter Strip (393) Standard/Specification will be followed (40 PLS/ft²).
- d. When the site is subject to excessive concentrated flow, seeding rates and other requirements of the Critical Area Planting (342) Standard/Design Procedures will be followed (60 PLS/ft²) along with appropriate measures such as mulching. In addition, if the field border will convey runoff from terraces, diversions, or other water concentrations used to prevent gully erosion, the field border will be designed according to the Grassed Waterway (412) Standard/Specification.

5. Woody Vegetation Composition

- a. The addition of this habitat component is critical to bobwhite quail and some upland bird species such as Bell's vireo and must be installed when suitable woody vegetation is not present within or immediately adjacent to all portions of the field border at a distance not to exceed 1/8 mile.
- b. Suitable woody vegetation is considered to be dense shrub thickets or woodlands with substantial woody understory. Note: This type of habitat can also be temporarily replicated by cutting mature trees and placing them within the field border as described in Section 8. "Management to Enhance Existing Field Borders" below.
- c. Refer to Tree/Shrub Planting Procedures Guide (380 TPP) located at FOTG, Section IV, A. Conservation Practices, Windbreak/Shelterbelt Establishment (380) for guidance on installing woody plantings.
- d. Shrub thickets installed to provide suitable woody vegetation must meet the following criteria:
 - Only native shrub species adapted to site conditions may be used. For information on suitable shrub species, see Tables 1-10 under Windbreak Interpretations in Section II of the FOTG for site adaptability and Table 11 for origin, wildlife values, and other attributes. Select shrub species listed as beneficial to upland game birds.
 - All shrub thickets which are newly established will be a minimum of 30' wide by 50' long.
 - All shrubs will be planted at a density of 1 plant for every 10 square feet (except as noted below) to expedite the establishment of a thicket with a closed canopy overstory. A survival rate of 70% over the first three growing seasons is required as outlined in Nebraska Forestry Technical Note #63.

Exception: A planting density of 1 plant for every 15 square feet is permitted provided that a survival rate of 80%, as outlined for multi-row windbreaks in Forestry Technical Note #63, is maintained AND management (mechanical or chemical treatment) is applied to prevent encroachment by perennial grasses during the first three growing seasons.

Direct Seeding: The use of direct seeding is permitted to establish shrub thickets. Refer to Section X in the Tree/Shrub Planting Procedures Guide (380 TPP) for details.

- e. Areas devoted to woody vegetation should generally not comprise more than 10% of the total area within a field border. Woody vegetation is not appropriate when the site is functioning as a filter strip or grassed waterway.

6. Plans and Specifications

- a. A Wildlife Development and Management Plan (NE-CPA-14) may be used to document the objectives, target species, habitat types, and associated planning sheets for the habitat unit. Consult with a wildlife biologist, as needed, for assistance with developing the wildlife plan.
- b. Use NE-CPA-8 Job Sheet for Grass Seedings to document practice designs, certification, and other requirements as noted in Herbaceous Vegetation Design Procedures, (550 DP).
- c. Use NE-CPA-15 Tree and Shrub Planting Plan or NE-CPA-15B Tree and Shrub Establishment – Direct Seeding Job Sheet to document practice designs, certification, and other requirements as noted in Tree/Shrub Planting Procedures Guide (380 TPP).

7. General Operation and Maintenance Requirements

- a. Refer to the Field Border (386) Standard for additional requirements on the following items to be planned and applied as necessary:
 - Storm damage repair – (fill and reseed ephemeral gullies and rills)
 - Sediment removal – (if 6" of sediment has accumulated at the cropland interface)
 - Shut off pesticide sprayers when turning on a field border
 - Raise tillage equipment to avoid damage to field borders
 - Shape and reseed border areas damaged by chemicals, tillage, or equipment traffic
 - Fertilize, mow, harvest, and control noxious weeds to maintain plant vigor
 - Reseeding or interseeding as necessary to maintain desired plant species
- b. Avoid using the field border as a roadway and frequently turning equipment on narrow field borders which will diminish the quality of habitat provided. Note: Conservation programs, such as CRP, may prohibit the use of field borders as turn rows.

