Additional Information:

More detailed information about buffers may be obtained from the following sources:

CT Department of Environmental Protection
Wetlands Management Section
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3019

CT River Estuary Regional Planning Agency
P.O. Box 778
Old Saybrook, CT 06475
(860) 388-3497

Middlesex County Soil and Water
Conservation District, Inc.
P.O. Box 70
Haddam, CT 06438
(860) 345-3219
Attn: Executive Director

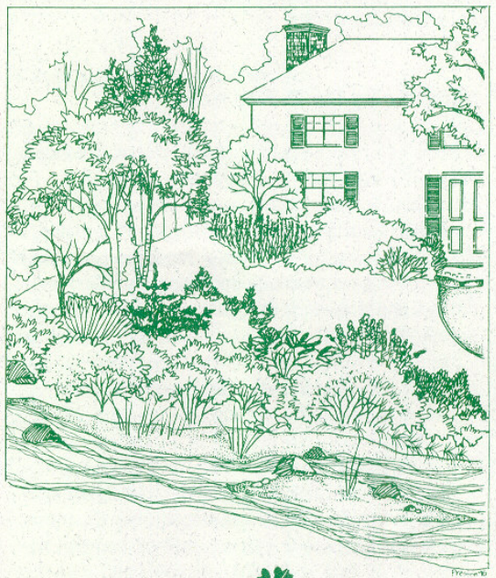
USDA Natural Resources Conservation Service
North Farms Executive Park -- Suite A
900 Northrop Road
Wallingford, CT 06492
(800) 805-8313
(203) 269-7509

The Nature Conservancy
Connecticut Chapter
55 High Street
Middletown, CT 06457
(860) 344-0716

Connecticut River
Watershed Council, Inc.
One Ferry Street
Easthampton, MA 01027
(860) 528-3588

Landscaping to Protect Water Quality

A Guide to the Functions, Design and Preservation of Vegetated Buffers

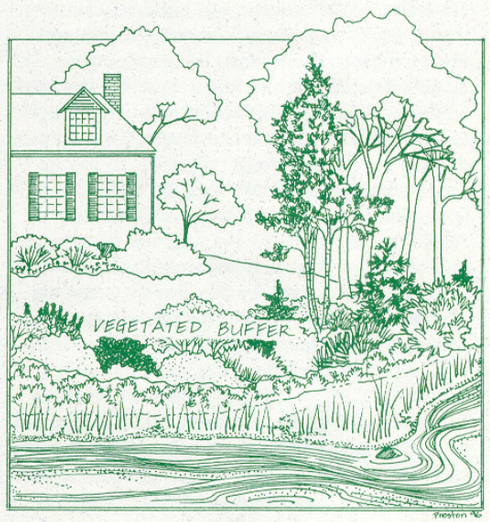


The Nature Conservancy
CONNECTICUT CHAPTER

Tidelands of the Connecticut River

The lower reach of the Connecticut River, which is the focus of The Nature Conservancy's *Tidelands of the Connecticut River* program, is one of New England's unique natural resources. This extensive tidal marsh area contains a wide variety of plant and animal species, is a major resource for recreation and is known for its spectacular scenery.

These qualities have encouraged land development, considerable clearing for views, and intensive recreational use, which can threaten wildlife, water quality and riverbank stability. Residents of the *Tidelands* region can easily lessen any potential negative impacts from these activities by creating or maintaining vegetated buffer strips. Basically, a vegetated buffer is an undisturbed natural area next to a watercourse or wetland that provides protection from nearby land use impacts, affording an effective means of minimizing potential environmental damage and integrating land use with sound stewardship practices.



Vegetated Buffer Functions

Buffers provide environmental protection in a number of ways that benefit landowners, recreational users and wildlife.

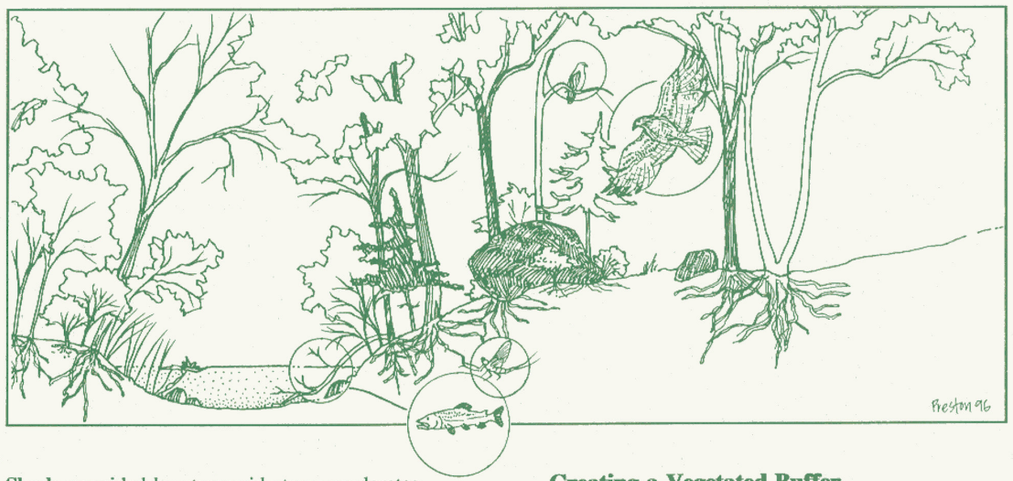
Protection of water quality is an important buffer function. Sediment and pollutants in storm-related runoff can degrade water quality and, in turn, animal and plant health. However, surface roots, vegetation and leaf litter in buffers trap sediment before it can reach a river or wetland.

