



## ***RIPARIAN RECOVERY NETWORK NEWS***

**Riparian: wetlands adjacent to rivers or streams**



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### ***Riparian Buffers - Good for Water Quality***

Riparian areas are complex transitional zones between aquatic environments and the uplands. Such areas include not only strips of land along perennial streams, but also those adjacent to what Texans often refer to as “wet weather” creeks. While these narrow bands generally represent 2% to 5% of total land area (depending on terrain), their influence extends laterally from the stream bed to the uplands and vertically from groundwater to the canopy. In recent years, we’ve heard a lot about the importance of riparian “buffers,” a term that generally refers to lands bordering a creek or river that are managed with the health of the stream in mind. A lot of the discussion has been around water quantity in terms of how native vegetation slows floodwaters when we have too much and stores it for times when there is too little. But, vegetative strips also significantly impact the quality of our surface water by filtering out both sediment and pollutants and moderating temperature swings.

Let’s start with sediment as it is the most visible problem. How often after a heavy rainstorm do our streams turn brown? Why is this? There are actually two factors. The first is bank erosion, a natural process, but one that is magnified when natural vegetation is clear cut. However, if a riparian zone is left intact/restored to its natural state, roots of herbaceous and woody plants penetrate the top soil to find stability in rock crevices adding tensile strength that can better resist fast flowing waters. Thus, less soil is lost to erosion. The second factor is storm run-off from the uplands that picks up sediment on the trip downhill. A smooth ride across the riparian zone means sediment ends up in one of Wimberley’s many creeks and the Blanco. But with a riparian buffer, particularly one rich in tree roots and downed wood, the muddy water slows down meaning sediment drops out and builds soil on the banks where it is wanted. Studies have shown that a 33 foot buffer can be expected to trap about 65% of sediments delivered by overland flow.

Slowing flow and trapping sediment is also the most effective way to keep non-point source pollution out of our waterways. Riparian plants take up metals, nutrients, and other chemicals in runoff and facilitate bacterial degradation. These multiple processes can be illustrated by what happens to nitrogen, a major pollutant in most watersheds including our own. First, bacteria in the riparian zone use nitrogen as an energy source and in the process converts it to a gas. And as nitrogen-rich water seeps into the soil, plant roots absorb the nitrogen and use the chemical to stimulate growth. Finally, trees take up and store nitrogen in their biomass.

Trees in a riparian buffer also play a crucial role in moderating water temperature through the shade they create. Depending on the season, the light intensity on a shaded area of a stream can be 30% to 60% less intense impacting both daily temperature fluctuations and maximum temperatures reached. Organisms that have a positive impact on water quality are often

affected by elevated temperatures. For example, fish populations are harmed in multiple ways - by increasing their susceptibility to pathogens, decreasing food availability, altering feeding activity and body metabolism, interfering with spawning, etc. The life histories and reproductive success of aquatic insects can also be adversely affected.

Increased water temperatures also impact the toxicity of chemicals that reach the stream. Again, nitrogen is a good example. Ammonia, an inorganic form of nitrogen, is present in water in one of two forms, un-ionized (NH<sub>3</sub>) which is relatively toxic and ionized (NH<sub>4</sub><sup>+</sup>) which has negligible toxicity. As the temperature of the water increases, more ammonia is converted to the un-ionized form, NH<sub>3</sub>. Thus, lack of a riparian buffer can be a double whammy in that more nitrogen gets into the water and more light on the stream means more is converted to the toxic form.

### **Winter Landscapes - Interesting and Sometimes Surprising**

We all like looking at the trees and shrubs that stay green all winter. You are likely familiar with some - Ashe Juniper, Live Oak, Agarita, Texas Mountain Laurel, etc. But have you ever heard of Lindheimer Silktassel (also known as Mexican Silktassel)? Walk the path from Blue Hole to Winters Mill Parkway and you'll see a cluster of large shrubs just before you cross Deer Creek. The plants almost look like invasive, waxed leaf ligustrum, but the leaves are not quite as thick and are shaped differently.



