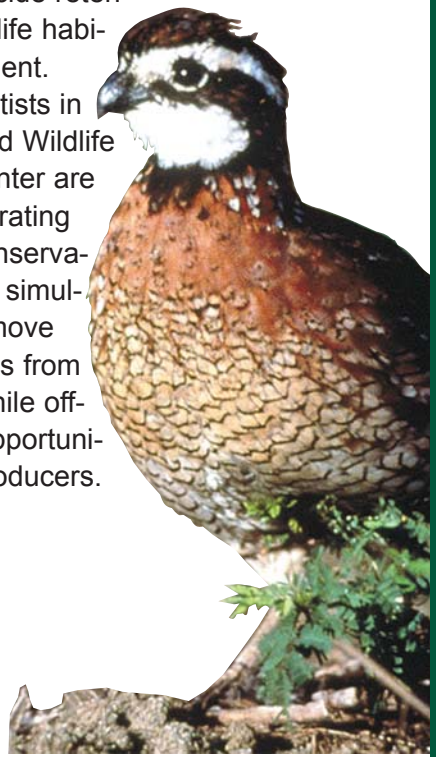
Conservation Buffers:

Wildlife Benefits in Southeastern Agricultural Systems

In the Southeast, privately owned rural lands constitute almost 80% of the total land base. Timber and agriculture are the most important land uses, making up 48% and 31% of the land base, respectively. Therefore, the health of wildlife populations in the Southeastern United States is largely determined by the land management decisions of private landowners. These privately owned forests and farmlands not only produce food and fiber products to meet growing global markets, they also provide essential habitats for hundreds of wildlife species.

Increasing demand for food worldwide and advancing technology have resulted in dramatic intensification of agricultural practices and changes in our agricultural systems. Notable changes have included farm consolidation, larger field size, single-crop production, loss of idle non-crop plant communities, conversion of native grasslands to row crops or exotic forage grasses, and wetland loss. All of these factors have contributed to a reduction in overall landscape diversity. In plain terms, we have replaced native plant communities with simple artificial communities, thus simplifying the landscape and leaving fewer places where wildlife exist and thrive.

Agricultural producers are the stewards of some of America's most important natural resources and are often interested in enhancing wildlife habitat value if management practices can be implemented without compromising their agricultural production goals. Naturally, conservation practices that provide multiple environmental benefits while minimizing impacts on crop production will receive priority implementation. Research has documented that conservation buffer practices such as filter strips, riparian corridors, grass waterways, and field borders can enhance environmental quality through erosion control, herbicide retention, and wildlife habitat enhancement. Wildlife Scientists in the Forest and Wildlife Research Center are also demonstrating that these conservation practices simultaneously remove marginal lands from production while offsetting lost opportunity costs of producers.



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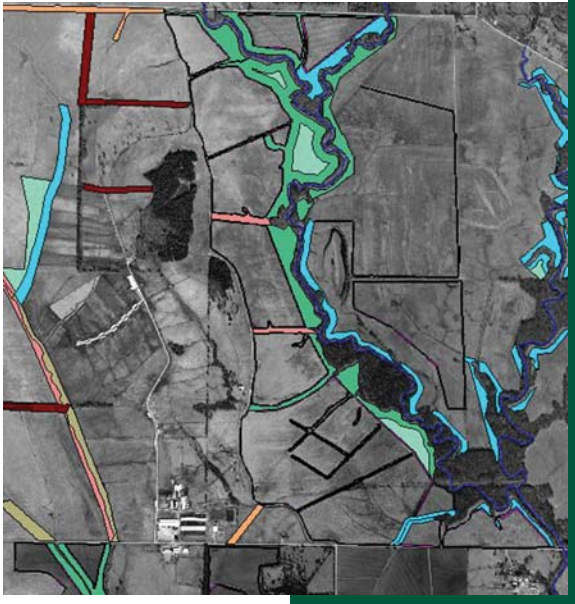

aerial photo of property implementing buffers

What are Conservation Buffers?

Conservation buffers are narrow strips of land maintained in permanent vegetation, designed to intercept pollutants, reduce erosion, and provide other environmental benefits, including wildlife habitat. In 1997, the USDA launched the National Conservation Buffer Initiative to encourage the use of conservation buffers by agricultural producers and other landowners. The theme of this initiative is "Buffers: common-sense conservation."

Buffers come in a variety of forms, including: riparian buffers, filter strips, grassed waterways, shelterbelts, windbreaks, living snow fences, contour grass strips, cross-wind trap strips, shallow water areas for wildlife, field borders, alley cropping, herbaceous wind barriers, and vegetative barriers. These accomplish somewhat different, but overlapping purposes. Producers and conservation planners work together to develop a conservation farming system that meets producer objectives while providing environmental benefits. By providing incentives and cost-share, the National Conservation Buffer Initiative encourages landowners to understand the economic and environmental benefits of buffer strips and implement these practices through various USDA conservation programs.

