NRCS Natural Resources Conservation Service
MISSISSIPPI

MS-CRP-CP33-01 (JS/SS)
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# HABITAT BUFFERS FOR UPLAND BIRDS - ESTABLISHMENT AND MANAGEMENT GUIDELINES

**Planning criteria and considerations**

- ✓ Purposes
- ✓ Location within the field, farm, and local landscape; overall landscape composition
- ✓ Buffer lengths and widths (based on planning criteria)
- ✓ Vegetation
- ✓ Maintenance/management

**Purposes:**

The primary purpose of habitat buffers is to provide multiple wildlife habitat components including food, nesting cover and escape cover for quail and other upland birds in cropland areas. A habitat buffer can also provide a transition zone (TZ) and/or travel corridor between cropland and other habitats, such as grazing lands and forest lands. Linking habitats fragmented by croplands with habitat buffers may greatly increase use of an area by quail, upland birds, and other wildlife. In addition to providing wildlife habitat; habitat buffers can reduce erosion from water at the edge of fields; can protect water quality by trapping sediment, chemicals and other pollutants; and can serve as setbacks from sensitive areas when applying pesticides or fertilizers. **Habitat buffers shall NOT be used as turn rows, roads, or for storage of crops or equipment.**

**Location Within the Field, Farm, and Local Landscape; Overall Landscape Composition:**

- Habitat buffers generally should be established around the entire perimeter of cropland fields. However buffers can be placed on any field edge or combination of connecting field edges. At a minimum habitat buffers will be located in areas where runoff enters or leaves the field.
- Location of habitat buffers will be **permanently marked with flagging or posts** to delineate the field-side boundary.
- Habitat buffers can be located: between the edges of two adjacent crop fields; between cropland edges and existing forests, grazing lands, hay lands, wetlands, ponds, or streams; and along the cropland edges of existing conservation practices, such as riparian forest buffers, forested hedgerows, and grassed waterways.
- Soil types, topography, drainage, climate, and adjacent land uses need to be taken into account.
- Habitat buffers planned to benefit quail and/or other targeted upland bird species should be viewed from a landscape perspective, including the pattern of land use patches, corridors, and the dominant cover type. Food, cover and water must be distributed on the landscape in a manner that provides reasonable access.

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**Buffer Lengths and Widths:**
Habitat buffers should be as long as needed to support the targeted species and participant objectives. Locating buffers around the entire field increases the effectiveness and provides more environmental benefits. Habitat buffers will have a minimum average width of 30 feet, with a maximum average width of 120 feet. Generally, the wider the habitat buffer, the greater the number of species will use it. Additional width is also important to decrease predator efficiency and minimize the destruction of nests. If buffers are used as setback areas the minimum width must be equivalent to the required minimum appropriate to meet nutrient and/or pest management requirements. To provide habitat that is not disturbed by turning equipment, field turn rows must be moved inward. **(Habitat buffers shall NOT be used as turn rows, roads, or for storage of crops or equipment.)**

| Recommended Habitat Buffer Widths: | Minimum | Optimum |
|---|---|---|
| Field Edges – Wildlife travel corridor | 30 feet | 60 feet |
| Field Edges – Corridor + Shrub TZ | 50 feet | 100 feet |
| Field Edges - Nesting or escape cover | 40 feet | 80 feet |
| Field Edges - Nesting or escape cover + Shrub TZ | 60 feet | 120 feet |
| Between 2 adjacent fields – Travel corridor | 40 feet | 80 feet |
| Between 2 adjacent fields – Travel corridor +Shrub center | 60 feet | 120 feet |
| Cropland edges of existing conservation practices | 30 feet + practice width | 60 feet + practice |
| Cropland edges of existing conservation practices + Shrub | 50 feet + practice width | 100 feet + practice |