Other pollutants, particularly nutrients such as phosphorus and nitrate, can be transformed by biological or chemical processes or stored in the buffer itself. Nutrients are commonly found in fertilizer and leachate from improperly functioning septic systems.

Erosion control and **stream bank stabilization** are also significant buffer functions. This is very important in the *Tidelands* area, which has many miles of sloping waterfront land that is vulnerable to erosion. Vegetation lessens the impact of rain, and roots slow stormwater flow, thereby reducing erosion. These processes promote the absorption of rain into the soil, reducing surface runoff and lessening the threat of flooding.

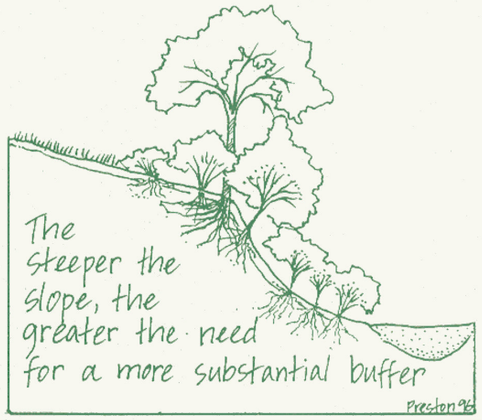
Also, by **providing critical habitat and travel corridors** for both resident and migrant species, buffers are of significant value to the diverse wildlife of the *Tidelands* area. The lower Connecticut River watershed is home to six globally-rare and dozens of state-rare plant and animal species.

Many animals either live in or depend on streams, wetlands or vegetated buffer areas during part of their lives. As an example, waterbirds and woodland species use buffers for feeding, nesting and resting. In addition, litter from buffer vegetation provides an important food source for aquatic organisms at the base of the food chain.



Shade provided by streamside trees moderates water temperature, improves habitat for aquatic life and controls excessive algal and aquatic plant growth. This is particularly important for cold water fish, such as trout.

The **aesthetic appeal** of buffers and their **recreational use**, such as for hiking or bird watching, can readily be appreciated. Also, the scenic nature of buffers enhances property values, benefitting landowners.



Creating a Vegetated Buffer

Size - Buffers can range from an extensive forested strip to a modest unmowed yard area.

Generally, the effectiveness of buffers increases with size. Conditions such as steep slopes, soils that promote surface runoff, or significant disturbances associated with land use warrant larger buffers. While large buffers may not be practical for a *Tidelands* landowner, even small buffers can provide important benefits. There is no precise formula to determine buffer width; buffer design is a function of site-specific factors. Generally, smaller buffers 15 to 50 feet wide can be effective in trapping sediment and lessening the impact of some pollutants, and they can provide temporary shelter for wildlife. Larger buffers will improve sediment and pollution control and enhance wildlife habitat to a greater extent.

Location - Buffers should be located between areas of activity or disturbance, such as buildings, paved surfaces, lawns, playing fields or agricultural areas, and the nearby watercourse or wetland to be protected. The buffer will intercept stormwater runoff and associated pollutants and shield wildlife from intrusions.

Vegetation - Appropriate vegetation includes native trees, shrubs or grasses. While trees provide the widest range of benefits, even allowing an area to remain unmowed and develop into tall grass and wildflowers is beneficial, while still providing a view.

Trees are particularly effective for maintaining water quality, but native shrubs and herbaceous vegetation are also suitable. Native fruit-bearing trees and shrubs provide numerous wildlife benefits. In cleared areas, an easy method of establishing native vegetation is to allow buffers to grow back naturally.

Maintaining the Buffer Area

Buffers can be damaged by a number of practices, many of which may be inadvertent, such as excessive clearing, filling, construction or improperly designed road crossings or footpaths. There are a number of "best management practices" that can be used to create and maintain vegetated buffers and to ensure that their functional values are not compromised:

- Avoid excessive removal of vegetation near rivers, ponds and wetlands.
- The *Tidelands* area has many properties with spectacular views of the Connecticut River and its associated marshes and tributaries. If one is clearing to improve views, removal of branches may be all that is needed. If you must cut down entire trees, do so selectively and limit the size of the canopy opening. Replace removed trees with shorter plantings.
- Plant native vegetation in bare areas.
- Hemlock trees are common in the *Tidelands* area, and many are dying from infestation by the hemlock woolly adelgid insect. Where this has occurred, replanting with other native vegetation will lessen potential erosion.
- Leave undergrowth and leaf litter in place.
- Use fertilizers and chemicals sparingly to protect water quality.
- Leave natural depressions in lawns. They will detain runoff and reduce erosion potential.
- Minimize the size of impervious surfaces such as driveways. They promote erosion by increasing surface runoff volume and velocity. Use gravel instead of paving to allow infiltration and reduce surface runoff.
- Inspect buffers after storms for signs of erosion or sediment deposits and repair as necessary.
- Keep paths narrow and winding to minimize erosion potential. Locate them outside of critical wildlife areas.
- Avoid mowing or clearing to the edge of a watercourse or wetland. This will provide a vegetated buffer area.
- Refrain from dumping leaves and yard debris near watercourses. These materials may kill vegetation, promoting erosion, and add excessive nutrients to aquatic systems.
- Make buffer areas and their borders obvious, using stone walls, fencing or plantings. Clear marking of buffers helps to protect against activity that may inadvertently damage them.
- Mark buffer areas on maps and other land records to promote awareness of their existence.