

# Info

## What is a riparian forest buffer?

# Working Trees



Woody vegetation in Riparian Forest Buffers provides food and cover for wildlife, helps lower water temperatures and slows out-of-bank flood flows. — NAC photo

**R**iparian Forest Buffers are natural or re-established woodlands next to streams, lakes and wetlands.

These buffers usually consist of trees, shrubs and grass plantings that are managed to enhance and protect aquatic resources from adverse impacts from the management of adjacent lands.

Riparian Forest Buffers intercept sediment, nutrients, pesticides and other materials in surface runoff and in shallow subsurface water flow so they don't get into the streams, lakes or

wetlands. Temperatures in cold water streams can be maintained with shade from trees along their banks. Woody vegetation also reduces bank erosion by absorbing energy from wave action and by the roots holding soil in place.

Some tree and shrub species can be managed in a Riparian Forest Buffer for timber, wood fiber, bioenergy fuels, horticultural and non-timber forest products. The inclusion of woody plants into an agricultural landscape also increases biodiversity and habitat diversity.

## Benefits of riparian forest buffers

**Diversification of income** — Landowners can increase farm and ranch income by using a diversity of trees and shrubs in their buffers. Crops such as nuts, berries, craft materials and bioenergy feedstocks can be harvested without reducing the buffer effectiveness.

**Reduced flood damage** — Woody buffers reduce floodwater velocity and erosive power and block stream debris from entering cropland, grassland, and urban lands. Roots hold stream banks and keep the soil in place. Buffers reduce peak storm flows by slowing surface runoff.

**Improved water quality** — Woody plants and their roots help reduce streambank erosion, trap erosion sediments, increase water infiltration and absorb excess nutrients, pesticides and other contaminants.

**Increased wildlife** — Woody plants in buffers can create habitat diversity, shade streams and increase food for songbirds and other wildlife, including salamanders and pollinators. This increase provides opportunities for recreational uses, such as hunting, fishing, bird watching and hiking.

# Considerations of riparian forest buffers

**Management Objectives:** Determine what problems are present at the site along with what other needs, issues, or desires should or can be addressed. This will help facilitate in the proper design and application. By addressing multiple issues, the design will create a multi-functional Riparian Forest Buffer with numerous benefits.

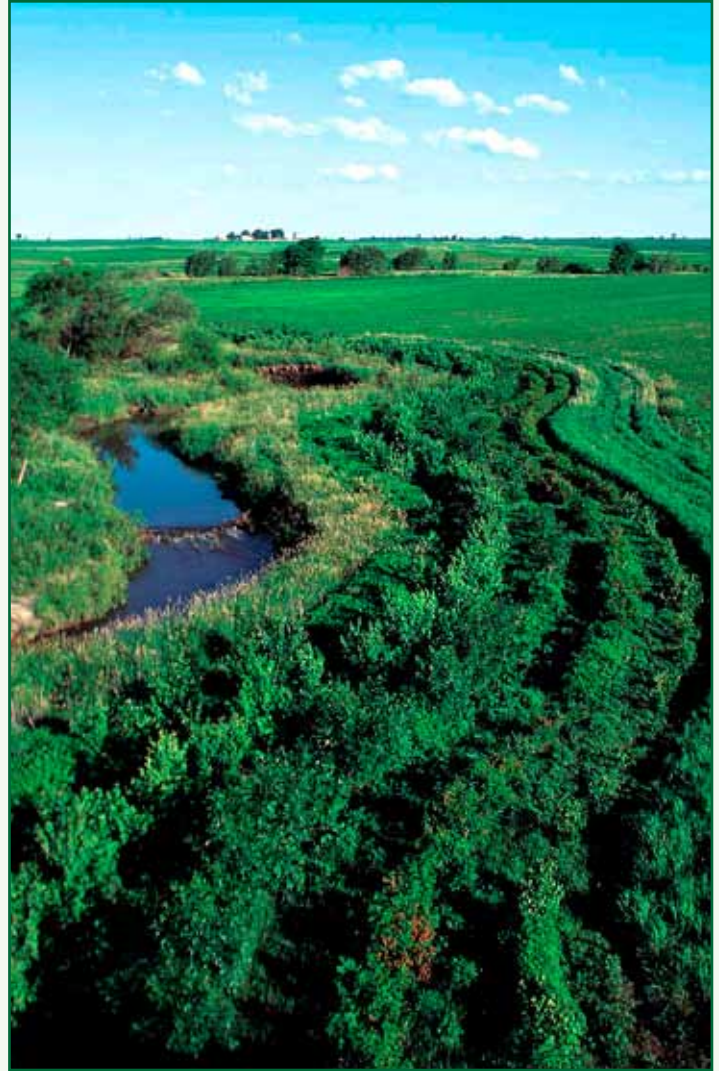
**Vegetation type:** The possible combination of trees and shrubs is nearly endless. The woody rows of the buffer can include plants that produce berries, florals, wildlife food or a number of other products. Flood frequency and duration are significant factors affecting species selection. When stream shading is a primary goal use tall trees for maximum shade.