**Vegetation:**

- Plant species can greatly affect the wildlife habitat components that can be provided by a habitat buffer including nesting cover, feeding cover, escape cover, and/or travel corridors between habitats. Typically a buffer designed and managed with wildlife in mind will have an unkempt appearance with a variety of different plants.
- In most situations, habitat buffers can be established in desirable vegetation by not mowing or disking (keeping the area fallow) for 1 to 2 years. **Natural succession will usually regenerate desirable grasses, legumes, forbs, and shrubs in most areas.** Broomsedge and/or other native warm-season bunchgrasses will naturally colonize most agricultural sites within 2-3 years after fallowing and provide excellent nesting habitat. **Habitat buffers should not have to be planted unless: erosion is a problem; the cropland has no native seed bank for desired plant species due to heavy herbicide usage; or a specific combination of plant species is desired (such as native warm season grasses mixed with legumes and/or shrubs).** When using natural regeneration, field checks should be conducted during the 1st and 2nd growing season to be sure suitable plant species for targeted wildlife are present and growing well.
- One potential method to "kick start" natural regeneration in the right direction would be to sow a mix of winter wheat (50 lbs/ac), kobe lespedeza (12 lbs/ac), and partridge pea (4 lbs/ac). The wheat in this mix would provide a winter cover crop to protect the soil until the vegetation becomes established, help delineate the buffer area, and provide usable food and cover for quail and other wildlife. The lespedeza and partridge pea would provide perennial food and cover for wildlife to supplement native grasses and forbs that would grow in the buffer the following season.
- The diversity of plants in a well-managed habitat buffer will increase the availability of food resources such as seeds and insect prey (important for many wildlife species, e.g., the diet of species like quail and turkey chicks during the first few weeks of life is composed almost entirely of insects).

**Vegetation (continued):**

- Regardless of establishment methods, measures must be provided to control severe outbreaks of noxious weeds and/or invasive species. If fescue and/or bermudagrass are present in existing field margins/borders, herbicidal control will be required prior to establishment to prevent invasion into the habitat buffer. Spraying or other control methods for undesirable weeds should be done on a "spot" basis to protect the plants that benefit wildlife.
- **If habitat buffers are planted,** a mixture of plants that provide wildlife food and cover in each season should be used. Targeted wildlife needs should be considered when selecting plant species. Native species should be used when feasible. The best results will be achieved when there is a mixture of grasses, legumes, forbs, and/or shrubs. Rates for wildlife seeding mixtures and planting rates and spacing for seedlings may be less than recommended rates in planting guides. Use 60% of recommended rate for a mixture of 2-3 species. Use 30% of recommended rate for a mixture of 4 or more species.
- Species to plant: The following is a recommended mixture for quail – Little bluestem (2 PLS), big bluestem (1 PLS), Indian grass (1 PLS), kobe lespedeza (12 lbs/acre) and partridge pea (4 lbs/acre). See Table 1 for a list of additional recommended grasses, legumes, forbs, and shrubs for habitat buffers. Other plants may be used if they meet objectives and are adapted for the site. Avoid use of species known to be invasive. **Bermudagrass, fescue, and sericea lespedeza are not acceptable grasses to plant in habitat buffers since they are not desirable for wildlife.** A qualified wildlife biologist should be consulted.
- The use of native, warm-season grasses should be encouraged in all buffers to provide nesting and brood-habitat. These bunch grasses provide good nesting sites for ground-nesting birds, and the open spaces between plants allow good feeding habitat for young birds and small mammals. Access to a warm season grass drill is needed to plant warm-season grasses.
- Shrub plantings are optional for this practice and may not exceed 10% of the contract acreage. Depending on the wildlife objective, narrow (10-20 feet) linear shrub rows can be planted. The shrubs will provide a transition zone between herbaceous vegetation and forestland, wetlands, ponds, and streams; and between the edges of existing conservation practices, such as riparian forest buffers and forested hedgerows, and the herbaceous sections of the habitat buffer. Small group or "clumped" plantings (at least 30'X30' in size) of native shrubs and forbs can add escape cover and/or food to habitat buffers. If shrubs are established in clumps, "ring-arounds" (fire breaks around plantings) should be established for protection, if prescribed burning is used as a maintenance technique for the habitat buffer.
- Leaving several rows of standing crops adjacent to the buffer will enhance fall and winter food.

