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Conservation Buffers

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The long-term success of wildlife populations in the Southeastern United States is largely in the hands of private landowners. Nearly 80% of the total land base in the Southeast is privately owned forests, agricultural lands, and rural properties. As demand for food and fiber products has increased and technology advanced, agricultural practices have intensified. The result has been farm consolidation and larger fields, monocultural production, loss of idle fields, conversion and loss of native grasslands and wetlands, and reduction in overall landscape diversity. In other words, the environment has been simplified and there

A native warm season grass field bordering a soybean field provides nesting and brood rearing cover during the breeding season, increases usable space and supports winter grassland songbirds. Photo courtesy of USDA-NRCS.

In This Issue

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are now fewer places for wildlife to exist and thrive. In response to these land use changes, an entire suite of early successional wildlife species is slowly disappearing from the landscape. Among these species is the northern bobwhite which has declined by more than 70% (3.8%/year) over the last 3 decades.

However, many agricultural producers value wildlife and are interested in improving wildlife habitat on their properties, if the management practices can be implemented without compromising their agricultural production goals. Agricultural producers are the stewards of our working lands. Conservation practices that are easily integrated into production systems, achieve multiple environmental benefits, enhance wildlife habitat and improve whole-farm profitability are most likely to be adopted by producers. Conservation buffers uniquely meet these criteria. Conservation buffers are narrow strips of land maintained in permanent vegetation designed to trap pollutants, reduce water and wind erosion, and provide other environmental benefits, including wildlife habitat. The National Conservation Buffer Initiative, launched in 1997 by the USDA, encourages the use of conservation buffers by agricultural producers and other landowners. This initiative utilizes USDA conservation programs to assist landowners in developing or enhancing wildlife habitat using cost shares and incentive payments to offset direct costs or lost revenue associated with changes in production systems.

Conservation Buffers

Conservation buffers are a suite of management practices that can be implemented individually or in concert with other buffer or agricultural practices, including conservation tillage, nutrient management, and pest management. There are many kinds of conservation buffers including: filter strips, riparian corridors, shelterbelts, grass waterways, contour grass strips, alley cropping, vegetation barriers, and field borders. Each of these buffer types accomplishes specific objectives such as: soil erosion reduction, herbicide retention, water quality improvement, and wildlife habitat provision. The environmental benefits of a buffer will change in relation to its type, surrounding landscape, hill slope position, vegetation structure, and management.

Conservation buffers, particularly forested riparian buffers along streamsides, improve water quality and aquatic habitat by reducing soil and agri-chemical runoff, stabilizing creek banks, and reducing water temperatures. They also provide important nesting, feeding and protective cover for birds and smaller mammals. Similarly, alley cropping and windbreaks, narrow strips of trees that border fields or divide larger fields into small units, provide reduction in wind erosion and comparable wildlife benefits. Conservation buffers provide

Riparian buffer and herbaceous buffer along drainage ditch intercepts agrichemicals, stops erosion and improves water quality. Photo courtesy of Haren Brasher, MSU-FWRC.

travel corridors, linking patches of similar habitat and facilitating movement of animals through inhospitable landscapes.

Although riparian buffers that include trees, shrubs and grass likely provide the greatest multiple environmental benefits, gains in soil erosion reduction and water quality can also be accomplished with grass filter strips, waterways, and contour strips. Four-meter-wide grass strips, regardless of plant species, have been shown to reduce herbicide leaving fields by 66-95%. The type of grass species does, however, substantially affect wildlife habitat value. Sod-forming grasses such as Kentucky Tall Fescue and Bermuda grass have been traditionally used for erosion control, but their dense structure is not nearly as beneficial to wildlife as native warm season grasses, such as Eastern gama grass, big bluestem, little bluestem, Indian grass and switch grass. Management practices also influence wildlife habitat value. For example, frequent mowing will diminish wildlife value, whereas periodic burning (2-3 year rotation) can enhance wildlife value.

