

## RIPARIAN BUFFER MANAGEMENT RIPARIAN BUFFER SYSTEMS

Most bodies of water, both running and standing, have a flood plain or riparian area. Whether the waterway is a large river or a small, intermittent creek, the water directly affects and is affected by this adjacent land. The riparian area serves as a transition between aquatic and upland habitats—it is the link between land and water. When this area is planted in such a way to protect the waterway from negative impacts of the adjacent land use it becomes a buffer, specifically, a riparian buffer.

Since the early 1900's lands in the riparian area have been cleared for many reasons and put into other land uses, such as pasture, row crops, and storm sewer lines. As our population has grown, pressure for home sites has increased and now there are a number of housing developments built in low-lying, flood prone areas. As a reaction to these changes, stream channels have been straightened and deepened to control stormwater. The resulting pollutants in runoff are flushed into the Chesapeake Bay quickly, bypassing natural systems of cleansing. The waters are also exposed to much more sunlight, which increases water temperatures, thus reducing the number of aquatic organisms, including fish.

By incorporating vegetative riparian buffers along as much of the length of a watercourse as is possible, runoff is intercepted, slowed, and allowed to percolate into the ground, recharging our groundwater. Multiple benefits with minimal expense accrue when we allow natural systems such as riparian buffers to function properly.

Vegetative riparian buffers need to extend along streams, lakes, and wetlands. The perennial vegetation that grows there

becomes a “living filter” for both surface and subsurface water leaving upslope areas. Soil sediment, and lawn and agricultural chemicals, are trapped, modified, or used by the vegetation for growth, reducing the amount of pollutants. Roots of riparian buffer vegetation help hold the soil. Other woody debris, extending into the stream, reduce the water's velocity during high flows, which reduces streambank erosion.

Within the riparian buffer, the water-holding capacity of the soil increases; this moderates flooding and recharges groundwater supplies. Trees and shrubs near the waterway also improve and protect the aquatic environment. Not only do they provide shade and lower summer water temperatures, but the woody and leaf debris provides both food and shelter to aquatic insects, fish, and amphibians. Riparian buffers also provide important needed habitat for terrestrial wildlife.

The visual diversity and beautification resulting from a riparian buffer can be considerable. In some cases, products can be harvested from the buffer zone. Haymaking, selected logging, and alternative agricultural products can possibly provide revenue.

Trees, shrubs, and herbaceous plants (such as grasses, wildflowers, and ferns) are the basic types of vegetation in a riparian buffer. One, two, or all three types can be incorporated to create a buffer. Each type provides certain benefits. The following table compares herbaceous vegetation (primary grasses), shrubs, and trees for the relative level of benefits derived for different priorities.

Naturalizing the vegetation along our waterways benefits wildlife and the Chesapeake Bay, and, ultimately, us.

## REFERENCES

Alliance for the Chesapeake Bay. "Riparian Forest Buffers White Paper." Jan. 1996. Call 1-800-YOUR-BAY or 1-800-662-CRIS.

U.S. Department of Agriculture Forest Service. 1997. *Riparian Forest Buffer Manual*.

"How to Design a Riparian Buffer for Agricultural Land." *Agroforestry Notes*. AF Note-4, Jan. 1997. U.S. Department of Agriculture Forest Service/NRCS.

**Table 1.**

Relative effectiveness of different vegetation types for specific benefits

Benefit	Vegetation Type		
	Grass	Shrub	Tree
Stabilize bank erosion	Low/ Medium	Medium/ High	High
Filter sediment	High	Low/ Medium	High
Filter nutrients, pesticides, microbes			
• sediment-bound	High	Low/ Medium	High
• soluble	Medium	Low	Medium
Aquatic habitat	Low	Medium	High
Wildlife habitat			
• range/pasture	High	Medium	Low
• forest wildlife	Low	Medium	High
Economic products	Medium	Low/ Medium	High
Visual diversity	Low	Medium	High
Flood protection	Low	Medium	High

Source: Adapted from *Agroforestry Notes*. AF Note-4, Jan. 1997. U.S. Department of Agriculture Forest Service/NRCS.

### Other Fact Sheets in the Riparian Buffer Series:

- FS 724 An Introduction to the Riparian Forest Buffer
- FS 725 Buffer Design, Establishment, and Maintenance
- FS 726 Trees for Riparian Forest Buffers
- FS 727 Understory Plants for Riparian Forest Buffers
- FS 728 Grasses for Riparian Buffers and Wildlife Habitat Improvement
- FS 729 Soil Bioengineering or Streambank Restoration for Riparian Forest Buffers

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