

## Maryland Conservation Buffers for Wildlife Planning and Design Guidelines



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### **Definition**

A strip of permanent vegetation established at the edge or around the perimeter of a field.

### **Purpose**

While field borders are frequently employed to serve as turn-rows and travel-ways for farm equipment, they also provide a number of conservation functions. Field borders are effective at providing wildlife cover and food, reducing erosion from wind and water, protecting soil and water quality, and managing harmful insect populations. Field borders are particularly useful for maximizing wildlife habitat quality in agricultural settings.

The purpose of this job sheet is to assist conservation planners integrate wildlife considerations into the establishment and maintenance of field borders. Therefore, material presented is focused on using field borders to provide wildlife habitat. Many of the concepts presented relate to the other conservation buffer practices as well.

Unlike filter strips and riparian buffers that are typically used only on the down slope side of fields, field borders are generally herbaceous, non-crop buffers that can be used anywhere along the entire field margin to remove low producing areas from production and provide wildlife habitat. Field borders are a buffer practice that can substantially increase wildlife habitat while minimally affecting farm profitability.

## Where Used

- Edges of agricultural fields and other open areas.

## Requirements

- The minimum field border width to meet the Maryland practice standard is 10 feet. Field borders that are at least 20 feet wide provide room for turn-rows needed for most field equipment. However, wildlife habitat potential can be greatly improved by increasing field border width to meet specific wildlife habitat objectives (see table).
- Plant species should be native, or naturalized and non-invasive, and should maximize wildlife habitat values while providing for erosion control, aesthetics, and other objectives for the site.
- Site preparation and planting to establish vegetative cover shall be done at a time and manner to ensure survival and growth of the selected species.
- The vegetative cover shall be managed to maximize fish and wildlife habitat values.
- Cover shall be established and maintained using procedures outlined in the Maryland Conservation Reserve Program Practice Implementation and Maintenance Guidelines, as appropriate.

<b>Fish and Wildlife Objective</b>	<b>Optimal buffer width</b>
Beneficial insects, butterflies and wildflowers	> 35 ft.
Small mammals, reptiles and amphibians	>50 ft.
Upland game birds and mammals	>100 ft.
Grassland songbirds	>150 ft.

## **Conservation management system**

Field border conservation buffer practices are normally established as part of a conservation management system to address the soil, water, air, plant, and animal needs and the operator's objectives. For example, adjoining stream banks and shorelines must be stabilized before or in conjunction with the establishment of field borders or other practices. Likewise, gully erosion and other soil erosion problems should be addressed using the grass waterway (412) or other appropriate buffer practices. To maintain proper functioning, excessive erosion must be controlled up-slope of the field border, and field border vegetation should be protected from disturbance during the primary nesting season to the extent possible.

## **Wildlife Considerations**

Alternatives can vary from simple, when creating habitat where wildlife is not the landowner's primary objective, to complex, when managing field borders for specific wildlife such as bobwhite quail or migratory songbirds. The habitat contribution of a field border is determined by the vegetation selected, the width of the border, and the maintenance/management (light disking, prescribed burning, prescribed grazing, etc.) techniques



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selected. Typically a field border designed and managed with wildlife in mind will have an unkempt appearance with a variety of different plant species and growth forms.

The following considerations should be made while planning field borders to maximize wildlife utility.

### ***Vegetation composition***

Like other conservation buffer practices, field borders support wildlife populations on agricultural landscapes by providing physical habitat structure. This habitat supports the food and cover needs of many species within the field border itself, and also serves as a travel corridor through which individuals disperse and migrate. Maximizing the diversity of native grasses, forbs and legumes increases the availability of wildlife foods in the form of green forage, seeds, fruits, and insects.

The composition of plant species in field borders is a critical element in determining the quality of wildlife habitat provided. In many instances, natural regeneration of field borders provides a diversity of grasses and forbs. Table 1 provides a list of some common plants that are known to provide wildlife food and cover.

Diversity in both vertical and horizontal structure increases wildlife species diversity. Field borders should be established and maintained to maximize vertical and horizontal structure to the extent possible.



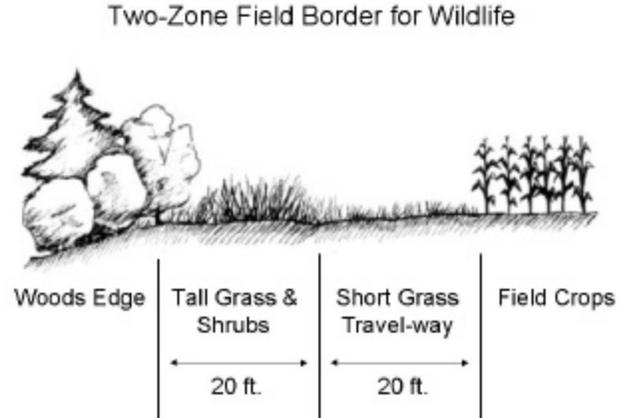
Vertical structure refers to the “layers” of different plant forms and sizes in the plant community. Vertical structure has a significant influence on the diversity of wildlife species present in the community. Different layers offer food, water, cover, shelter, or breeding sites to different species, resulting in a rich diversity of wildlife utilizing one habitat type. Each species fills a niche or specialized position in the habitat.

Horizontal structure refers to the arrangement of habitat types or plants as seen from above. Field borders can be established and maintained to maximize horizontal structure by encouraging a variety of native vegetation types to become established within certain sections of the field border through planting and disturbance activities. Where feasible, small group plantings of native shrubs (fleshy fruit-producing) suited to the site can add woody cover and food sources between crop fields or field borders that serve as transition zones between and cropland, pasture, or forest lands.