8. Operation and Maintenance to Benefit Habitat Quality

- a. Grazing and Haying Disturbances
 - Grazing should not be conducted until after July 15th and should only be used as a means to enhance the quality of wildlife habitat provided by the field border.
 - Grazing events during the growing season should be limited to 30 days or less.
 - Occasional dormant-season grazing ("incidental grazing" while gleaning crop residue) is acceptable when grazing periods do not exceed 60 days in length and adequate ground cover is maintained. Generally, livestock should be removed when an average minimum stubble height of 5 inches is reached.
 - Periodic incidental grazing should not occur more frequently than once every three years. Refer to criteria for wildlife habitat in Prescribed Grazing (528) for additional information on applying this practice.
 - Haying or mowing, by itself, is not recommended as a management activity to enhance habitat quality and should only be used to facilitate another activity such as disking, herbicide application, or interseeding. Refer to criteria for wildlife habitat in Forage Harvest Management (511) for additional information on applying this practice.
- b. Management to Enhance Existing Field Borders
 - Field borders that are dominated by sod-forming grasses should be treated with tillage, herbicide application, or prescribed burning to set-back plant succession and create more bare ground for use by bobwhite quail. Refer to Early Successional Habitat Development/Management (647) or Prescribed Burning (338) for additional information.
 - Interseeding of desired grasses, forbs, and/or legumes into these disturbed areas can increase species diversity and overall habitat quality. Additional information is provided in Early Successional Habitat Development/Management (647).
 - If undesirable trees (e.g., Siberian elm) are present within or adjacent to the field border, they should be cut following the planting or other treatment to the field border and allowed to lay in a scattered manner within the field border to simulate the required woody vegetation described in Section 5 above. It may be necessary to treat the stumps of resprouting species with an appropriate herbicide.

APPENDIX A

Figure 1. NORTHERN BOBWHITE QUAIL RANGE IN NEBRASKA

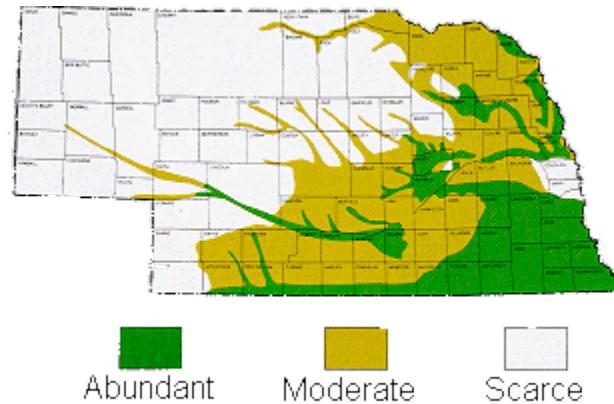


Table 1. Bird species determined to benefit from field borders to provide wildlife habitat.

| | Bird Species | Distribution and Appropriate Habitat Type |
|--------------------------------|---------------------------|---|
| Upland Game Bird Species | Greater Prairie Chicken | Statewide except Panhandle in larger blocks of nearly contiguous grasslands |
| | Ring-necked Pheasant | Statewide in grassland habitat associated with crop production and other habitats |
| | Sharp-tailed Grouse | Western half of Nebraska in areas with considerable grasslands in large blocks |
| | Wild Turkey | Statewide where forests and woodlands interface with cropland or grassland |
| At-Risk Natural Legacy Species | Bell's Vireo | Statewide distribution in grasslands with intermixed shrub stands |
| | Henslow's Sparrow | Tallgrass prairie in grasslands with adequate residual cover from previous years |
| | Short-eared Owl | Statewide in open grasslands with standing cover and limited disturbance |
| | Prairie Loggerhead Shrike | Statewide, except shortgrass prairie, in grasslands or grass-shrub habitats |