Buffer Function and Position

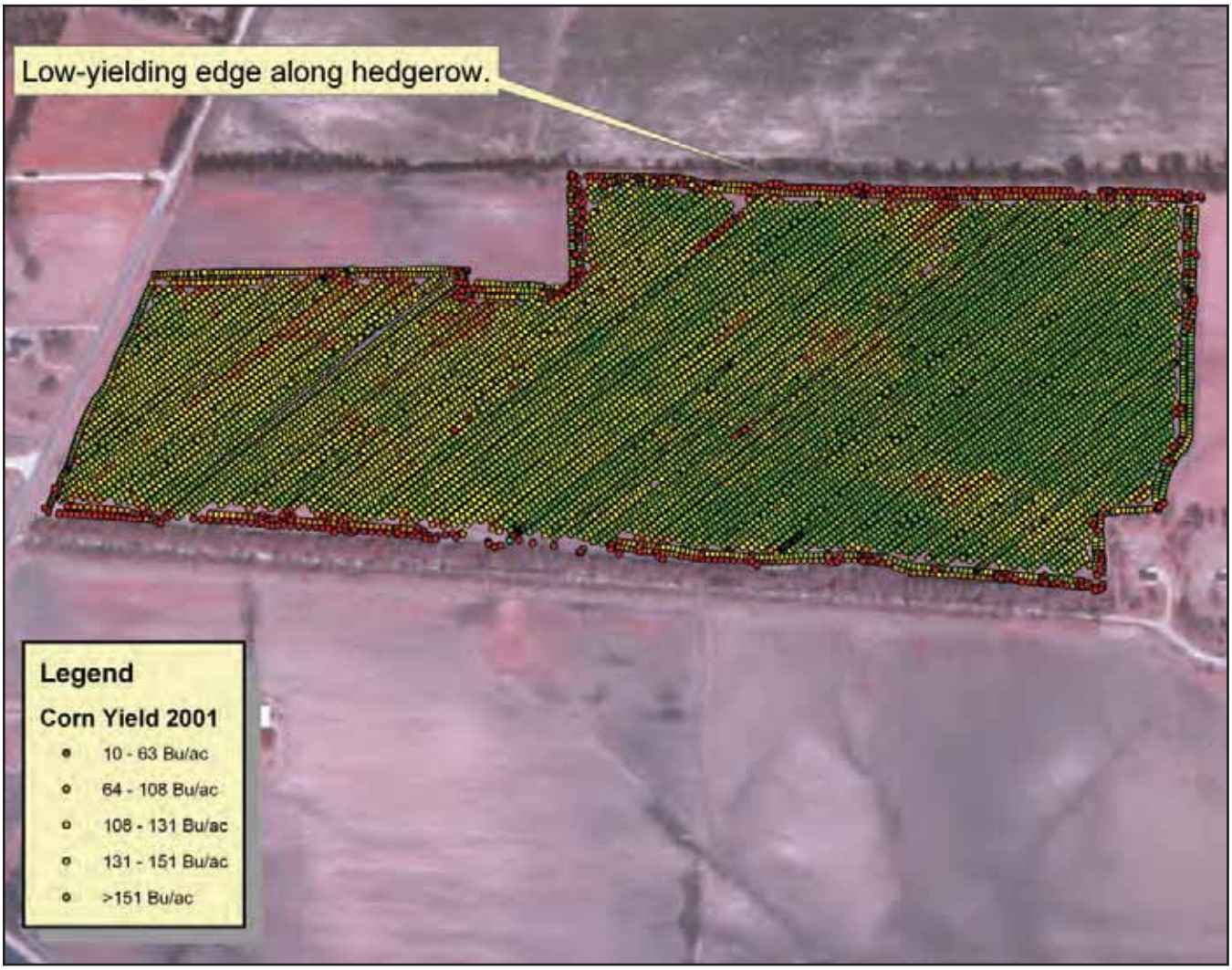
The various types of conservation buffers should be located in different positions in the field, depending on what function or purpose the buffer is to serve. For example, riparian buffers and grass filter strips are usually used on the down slope side of crop fields, adjacent to rivers, streams, or lakes. Their primary purpose is to retain sediments and herbicides and improve water quality. Grassed waterways, terraces, and contour strips are placed within the field, relative to topographic or drainage features. They are designed to slow and direct

Herbaceous field border dominated by ragweed provides excellent brood habitat during the breeding season and cover and food during the fall and winter. Photo courtesy of Wes Burger, MSA-FWRC.

water flow, trap sediments, and reduce erosion. In contrast, field borders are designed primarily for wildlife habitat and can be used around the entire field edge. A field border consists of 20-150' wide strips of idle, herbaceous vegetation maintained between the crop and adjacent non-crop habitat. Field borders may also make good economic sense. Research in North Carolina and Mississippi has shown that field borders can replace low-yielding field margins with a subsidized conservation practice, increasing overall economic return. Use of GPS-equipped yield monitors can help producers to identify poorly producing areas of a field. For example, figure 1 shows corn yield on one Mississippi farm in relation to an adjacent wooded plant community and Figure 2 demonstrates the type of situation in which replacing a low yielding edge with a conservation buffer can increase farm profitability. Because creation of wildlife habitat is a primary function of field borders, the rest of this article will focus on field border benefits and design.