One way to maintain horizontal structure is to provide two zones within the field border. The zone closest to the field is generally subject to greater disturbance from farm equipment working the crop field, while the outside zone is more protected from frequent disturbance. The outside zone also provides a smooth transition to adjacent forested habitats.

## Field border width

As with many conservation buffer practices, wider field borders provide more and better quality habitat for most species than narrower buffers. In many situations, field borders should be at least 35 feet wide to provide enough habitat to be used by beneficial insects, small mammals, and other wildlife. Where field borders are used as equipment turn rows, their width should be wide enough to leave a strip of undisturbed habitat at least 20 feet wide along the outside edge of the field border.



Field borders that typically have limited wildlife habitat potential are those that are narrow, consist of monoculture sod-forming non-native grasses with little vertical or horizontal structure, are mowed every year, and are associated with abrupt edges.



Field borders that provide habitat for a variety of wildlife are those that are substantially wider than 35 feet, consist of a diversity of native grasses and forbs with significant vertical and horizontal structural diversity, are maintained on a 3- to 5-year rotational cycle, and are associated with gradual edges.

Where field borders occur along woodlands, they may be widened by cutting woodland edges back to encourage growth of shrubs and other wildlife food-bearing plants. Leaving cut slash and woody material on the ground along woodland borders provides additional wildlife cover adjacent to field borders. Leaving several rows of crop standing along field edges can also increase the functional width of field borders, providing increased wildlife food and cover.

## Field border height

Field borders managed for wildlife should attain a height of 3-6 feet. They should be comprised of planted species (e.g., switchgrass and shrub lespediza) as well as volunteer vegetation that produce wildlife food and cover. Grasses with sturdy



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Leaving several standing rows of crops along field borders improves wildlife food and cover availability.

stalks are preferred in regions with heavy snow -- they provide residual cover for early nesting species.

### *Disturbance and maintenance*

Periodic disturbance of field borders is typically necessary to stimulate growth of desirable vegetation and to control the growth of woody plants. This can be accomplished by early spring light disking or burning portions of the field border as needed to reduce the amount of rank and woody vegetation and litter build-up. Field border disturbed on a 3- to 5-year rotation typically provide the best habitat over the life of the practice.

Disturbance actions should be tied to local climate conditions. For example, prescribed burning may not be conducted during times of drought. Maintenance activities should be scheduled before or after the nesting and birthing season. Any disturbance action taken to maintain or improve wildlife habitat conditions must also consider how it affects water quality, erosion, and other buffer practice objectives.

Disturbance and its effects on succession are the principle agents of change in buffer vegetation. Light disking opens up the surface to allow wildlife better movement along the ground and the disturbance releases seed-producing annuals such as partridge pea, ragweed, beggarticks, foxtail and other weedy species that provide food and cover. Maintenance must take into consideration local climate, soil quality, and moisture conditions. For example, maintenance of field borders in arid regions may involve mowing in lieu of disking to conserve soil moisture.



Although disturbance is necessary, no more than half of the field border around a single field should be disturbed in any one year. In this manner, disturbance can be used as a tool to replenish field border habitat condition while maximizing horizontal structural diversity.

Frequently, initial nesting attempts by birds in hayfields are destroyed by hay harvesting operations. These birds attempt to re-nest in available habitat elsewhere - typically in nearby buffer areas and other strip cover habitats. In this manner, field borders and other buffer areas can provide crucial habitats for these second nesting attempts. Where buffers need to be mowed for maintenance, mowing should be delayed to the end of August to allow second nesting attempts to succeed.

Night mowing of hayfields and buffer areas frequently results in mortality of adults attempting to nest in these habitats. Therefore, night mowing should be avoided to minimize mortality of adult nesting birds. Pesticide drift in field borders should be minimized to support a broad spectrum of butterflies and other native pollinators and beneficial insects.

Well-designed and managed field borders provide substantial wildlife food and cover on agricultural lands in Maryland.

**Table 1. Common field border native plants that provide food and cover for various wild-life groups in Maryland.**

	Upland game birds & mammals	Grassland birds	Butterflies and pollinators
<b>Native grasses</b>			
Big bluestem ( <i>Andropogon gerardii</i> )	.	.	
Broomsedge ( <i>Andropogon virginicus</i> )	.	.	
Deertongue ( <i>Panicum clandestinum</i> )	.	.	
Eastern gamagrass ( <i>Tripsacum dactyloides</i> )	.	.	
Indiangrass ( <i>Sorghastrum nutans</i> )	.	.	
Little bluestem ( <i>Schizachyrium scoparium</i> )	.	.	
Switchgrass ( <i>Panicum virgatum</i> )	.	.	
Virginia wild rye ( <i>Elymus virginiana</i> )	.	.	
<b>Native forbs</b>			
American vetch ( <i>Vicia americana</i> )	.	.	.
Black-eyed Susan ( <i>Rudbeckia hirta</i> )	.	.	.
Blazing star ( <i>Liatris spicata</i> )			.
Bush clover ( <i>Lespedeza capitata</i> )	.		.
Butterflyweed ( <i>Asclepias tuberosa</i> )			.
Hairy white odfield ater ( <i>Aster pilosus</i> )			.
Lanceleaved coreopsis ( <i>Coreopsis lanceolata</i> )	.		.
Partridge pea ( <i>Chamaecrista fasciculata</i> )	.	.	
Purple coneflower ( <i>Echinacea purpurea</i> )			.
Tickseed ( <i>Coreopsis tinctoria</i> )	.		.
Wild blue indigo ( <i>Baptisia australis</i> )			.



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