APPENDIX B

EARLY SUCCESSIONAL HABITAT SEEDING MIXTURE EXAMPLES

| Grass/Legume/Forb Species | # PLS/Acre | Approximate % of Mixture |
|---------------------------|------------|--------------------------|
| Big Bluestem | 0.5 | 20% |
| Little Bluestem | 0.3 | 15% |
| Sideoats Grama | 0.2 | 10% |
| Western Wheatgrass | 0.2 | 5% |
| Alfalfa | 0.6 | 25% |
| Red Clover | 0.4 | 25% |
| | | |
| Little Bluestem | 0.3 | 15% |
| Canada Wildrye | 0.6 | 15% |
| Indiangrass | 0.3 | 10% |
| Big Bluestem | 0.3 | 10% |
| Red Clover | 0.3 | 20% |
| Alfalfa | 0.4 | 20% |
| Sweet Clover | 0.2 | 10% |
| | | |
| Sideoats Grama | 0.6 | 25% |
| Canada Wildrye | 0.6 | 15% |
| Little Bluestem | 0.2 | 10% |
| Alfalfa | 0.2 | 10% |
| Red Clover | 0.2 | 10% |
| Crimson Clover | 0.1 | 5% |
| White Prairieclover | 0.17 | 15% |
| Showy Partridgepea | 0.40 | 5% |
| Illinois Bundleflower | 0.40 | 5% |
| | | |
| Big Bluestem | 0.3 | 10% |
| Little Bluestem | 0.2 | 10% |
| Sideoats Grama | 0.2 | 10% |
| Indiangrass | 0.1 | 5% |
| Canada Wildrye | 0.2 | 5% |
| Switchgrass | 0.05 | 5% |
| Western Wheatgrass | 0.2 | 5% |
| Showy Partridgepea | 1.30 | 15% |
| Illinois Bundleflower | 1.10 | 15% |
| Purple Prairieclover | 0.16 | 10% |
| Roundhead Lespedeza | 0.15 | 5% |
| Maximilian Sunflower | 0.15 | 5% |

Note: Seeding rates for grasses, legumes, and forbs total 10 PLS/ft² with legumes or forbs comprising 50% of the mixture for use only on non-erosive sites. These mixtures are intended to provide high quality brood-rearing habitat for bobwhite quail and other upland game birds according to the Upland Wildlife Habitat Management – Upland Game Bird Habitat Design Procedures (645DP).

APPENDIX B**EXAMPLE SEEDING MIXTURES USING NATIVE GRASSES**

| Grass/Legume/Forb Species | # PLS/Acre | % of Grass Mix or Legume/Forb Ratio |
|----------------------------------|-------------------|--|
| Big Bluestem | 1.9 | 35% |
| Little Bluestem | 1.2 | 35% |
| Sideoats Grama | 0.9 | 20% |
| Western Wheatgrass | 0.8 | 10% |
| Alfalfa | 0.7 | 1/2 |
| Red Clover | 0.5 | 1/2 |
| | | |
| Little Bluestem | 1.2 | 35% |
| Sideoats Grama | 1.6 | 35% |
| Canada Wildrye | 2.3 | 30% |
| Alfalfa | 0.5 | 1/3 |
| Red Clover | 0.4 | 1/3 |
| Crimson Clover | 0.7 | 1/3 |
| | | |
| Canada Wildrye | 3.2 | 40% |
| Prairie Junegrass | 0.14 | 35% |
| Western Wheatgrass | 2.0 | 25% |
| Alfalfa | 0.5 | 1/3 |
| Red Clover | 0.4 | 1/3 |
| Birdsfoot Trefoil | 0.3 | 1/3 |
| | | |
| Canada Wildrye | 1.9 | 25% |
| Little Bluestem | 0.9 | 25% |
| Sideoats Grama | 1.2 | 25% |
| Indiangrass | 1.3 | 25% |
| Showy Partridgepea | 1.91 | 1/3 |
| Illinois Bundleflower | 1.59 | 1/3 |
| Blackeyed Susan | 0.07 | 1/3 |
| | | |
| Little Bluestem | 0.9 | 25% |
| Sideoats Grama | 1.2 | 25% |
| Big Bluestem | 0.8 | 15% |
| Indiangrass | 0.8 | 15% |
| Switchgrass | 0.2 | 10% |
| Western Wheatgrass | 0.8 | 10% |
| Showy Partridgepea | 1.45 | 1/4 |
| Illinois Bundleflower | 1.21 | 1/4 |
| Grayhead Coneflower | 0.12 | 1/4 |
| White Prairieclover | 0.19 | 1/4 |

Note: Seeding rates for grasses total 20 PLS/ft² with legumes or forbs added to that total to comprise 25% of the mixture. Adaptations will be needed if the site is subject to excessive erosion, sedimentation, or concentrated flow. (Refer to Section 4 of this document for seeding rate and other requirements when these conditions exist.)