**Maintenance/Management**

- Habitat buffers will require wildlife maintenance/management techniques that disturb plant succession (light strip disking, prescribed burning, and/or spot spraying with herbicides) to be applied on 1/3 of the buffer length each year, beginning in the second year after establishment. The management should be done on a staggered basis (e.g., applied to a different area each year). Before a new area is disturbed, any areas previously disturbed should have sufficient permanent cover to provide wildlife habitat and soil loss protection. Maintenance techniques should be conducted after August 15 and before April 1 in order not to conflict with nesting and brood rearing.
- Refer to MS-ECS-645-09(JS/SS), "Wildlife Management Techniques – Light Strip Disking" and MS-ECS-338-02 (JS), "Wildlife Management Techniques – Prescribed Strip Burning" for details.
- Noxious weeds and other undesirable plants, insects and pests shall be controlled, including such maintenance as necessary to avoid an adverse impact on surrounding land.

**TABLE 1**
**RECOMMENDED PLANTS*/PLANTING RATES***
**FOR HABITAT BUFFERS FOR UPLAND BIRDS IN MISSISSIPPI**

| **NATIVE GRASSES** Species | Minimum Units Per Acre | Planting Dates |
|---|---|---|
| Kaw Big Bluestem | 5.5 Lbs. PLS (Pure Live Seed) | Apr-May |
| Earl Big Bluestem | 5.5 Lbs. PLS | Apr-May |
| Lometa Indiangrass | 4.5 Lbs. PLS | Apr-May |
| Alamo Switchgrass | 4.5 Lbs. PLS | Apr-May |
| Kanlow Switchgrass | 4.5 Lbs. PLS | Apr-May |
| Aldous Little Bluestem | 5.0 Lbs. PLS | Apr-May |
| Alantic Coastal Panic Grass | 5,000 sprigs;10-20 Lbs. | Nov-Mar; Jun-Sep |
| Other*: | | |

| **NATIVE LEGUMES** Species | Minimum Units Per Acre | Planting Dates |
|---|---|---|
| Common Partridge Pea | 6 Lbs. | Feb-May 15 |
| Lark Selection Partridge Pea | 6 Lbs. | Feb-May 15 |
| Beggarweed | 10-15 Lbs. | Apr-May |
| Florida Beggarweed | 10-15 Lbs. | Apr-May |
| Other*: | | |

| **INTRODUCED LEGUMES** Species | Minimum Units Per Acre | Planting Dates |
|---|---|---|
| Ladino and White Dutch Clover | 3 Lbs. | Sep-Oct 15 |
| Kobe Lespedeza | 15-30 Lbs. | Mar-Apr |
| Perennial Red Clover | 8-12 Lbs. | Sep-Oct 15 |
| Other*: | | |

**INTRODUCED SHRUBS**

| Species | Minimum Units Per Acre **OR** Spacing | Approximate Plants/Acre |
|---|---|---|
| Shrub Lespedeza | | |
| (Seeds) | 10-15 Lbs./Ac. (Plant Mar-Apr) | NA |
| (Seedlings) | 3’ x 3’ | 4800 |
| Bicolor | (Planting Dates: | |
| Thunbergii | November 15 - March 15) | |
| Other*: | | |

**NATIVE SHRUBS/FORBS** (Planting Dates for Plants: November 15 - March 15)

| Species | Spacing | Approximate Plants/Acre |
|---|---|---|
| Native Blackberries (*Rubus spp.*) | 6' x 6' | 1200 |
| Native Plums (*Prunus spp*., - common ex.: Chickasaw Plum) | 8' x 8' | 700 |
| Native Dogwoods (*Cornus spp*., - common ex.: Rough Leaf Dogwood) | 8' x 8' | 700 |
| Native Hollies (*Ilex spp*., - common ex.: Deciduous Holly) | 8’ x 8’ | 700 |
| Hawthorn spp. | 6’ x 6’ | 1,200 |
| Viburnum spp. | 3’ x 4’ | 3,600 |
| Other*: | | |

