Riparian Corridor and Stream Banks Module

The riparian corridor is the land immediately adjacent to the stream. A forested riparian corridor will strengthen stream banks and reduce erosion benefiting the water quality in a watershed. In addition, a forested riparian corridor provides habitat for wildlife, filters runoff pollutants, and provides various economic and recreational opportunities for landowners.

Introduction

The strip of land bordering a stream channel is called a stream or riparian corridor. This is actually a part of the flood plain, but because it is so important to the stream system it deserves special consideration. A well functioning corridor is at least 100 feet wide and forested. The riparian corridor is technically defined as the area of the flood plain that experiences regular flooding.

The vegetation growing in this corridor provides many benefits and is necessary for creating a healthy stream. For instance, riparian trees shade the water and protect it from the scorching sun. Their leaves provide raw organic material for food chains. They also hold stream banks together with deep, dense root systems. During floods, they slow the flow of water and protect adjacent fields from flood plain scouring. When these trees eventually fall in the water, they provide valuable fish cover and habitat. All streams are dependent on well-managed riparian corridors. Re-establishing adequate riparian corridors is a key step in restoring degraded streams.

Healthy, well-managed riparian areas have a variety of tree species and understory vegetation growing at least 100 feet from each bank. They also have a layer of dead leaves, which contribute to a thick humus layer in the soil. This wooded border benefits the stream and neighboring landowners by controlling erosion and sediment in several ways. During a flood the streamside trees and brushy vegetation slow the water before it passes over the flood plain. This reduces erosion on bottom land fields.

Because the water is slowed within the wooded corridor, it drops much of the sediment, gravel, and sand within the stream corridor rather than on bottom land fields or in backwater areas downstream. This corridor of trees also traps woody debris that would otherwise end up in fields. The tree canopy and underlying leaf layer of healthy stream corridors protect the soil from the direct force of falling rain and the forest floor acts as a sponge to slow runoff and reduce erosion.

Well-managed riparian corridors are accompanied by a general lack of erosion. The root systems of trees growing near the water's edge are vital to controlling stream bank erosion. A wide corridor of trees will ensure that banks are protected even when unusual flooding removes some streamside trees.

A riparian corridor that is managed poorly may be less than 25 feet wide. Trees may be sparse or lacking. Grazed woodlands and pastures or fields plowed to the edge of the stream are examples of rural riparian corridors that have been poorly managed. Urban areas are no different. Trees are frequently replaced by parking lots and other hard surfaces.

The function of stream banks to contain flowing water is obvious, but stable banks offer additional benefits to the watershed. The trees present on stable banks shade the stream to moderate water temperatures. The leaf litter produced is a vital source of soil nutrients and a food supply for many aquatic insects. Streamside vegetation also attracts terrestrial insects which fall to the water and provide food for fish. The submerged root systems of these trees also act as excellent habitat for fish, frogs, beaver, muskrat, otter, and a variety of other animals. Fish and wildlife habitats are

improved by forested stream corridors. These corridors provide many species with food, protection, travel lands, and nesting cover. Every part of the tree is important when it is living and even after it has died.

Some animal species use riparian woodlands through all stages of their lives. Most animal species use the riparian corridor for part of their habitat needs. The diversity of plant species, along with a source of water, make riparian woodlands attractive to wildlife. Nuts, fruits, roots, and grasses are among the beneficial products available to wildlife in the riparian woodlands. Trees, grasses, and other plants provide shelter and cover for various species of wildlife. Various sizes of trees serve as specific habitats. After trees have died, their decaying logs provide shelter for snakes, rodents, and other ground-dwelling species. Trees provide shade over streams which affect the amount of dissolved oxygen the water can hold. Shaded stream areas may be as much as 10 degrees cooler than areas exposed to direct sunlight.

Stable banks are well vegetated with a variety of tree species and exhibit a minimal amount of soil erosion. The root system of the trees and other plants hold the soil and provide stability under normal conditions. Stability also depends on the material composition of the banks. For example, a bank comprised of compacted clay and tree roots will be much more stable than one comprised of sand and silt.

Unstable banks are characterized by a lack of woody vegetation and severe **erosion**. A common cause of unstable banks is the clearing of trees in the riparian corridor. Other causes are overgrazing, gravel removal that increase erosive forest, and changes in the watershed that increase the speed and volume of runoff waters. Unstable banks lose valuable soil to erosion. These eroded soils smother aquatic habitats downstream. In addition, unstable, eroded banks lose their aesthetic appeal and cloud the water. The clouded water in turn increases the absorption of sunlight which raises the water temperature and thus decreases the dissolved oxygen content which is essential for aquatic life.

What can be done to establish and protect riparian corridors? On nonforested stream sides, trees should be planted on at least a 100-foot wide strip on each side of the stream. This can be done by planting seedlings, cuttings, or seed, or by allowing natural reforestation to take place. Plant species that are adaptable to local conditions should be used. On forested stream sides, at least a 100-foot wide strip should be protected on each side of the stream. Fences can be constructed to exclude livestock from the stream side except for controlled accesses for watering and crossing. Allowing livestock to graze along stream banks is damaging to riparian woodlands. Vegetation is destroyed and stream bank erosion increases. Fallen trees should be left in the stream. Heavy equipment such as tractors, log skidders, or bulldozers that could remove ground cover should not be used near a stream bank. It is also important to consult a local forester before cutting trees along a stream. He or she can advise how to harvest trees without damaging the stream bank and riparian corridor.