

Protecting and managing Hudson River streams: The Importance of stream buffer protection and management

In 2013, the US EPA reported that, in a nationwide 2008-2009 study, 55% of rivers and streams didn't support healthy aquatic life, with excess nutrients (phosphorus and nitrogen, streamside disturbance and poor vegetative cover identified as some of the biggest impacts on stream health (Source: [US EPA National Rivers and Streams Assessment, March 2013](#)). Protecting and restoring areas near streams -- known as riparian buffers -- is one of the important ways to protect a stream's water quality and health. A healthy buffer supports stream health by providing a vegetated area that can include trees, shrubs, and other native plants between the stream and human activities. Research has found that depending on their width and other factors, riparian buffers can perform many different biological, chemical, and physical functions, as described below.

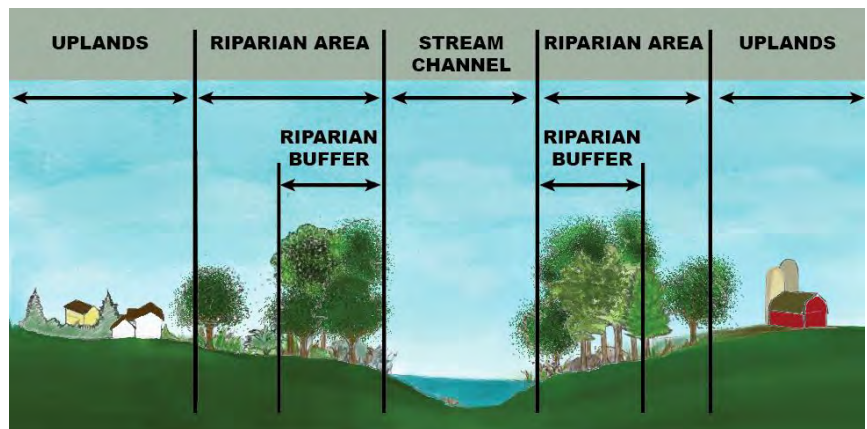
Stream buffers:

A stream or riparian buffer is a belt of upland alongside a stream that is extremely significant for the health of many streams. Wherever these adjacent uplands can support trees and other vegetation, an intact, healthy buffer provides many benefits.

Stream benefits:

A healthy vegetated stream or riparian buffer provides many benefits including:

- habitat for fish, birds and other wildlife;
- shade that helps regulate stream temperatures;
- allowing the movement of sediment;
- recharging and filtering groundwater;
- stabilizing stream banks and reducing erosion
- filtering runoff
- storing flood waters
- reducing flood damage by slowing and trapping water
- supplying clean water for surface waters and drinking water reservoirs; ; and
- economic benefits such as public access, recreation and tourism, manufacturing and agriculture.



Source: [EPA Around the Water Cooler: Riparian Buffers](#)

Healthy vs. Unhealthy Buffers

A healthy buffer has many different species of native trees, shrubs and grasses with minimal human disturbance. Unhealthy buffers have plants with weak root systems; invasive plant species; grazing animals; inadequate buffer widths; hardened shorelines, and impervious surfaces.

(Source: [NYS DEC Tools for Watershed Protection: Stream Buffers](#))

Hudson Estuary Trees for Tribs

The [Hudson Estuary Trees for Tribs Program](#) ('tribs' is short for tributaries) engages volunteers to plant native trees and shrubs to restore riparian buffers on the tributary streams the Hudson River Estuary watershed. The program offers free native trees and shrubs to qualifying riparian landowners. Trees for Tribs staff may also be able to assist with plant selection, designing a planting plan, and other technical support to improve the odds of project success. More information and the application can be found on the [NYSDEC website](#).

Benefits from different buffer widths

Stream buffers serve as one tool that can help offset the effects of urbanization in a watershed. In general the wider the buffer the more benefits it can provide. A 2014 literature review explored the question, “How wide does a streamside buffer need to be to protect water quality, assure natural stream habitat and maintain natural structure of important stream communities?” Based on eight streamside ecosystem functions, **streamside forest buffers of 30 meters or greater (roughly 100 feet)** are needed in watersheds for small to medium sized to protect water quality, habitat and other ecological benefits.

Table 1 taken from the NYSDEC handbook *Conserving Natural Areas and Wildlife in your Community*, p.30 outlines conservation benefits from different buffer widths. The great range of widths emphasizes why it is important to define conservation goals and conduct a site-specific science-based survey when deciding on the appropriate width for a stream buffer.

Table 1

Buffer Width	Benefit
80 feet	Nutrient/pollutant removal
100-200 feet	Water resource protection, core aquatic habitat
100 feet	Temperature regulation
100 feet	Vernal pool habitat
160 feet	Bank stabilization
250 feet	Salamander core habitat and buffer
250-575 feet	Bird habitat for 90% of birds (adjacent uplands)
330 feet	Water quality and minimal wildlife protection (adjacent uplands)
465-950 feet	Core riparian habitat for reptiles and amphibians (adjacent uplands)
535 feet	Long-term health of ecosystem (adjacent uplands)
750 feet	Terrestrial habitat for vernal pool breeding species (adjacent uplands)

Land use planning and legal tools to protect buffers:

- **Municipal planning and code tools:**
 - **Zoning** –to control the type, density and other aspects of development in the buffer.
 - **Overlay zoning** – a stream corridor protection district can be created that spells out acceptable and prohibited uses to provide for the maintenance of a natural vegetative buffer.
 - **Municipal ordinances** – a local buffer ordinance to establish riparian buffers. Buffers can also be established through an erosion and sediment control ordinance.
- **Open space protection** through purchase of land, or of conservation easements, which are voluntary agreements between a landowner and a land trust or government agency that restrict the development or use of property; two kinds of easements are permanent (or in perpetuity) or temporary (known as term easements).

Stream Corridor and Water Supply Watershed Overlay District

The Town of Goshen, Orange County has created a Stream Corridor and Water Supply Watershed Overlay District to provide special protection of the Town's stream corridors and the reservoirs used for the village water supply as necessary to preserve their scenic character and water quality. Local law is intended to regulate land uses within stream corridors and reservoir watersheds to protect water quality, scenic resources, and the overall appearance of the community, as well as to reduce the risk of damage from flooding.

This Project has been funded in part by a grant from the New York State Environmental Protection Fund through the New York Department of Environmental Conservation.