Wildlife Benefits of Field Borders

Managed herbaceous field borders provide habitat for many farm wildlife species. For example, studies in North Carolina have shown that Northern Bobwhite were nearly 2 times

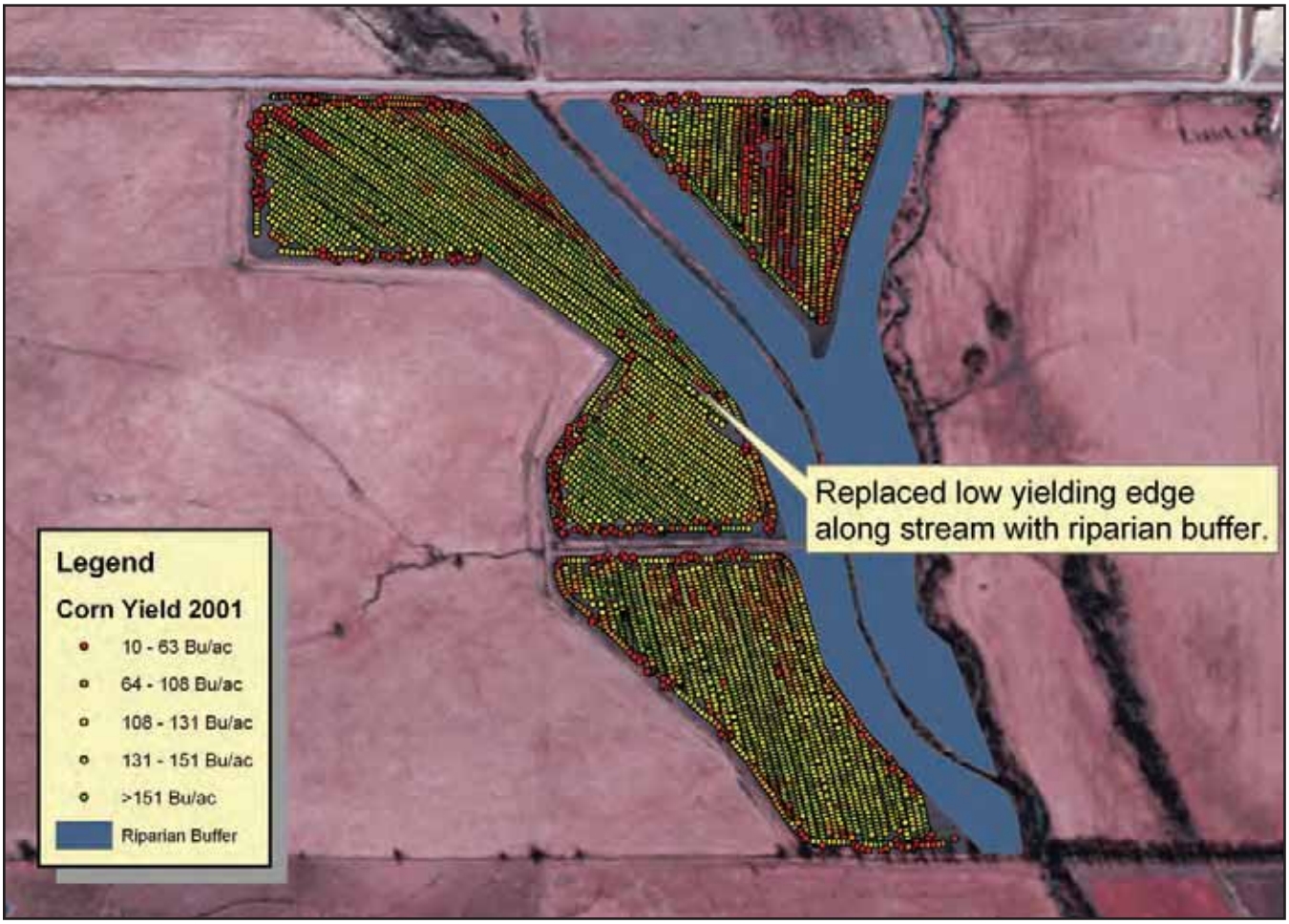


Competition for sunlight, water and nutrients producces low corn yields adjacent to hedgerow. These areas are often negative profit regions if costs of production exceed return. The producer can increase field and farm-level profits by taking these areas out of production and enrolling them in an incentivized conservation practice.

more abundant on row-crop farms with field borders compared to farms without borders. Research in Mississippi demonstrated a 69% average increase in local fall bobwhite populations from converting as little as 5-6% of row crop acreage to field borders. On one 1600 acre working farm, a 6% change in land use (crop lands to field borders) resulted in a 16% increase in usable space for bobwhite. This disproportionate response occurs because the field border not only provides habitat but also increases the utility of adjacent croplands.