Interestingly, the individual Silktassel plants are either male or female. In the April/May timeframe, male plants produce light-green, drooping flower stems that resemble corn tassels and thus the name. The flowers on the females are inconspicuous, but develop into clusters of white berries that turn purple as they ripen. The shrub's thick, evergreen foliage is ideal habitat for birds who also feed on the fruit.



And what could be better than bright red against the greens, browns, and yellows of our Central Texas winter landscapes? Two native shrubs, Possumhaw and Yaupon Holly both produce a proliferation of red berries that are visible throughout the winter months. And good news! Given a tolerance for moist conditions, both shrubs can survive in the riparian zone. Like Lindheimer Silktassel, both are dioecious meaning individual plants have only male or only female parts. Only the females produce berries, a fact you need to be sure to consider when planting for winter color.

Possumhaw (pictured above) loses its leaves in winter, thus its scientific name is *Ilex decidua*. Possumhaw seems to like fence lines. So as you drive north on RR12 toward Dripping Springs or on Elder Hill road on your way into Austin notice how this delightful shrub stands out on the winter landscape. Yaupon Holly on the other hand (pictured on the next page) retains its leaves and thus some sources suggest it as great way to decorate a holiday table. The leaves and twigs of Yaupon contain caffeine and were used by American Indians to make tea. The tea was consumed ceremonially in large quantities followed by vomiting. Thus the scientific name, *Ilex Vomitoria*. Both Possumhaw and Yaupon Holly provide nourishment for a variety of wildlife. The berries provide sustenance for many of our winter birds and small mammals also



like to snack on them. In the spring, the flowers attract hummingbirds and nectar feeding insects while the foliage provides nesting sites.

Unfortunately, some things that are pretty can create big problems. That is true of a non-native plant often sold by commercial nurseries that also has colorful berries this time of year. Like Yaupon, Pyracantha retains its foliage all year long. But its red and sometimes orange berries are more clustered and have a distinctive black spot on the end opposite the stem. Pyracantha typically grows into a tangled mound up to 10 feet high and 12 feet across. Also called Firethorn for obvious reasons, the shrub is armed with thorns hidden in the leaves and the puncture wound they leave when touched can become inflamed and painful. Not all non-natives are invasive. But Pyracantha is as birds like the berries which they disperse into natural areas where these large plants crowd out desirable natives.

Variations in winter temperatures can create pleasant surprises on our winter landscape. Last winter freezing temperatures caused Frostweed to put on quite a show for us. This year, except for an early cold snap, has been relatively mild. We have also been blessed with an abundance of rainfall. In December, we had 5.62 inches of rain as measured by one of our area's Master Naturalists and the average temperature for that month was a balmy 53 degrees Fahrenheit. Thus, we are seeing another kind of anomaly, spring flowers in January like this delightful little Windflower seen at Blue Hole.



### **Upcoming Events/Opportunities**

#### **Living in Harmony - Land, Water, Plants and Wildlife Library Speaker Series**

Settlers to Subdivisions - Tuesday, February 13, 6:00 PM, Wimberley Library Meeting Room

People have long been drawn to the natural beauty of the Wimberley Valley - first native Americans, then Spanish explorers followed by settlers from the southern states. In the process, they have left their mark on the landscape through poor agricultural practices, over-grazing, the War on Cedar, etc. Hays County Master Naturalist La Ray Geist will share his extensive research on the Lone Man Creek watershed tracing land practices back through time starting with the original land grants and will talk about how increasing land fragmentation poses new threats that require neighborhood cooperation.

The Riparian Recovery Network News is a periodic Hays County Master Naturalist publication covering topics of interest to the Riparian Recovery Network community. Please share this newsletter with friends and neighbors who would enjoy information on restoring and enjoying their riparian zone. Send any questions you might have or ideas for future topics to [riparian@haysmn.org](mailto:riparian@haysmn.org). And, if you are not currently on our mailing list, use this same address to request