Due to the wide variety of geographical areas and plant species that might be suitable for wildlife, this listing may be incomplete. Caution should be exercised not to plant species that have an invasive nature. Rates for wildlife seeding mixtures may be less than recommended rates in planting guides. Use 60% of recommended rate for a mixture of 2-3 species. Use 30% of recommended rate for a mixture of 4 or more species. Also recommended planting rates and spacing may vary slightly depending on intended wildlife uses (cover vs. food). **Consult with a qualified biologist.** Reference: "Mississippi Planting Guide", 1999.

**Habitat Buffers for Upland Birds**
**Specification Sheet**

**Landowner** _____ **Field Number** _____

## Purpose (check all that apply)

| | |
|---|---|
| ☒ Wildlife | ☐ Trap sediment, nutrients, pesticides, & other contaminants |
| ☐ Stabilize field boundaries and headlands | ☐ Erosion Control |
| ☐ Other (specify) | |

| **Habitat Buffer Layout** (Job sketch may be attached if desired) | **Habitat Buffer 1** | **Habitat Buffer 2** | **Habitat Buffer 3** | **Habitat Buffer 4** |
|---|---|---|---|---|
| Buffer width (ft) | | | | |
| Buffer length along edge of field (ft) | | | | |
| Area (acres) | | | | |
| **Grass/Legume/Forb/Shrub Species Name** | **Grasses/Legumes/ Forbs** Seeding rate (PLS) or (lb/acre) **Shrub Planting** Seedling spacing or plants/ac. | **Grasses/Legumes/ Forbs** Seeding rate (PLS) or (lb/acre) **Shrub Planting** Seedling spacing or plants/ac. | **Grasses/Legumes/ Forbs** Seeding rate (PLS) or (lb/acre) **Shrub Planting** Seedling spacing or plants/ac. | **Grasses/Legumes/ Forbs** Seeding rate (PLS) or (lb/acre) **Shrub Planting** Seedling spacing or plants/ac. |
| Species #1 – | | | | |
| Species #2 - | | | | |
| Species #3 - | | | | |
| Species #4 - | | | | |
| Species #5 - | | | | |
| Lime (tons/acre) (according to soil test) | | | | |
| N (lb/acre) (according to soil test) | | | | |
| $P_2O_5$ (lb/acre) (according to soil test) | | | | |
| $K_2O$ (lb/acre) (according to soil test) | | | | |

## Planting Methods

Ex.: Prepare firm seedbed. Apply lime and fertilizer according to recommendations. Plant grass and legume seed _____ inches deep uniformly over area. Establish stand of vegetation according to recommended seeding rate. If necessary, mulch newly seeded area with _____ tons per acre of mulch material. May seed small grain as a companion crop at the rate of _____ pounds per acre.

## Maintenance

Ex.: Maintain original width and depth of the habitat buffer by placing permanent boundary markers. Set back plant succession with light strip disking, prescribed burning, and/or spot spraying. Alternate the location of these disturbed areas each year as described in the notes below. Reseed and fertilize if needed to maintain plant density. Inspect after major storms, remove trapped sediment, and repair any eroding areas. Shut off pesticide sprayers when turning near a habitat buffer. Fire breaks should be established for protection around shrub plantings, if prescribed burning is used for maintenance. Habitat buffers shall NOT be used as turn rows, roads, or for storage of crops or equipment.

## Notes

Ex.: Maintenance schedule – In (month) of the second year, within each habitat buffer, lightly disk 1/3 of the length of the buffer and leave the rest of the buffer "undisked." In (month) of the third year, within each field buffer, disk the next 1/3 of the buffer length and leave the first (disked during previous year) and third section undisked. Continue this rotation. When prescribed burning, follow the same staggered schedule as for disking. Maintenance/management techniques should be conducted after August 15 and before April 1 in order not to conflict with nesting and brood rearing.

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