NRCS Natural Resources Conservation Service

Riparian Forest Buffer 391

Conservation Practice Fact Sheet

DEFINITION

A riparian forest buffer is an area of trees and shrubs located adjacent to streams, lakes, ponds, or wetlands.

PURPOSE

Riparian forest buffers of sufficient width intercept sediment, nutrients, pesticides, and other materials in surface runoff and reduce nutrients and other pollutants in shallow subsurface water flow. Woody vegetation in buffers provides food and cover for wildlife, helps lower water temperatures by shading the stream or waterbody, and slows out-of-bank flood flows. In addition, the vegetation closest to the stream or waterbody provides litter fall and large wood important to fish and other aquatic organisms as a nutrient source and structural components to increase channel roughness and habitat complexity. Also, the woody roots increase the resistance of streambanks and shorelines to erosion caused by

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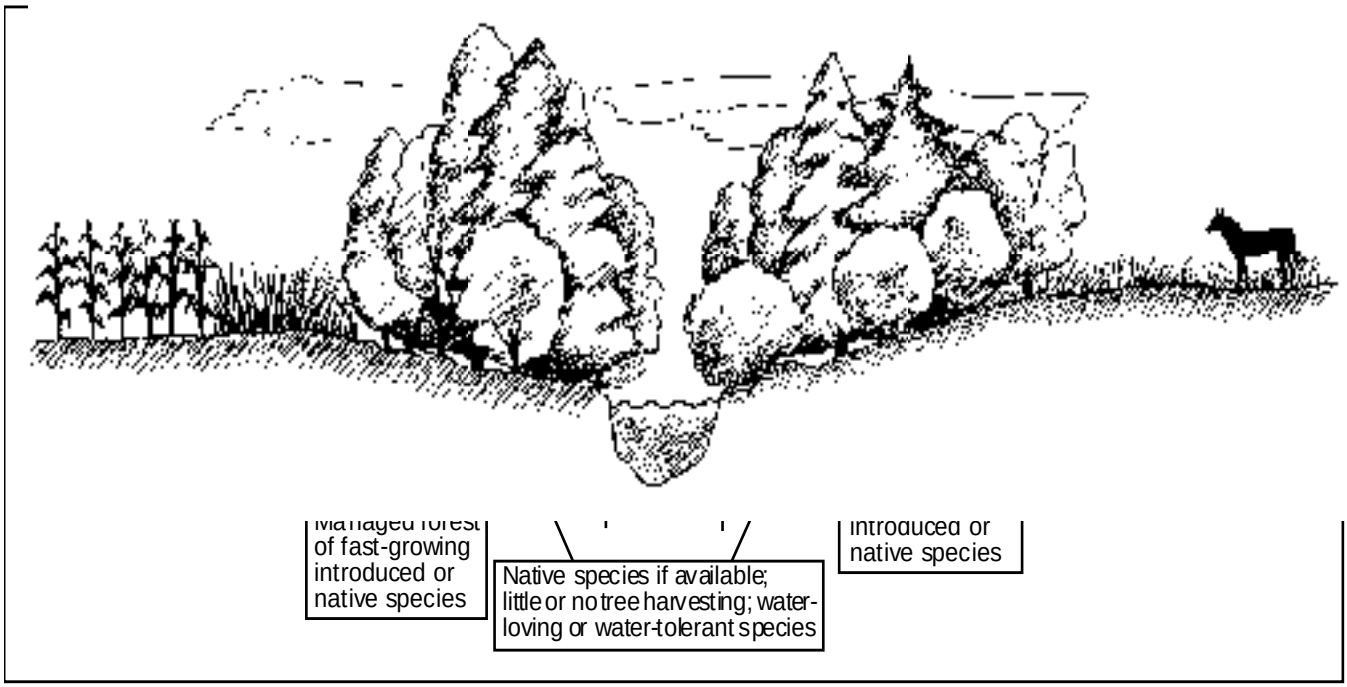
high water flows or waves. Some tree and shrub species in a riparian forest buffer can be managed for timber, wood fiber, and horticultural products.

WHERE USED

Buffers are located along or around permanent or intermittent streams, lakes, ponds, wetlands, or seeps. Many of these areas feature year-round or seasonal moisture, which allows woody species to establish quickly. A new riparian forest buffer can rapidly benefit a variety of settings such as cropland, rangeland, forest land, and urban areas.



A riparian forest buffer includes a zone 1, the area closest to the stream or waterbody, and a zone 2, the area adjacent to and up gradient of zone 1. Trees and shrubs in zone 1 provide important wildlife habitat, litter fall for aquatic organisms, large wood that can fall into the stream or waterbody, and shading to lower water temperature. This zone helps stabilize streambanks and shorelines. Trees and shrubs in zone 2 (along with zone 1) intercept sediment, nutrients, pesticides, and other pollutants in surface and subsurface water flows. Zone 2 can be managed to provide timber, wood fiber, and horticultural products. A third zone, zone 3, is established if periodic and excessive water flows, erosion, and sediment from upslope fields or tracts are anticipated. Zone 3 generally consists of herbaceous plants or grass and a diversion or terrace, if needed. This zone provides a “first line of defense” to assure proper functioning of zones 1 and 2.

RESOURCE MANAGEMENT SYSTEM

Riparian forest buffers are normally established concurrently with other practices as part of a resource management system for a conservation management unit. For example, adjoining streambanks or shorelines must be stabilized before or in conjunction with the establishment of the buffer (streambank and shoreline protection). To maintain proper functioning of a planting, excessive water flows and erosion must be controlled upslope of the riparian forest buffer (filter strip, diversion, critical area planting, residue management). New plantings must be protected from grazing during establishment (prescribed grazing, use exclusion).

WILDLIFE

Connecting a riparian forest buffer with existing perennial vegetation, such as woodlots, woody

draws (tree/shrub establishment) or other woody habitat (windbreak/shelterbelt establishment) benefits wildlife, including fish and other aquatic organisms. Select tree and shrub species and a planting pattern that benefit the wildlife species of interest and enhance local landscape aesthetics.

OPERATION AND MAINTENANCE

Replace dead and dying woody species in newly established plantings. Trees and shrubs in a riparian forest buffer can eventually become crowded, slowing their growth and the growth, survival, and composition of understory species. As the buffer matures, periodic harvesting of some of the overstory trees and shrubs becomes an important activity for maintaining plant health and buffer function. Some of the older trees that are dead or dying within the buffer area can serve as nesting cavities for terrestrial organisms as well as a source of large wood for aquatic systems.

SPECIFICATIONS

Site-specific requirements are listed on the specifications sheet. Additional provisions are entered on the job sketch sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See practice standard Riparian Forest Buffer, code 391.