**Soil type:** Knowing what types of soils are present on the site is critical. Many woody species are very site specific and if placed on the wrong site will either die or, at best, not perform as desired. Soils information can be easily obtained at your local USDA Service Center or from the web (see below).

**Bank stability:** The banks of streams and wetlands are constantly changing. Landowner knowledge of active bank erosion or bank stability is extremely useful in determining where to locate a buffer or if it is even practical. Before a Riparian Forest Buffer is installed, other practices may be required such as bank stabilization or even larger watershed scale drainage management.

**Buffer width:** The buffer width may vary along its length depending on the site conditions. Generally, the function that requires the greatest width will dictate the minimum width of the buffer. "[Conservation Buffers — Design Guidelines for Buffers, Corridors, and Greenways](#)" is an excellent publication to help determine proper buffer widths (see below).

**Operation and management:** All conservation buffers are dynamic and require varying levels of management as a result of flooding, pest infestation, herbicide damage, weed control or the harvesting of desirable products from the buffer. In each case the management activity must be evaluated keeping in mind the likely impact it will have on the functioning of the buffer.



Riparian Forest Buffers intercept sediment, nutrients, pesticides and other materials in surface runoff and reduce nutrients in sub-surface water flow.

— NRCS photo

## More information on the Web

USDA National Agroforestry Center [www.unl.edu/nac/riparianforestbuffers.htm](http://www.unl.edu/nac/riparianforestbuffers.htm)

USDA National Agroforestry Center [www.bufferguidelines.org](http://www.bufferguidelines.org)

USDA Web Soil Survey <http://websoilsurvey.nrcs.usda.gov/>

The Center for Agroforestry [www.centerforagroforestry.org/practices/rb.php](http://www.centerforagroforestry.org/practices/rb.php)

Association for Temperate Agroforestry [www.aftaweb.org/riparian\\_buffers.php](http://www.aftaweb.org/riparian_buffers.php)

Natural Resources Conservation Service [www.nrcs.usda.gov/technical/standards/nhcp.html](http://www.nrcs.usda.gov/technical/standards/nhcp.html)



A partnership of



Contact: USDA National Agroforestry Center, 402.437.5178 ext. 4011, 1945 N. 38th St., Lincoln, Nebraska 68583-0822. [www.unl.edu/nac](http://www.unl.edu/nac)

The USDA National Agroforestry Center (NAC) is a partnership of the Forest Service (Research & Development and State & Private Forestry) and the Natural Resources Conservation Service. NAC's staff is located at the University of Nebraska, Lincoln, NE. NAC's purpose is to accelerate the development and application of agroforestry technologies to attain more economically, environmentally, and socially sustainable land use systems by working with a national network of partners and cooperators to conduct research develop technologies and tools, establish demonstrations, and provide useful information to natural resource professionals.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call toll free 866-632-9992 (voice). TDD users can contact USDA through local relay or the Federal relay at 800-877-8339 (TDD) or 866-377-8642 (relay voice). USDA is an equal opportunity provider and employer.

First Edition May 2012