Benefits of Buffers

Conservation buffers, particularly forested riparian buffers, enhance water quality and aquatic habitat quality by slowing velocity of nutrient laden water running off of agricultural fields. This results in sediment, bacteria, nutrients, plant material, and pesticides dropping out and being captured by filtering effects of buffer vegetation. By reducing sediment inputs, buffers improve light penetration and productivity of aquatic systems. Forested riparian buffers also further enhance streams by providing woody debris that helps stabilize channels and provide additional habitat for fishes.

Although riparian buffers that include both trees and grass offer the greatest multiple environmental benefits, substantial gains in water quality can be accomplished with grass filter strips. Grass filter strips improve water quality through sediment and herbicide retention. Research by Dr. David Shaw, MSU's Department of Plant and Soil Science, has shown that grass filter strips can reduce herbicide runoff by up to 75%. The benefits in herbicide retention increase with strip width. Grass strips as wide as 12 feet can reduce the amount of herbicide leaving fields by 66-95%. Different grass species used in filter strips vary in their herbicide retention, but all grass species reduced herbicide runoff by more than two-thirds in comparison to no filter strip. Thus, species selection can be based on producer needs and objectives.

Traditionally, sod-forming grasses such as Kentucky Tall Fescue and Bermuda grass have been used for grassed waterways, filter strips, and riparian buffers. However, these exotic forage grasses provide relatively poor wildlife habitat because of their dense structure. Wildlife habitat benefits may be greater when

native grasses are used. Ongoing research at the USDA-ARS Sedimentation Lab and in MSU's Department of Plant and Soil Sciences, is evaluating the effectiveness of native prairie grasses in retaining sediments and herbicide. Eastern gamagrass, big bluestem, and switchgrass are native warm season grasses that show considerable potential for enhancing water quality and wildlife habitat quality. In addition to erosion control, native warm season grasses add diversity to agricultural landscape and provide wildlife habitat. Efforts are being made at the USDA-Natural Resources Conservation Service's plant materials centers at Coffeeville, MS and Americus, GA to collect and select southern sources of native warm season grasses to extend their use in conservation programs in the southeastern states.

Unlike filter strips and riparian buffers that are typically used only on the down slope side of fields, field borders are herbaceous, non-crop buffers that can be used around the entire field margin to remove low producing areas from production and provide wildlife habitat. Crop yield on field margins is strongly influenced by adjacent plant communities as a result of competition for sunlight, water, and nutrients. Greatest yield reductions are associated with woody cover such as hedgerows or forests. Therefore, field borders are a buffer practice that can substantially increase wildlife habitat while minimally affecting production. For example, as demonstrated in one research project, bobwhite quail were 2-3 times more abundant on farms with field borders when compared to similar farms lacking borders. Field borders increase use of fields by bobwhite, hold birds on the landscape during the breeding season, and improve nesting and brood rearing habitat. Field margins with field borders support more diverse and abundant bird communities during winter and summer. Ongoing collaborative research at MSU with the Department of Entomology is demonstrating that field borders have negligible effects in field pest insect populations. In fact, field borders may actually provide benefits by supporting beneficial predatory insects.

Summary

Conservation buffers are indeed common-sense conservation. The suite of buffer practices available and the myriad of USDA programs through which they can be implemented 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. Conservation buffers can be implemented through several programs including the continuous Conservation Reserve Program (CRP), the Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Wetlands Reserve Program (WRP), Stewardship Incentives Program (SIP), and Emergency Watershed Protection Program (EWP). For more information on the National Conservation Buffer Initiative visit your County USDA Farm Services Center.

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Examples of Conservation Buffers

Conservation buffers such as filter strips, riparian buffers, grassed waterways, and field borders are especially applicable to southeastern landscapes and have multiple environmental benefits while serving to significantly improve wildlife habitats. Research is also demonstrating that these practices can be cost-effective for producers.

Grass filter strips improve water quality through sediment and herbicide retention. In addition to erosion control, native warm season grasses add diversity to agricultural landscape and provide wildlife habitat. Species selection can be based on producer needs and objectives.

Riparian buffers that include both trees and grass offer the greatest multiple environmental benefits. They enhance water quality and aquatic habitat by slowing velocity of nutrient laden water running off of agricultural fields. Forested riparian buffers also further enhance streams by providing woody debris that helps stabilize channels and provides additional habitat for fishes.

Traditionally, sod forming grasses such as Kentucky Tall Fescue and Bermuda grass have been used for grassed waterways. However, in addition to providing erosion control benefits, native warm season grasses such as switchgrass add diversity to agricultural landscape and provide wildlife habitat.

Field borders are herbaceous, non-crop buffers used around the entire field margin to remove low producing areas from production and provide wildlife habitat. They can be established with an initial small-grain or legume cover crop. Field borders should be left undisturbed during the growing season; however, woody vegetation should be controlled with periodic disturbance such as disking or prescribed fire every 3-4 years.