What's the deal with Riparian Zones?!!!!

The better question may be what is a riparian zone? No, it is not a place where reality is skewed and odd beings run around. That's the Twilight Zone!! A riparian zone is the area along a stream, lake, wetland, or other waterway. Simply put it is the transition zone between land and water! You might be asking why these areas are so important. Riparian areas can either be a weak point or a strong point for a waterway depending on how well they have been cared for!

Riparian zones which are intact, meaning they still have trees and shrubs, etc. growing along them, act as natural "buffers" along a stream. They are very good at a number of important functions. Some of these functions include holding banks in place, preventing erosion, soaking up nutrients, slowing down flood waters, shading and cooling water, providing wildlife habitat, as well as many others! I know your next question is "That's amazing, how do they do it?" The answer is in the trees, shrubs, etc. growing along the banks. Let's look at these functions a little closer!

Tree and shrub roots actually "anchor" the banks in place to prevent erosion. Most grasses found in mowed lawns and pastures do not have the same effect. Their shallow root systems only hold the top 2 or 3 inches in place, allowing the banks to be undercut by flowing water or wave action. When this happens we often see severe erosion problems not only in the damaged section of the waterway, but also in the areas around the damaged riparian area. In streams we see water velocity increase downstream of damaged riparian areas. This results in more erosion of the downstream area and often some angry neighbors. We can also see damage upstream from a process called "head cutting". In this process the stream actually "unravels" and the damage migrates upstream from the original problem.

The plants growing along the waterway can also absorb nutrients rather than letting it enter the water to cause problems. So, why does this matter? Nutrients in the water do the same thing as on land, they make plants grow faster. In aquatic systems this can cause severe problems. In Crawford County you can find a prime example in Conneaut Lake's weed problems. Conneaut Lake has a serious problem with excess nutrients from residents over-fertilizing lawns, agricultural runoff, stormwater, development. Over the years these nutrients have built up in the lake's sediment and are stirred back up as the lake "turns over" annually. As a result, weed growth is rampant to the point of interfering with recreational uses of the lake. This issue has Conneaut Lake's various users scrambling to deal with restoration options that will likely cost millions of dollars to address. New York City has found that it is actually cheaper to restore riparian zones in the headwaters area of its water supply than it is to treat the water in their treatment plants. They ended up

spending 2 billion dollars on restoration and protection of upstream watersheds rather than spending 6 billion dollars on a new water treatment facility for the city.

Properly functioning riparian areas can help reduce flooding! In streams and along other waterways the riparian area is directly connected to the water system. Even though it is dry for most of the year it is an important part of the stream when flood waters rise. Riparian areas, and the floodplain associated with them, serve as a "pressure relief valve" for the waterway, giving flood waters space to spread out. When we develop these areas we take away a portion of the stream channel and push flood water downstream to cause more severe flooding issues. Also, by removing riparian vegetation we often see streams narrow and deepen. When this happens the stream flow is concentrated in the stream channel and is not allowed to spread out its energy across the floodplain, resulting in more costly erosion and much more severe flooding in the immediate area and downstream.

What about the things that call the waterway their home? Tree leaves shade the waterway to "cool" water and provide food to allow fish and other aquatic organisms to thrive. The cooler the water the more oxygen it can hold. This is especially important to fish like trout, which require cool water temperatures and lots of oxygen to survive. Also the leaves from the trees and shrubs are a critical part of the food web in an aquatic ecosystem. Trees, shrubs and woody debris in the stream also serve as cover for fish and aquatic invertebrates in the stream.

So, what should we avoid in riparian areas? You should **NEVER** mow to the edge of the bank along any waterway. Leave a natural buffer of trees, shrubs, and other vegetation. Often times these areas can be landscaped with native vegetation and look even better than if they were mowed. Avoid hard stabilization methods like rock, concrete, tires, etc. They are expensive, do not serve all of the important functions of a riparian buffer, and often cause far more problems then they solve. They should only be used when there is no other option and should be designed and installed by a professional. And lastly unless you *want* your house to get flooded out don't buy a house or build in the floodplain. It might be pretty in the dry season, but you will regret it in the wet season! Remember, an ounce of prevention is worth a pound of cure. The easiest and least expensive way to protect ourselves, our property and the environment is to educate ourselves, and to respect and care for what we already have.

In conclusion when we mow, graze or pave to the edge of the bank we lose the benefits of the buffers. Streams without buffers result in expensive erosion problems, increased flooding, stressed fish populations, as well as other serious environmental and economic problems! The bottom line is we *need* healthy riparian areas to keep our streams intact and to prevent costly repairs to our watersheds!