Wintering and nesting songbirds also respond positively to the habitat provided in field borders. In Mississippi, 53 bird species were documented using field borders during the breeding season. The most common species included Mourning Dove, Northern Cardinal, Indigo Bunting, Dickcissel, Red-winged Blackbird, and Common Grackle. Dickcissel and Indigo Bunting were nearly twice as abundant on fields with field borders, as compared to fields with no borders. The herbaceous vegetation in field borders provides nesting, foraging, loafing, and roosting cover for these species. Numerous studies have shown that in agricultural landscapes, the density of bird nests in strip cover is very high relative to other available patch types, but the nest success for some species is quite low. Narrow buffers are easily searched by nest predators which tend to forage along edges. Ongoing studies are demonstrating that birds nesting in wider borders (90-150') have higher nest success than those in narrow field borders (10 – 30'), but an optimal or sufficient border width has not yet been identified.

Although field borders provide breeding



Example of a low-yielding area next to a stream corridor that the producer removed from production and enrolled in CCRP CP22 riparian buffer.

season habitat for some songbird species, their greatest value may occur during winter. During winter, herbaceous communities in the Southeast provide important wintering habitat for numerous short-distance grassland migrants, many of which are exhibiting regional declines. A North Carolina study demonstrated that crop fields with conservation field borders supported substantially greater abundance of wintering sparrows than adjacent fields with mowed field margins. One Mississippi study documented 71 different bird species using field borders during winter. In this study, the most abundant species were Red-winged Blackbirds, American Pipits, Song Sparrow, Savanna Sparrow, and American Robins. Winter sparrows were 9-times more abundant on bordered field edges than unbordered. Song Sparrows were 6-times more abundant and Savanna Sparrows were 2-times more abundant on bordered field edges. During winter, the annual weeds in field borders provide food for seed-eating birds and the vertical structure provides roosting and thermal cover.

Field Border Establishment

Field borders can be created by planting a native grass community or by seeding a cover crop and allowing natural succession to revegetate the area. The least expensive method of establishing field borders is to plant a fall, small grain cover crop (wheat or oats), over-seed with a legume in winter (lespedeza, partridge pea, etc.), then allow the plant community to succeed naturally. On most sites in the Southeast, this combination will produce a diverse native community of broomsedge, legumes, and broad-leaved forbs within 2-3 growing seasons. However, if the producer has access to a native grass drill, a prairie grass community can be established within 1-2 growing seasons by drilling a mixture of big-bluestem, little bluestem, Indian grass, and switch grass. Inclusion of native legumes (partridge pea, Illinois bundle flower, etc) and wildflowers (Maximillian sunflower, cone flower, Liatris, black-eyed Susan, etc) will enhance the visual appeal and wildlife value. Regardless of the

establishment method, periodic management will be required to maintain an early successional plant community. Woody vegetation should be controlled with periodic disturbance, such as disking or prescribed fire, but not during the growing season.

Programmatic Assistance

Numerous USDA conservation programs can assist producers and landowners with installation of conservation buffers. Conservation buffers can be cost-shared under the Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Wetlands Reserve Program (WRP), and Conservation Reserve Program. However, the programmatic "workhorse" for conservation buffers is the Continuous Conservation Reserve Program (CCRP). CCRP provides cost-share and incentive payments (Signup Incentive Payments, Practice Incentive Payments, and annual rental payments) for a diversity of buffer practices, and unlike regular CRP the land does not need to be highly erodible (HEL) to be eligible. Furthermore, under CCRP eligible land can be enrolled at any time instead of simply during a short enrollment period (hence the name "continuous"). Cropland is eligible for the CCRP if it was planted or considered planted to an agricultural commodity in 4 of the 6 years between 1996 – 2001. Additionally, certain marginal pastureland is eligible for some CCRP practices. Individual CCRP cover practices (CP) are designed to achieve specific environmental benefits and eligibility varies among CPs. For example CP21 Grass Filter Strips and CP22 Riparian Forest Buffers are designed to be used on the down slope side of fields adjacent to a perennial stream, ditch, or water body. CP5 Field Windbreaks, CP8 Grass Waterways, CP15 Contour Grass Strips, and CP16 Shelterbelts are implemented within fields. In August 2004 USDA announced the availability of a new CCRP practice called CP33 Habitat Buffers for Upland Wildlife. This practice provides incentives and cost-share to establish 30 – 120' native grass and legume buffers around row crop fields. Incentives include $100/ac Signup Incentive Payment, an annual per acre rental payment, 50% cost-share on establishment costs, and 40% Practice Incentive Payment on establishment costs. CP33, in particular, provides a tremendous programmatic tool for creating wildlife habitat in agricultural landscapes. For more information on these programs, contact your local USDA Service Center or see http://www.fsa.esda.gov or http://www.nres.usda.gov. Landowners and producers will achieve greater wildlife benefits from federal farm programs if they work with a knowledgeable wildlife biologist to develop a comprehensive farm conservation plan with wildlife as a specific objective.

Conservation buffers are common-sense conservation practices that provide landowners and producers with tremendous flexibility and incentive to develop a conservation cropping system that meets production objectives, improves environmental quality, enhances wildlife habitat, and helps farmers be good stewards of our natural resources.

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