

Riparian Notes

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Myth Number 5

The removal of riparian trees is a good way to increase streamflow

Seven common myths and misperceptions about creeks and rivers are being addressed in this series. When our natural resource decisions are based on misinformation, we are more likely to make poor decisions. When misunderstandings are clarified, riparian managers are in a better position to make good management decisions.

Myth Number 5 has been one of the more commonly held misunderstandings about creeks and rivers for well over a half century. The logic goes like this: The banks and floodplains of many rivers are lined with trees, which have their roots in the alluvial water table. These riparian trees and shrubs use a significant amount of water. Therefore, if these trees are removed, then the volume of flow in the creek or river should necessarily increase. It sounds logical, and has been tried on many different creeks and rivers across the U. S. and the world.

A great deal of work was done in the 1950's, and even going back to the 1930's to increase streamflow by the removal of woody plants. Much of this was initially aimed at willow, cottonwood and associated species, but now, the target is mostly non-native species such as salt cedar. In some cases, this practice worked, at least to some degree, but the improvement if any, was usually temporarily. Experience and hindsight has taught us that the long-term effect has often been the opposite of the intent.

The problem with this approach is that it is short sighted. Trees and brush growing in the riparian zone were incorrectly blamed as the reason why creeks and rivers were drying up. Little or no thought was given to the more complex real reasons for diminished flows. People have the tendency to seek simple quick-fix solutions to complex problems and often without considering the side effects and consequences of their actions. Quoting H. L. Menken – *“For every complex problem, there is a solution that is simple, neat and wrong”*

One prime example of the long-term effects of riparian brush removal took place on Bear Creek in central Oregon, in a 12-inch precipitation zone. The banks and floodplain of Bear Creek once supported a thick stand of willow and water birch. Old cowboys recall that they could hardly ride horseback along the creek due to the density of willow brush. In an effort to increase the flow during a drought period, a government conservation agency sprayed the brush in the 1950's. Any increases in flow that may have occurred were never documented, but other consequences of removing the brush can still be seen today.

In 1964, heavy rains occurred across the region producing heavy runoff and flooding. Without the trees and brush to help dissipate floodwater energy, and without the willow roots to hold the banks and channel in place, Bear Creek experienced extreme erosion. The channel cut down as much as 8 feet in places, to bedrock. The amount of soil lost along Bear Creek in one season of heavy rain was astronomical and catastrophic. The creek channel that was once held in place by willow roots was blown out in a single season of heavy rainfall. In later years, the creek channel continued to erode laterally, getting wider and wider each year.

When creek channels downcut, alluvial water tables are drained. When water tables are drained, base flow ceases, and perennial creeks become intermittent or ephemeral. As riparian soil is lost to erosion, there is a corresponding loss in water storage capacity in the banks and floodplain. The immense water holding capacity of intact riparian soils is often called the “riparian sponge”. That sponge is held in place by the roots of riparian plants, including trees, shrubs and herbaceous vegetation. Disruption of riparian vegetation increases the risk of erosion.

The removal of riparian trees often has the exact opposite effect as intended. While there may be a temporary increase in flow after removal, the long-term effect is often loss of the water table due to down-cutting and loss of water-storing sediments in the floodplain. Instead of increasing the amount of flow in creeks, this practice often reduced base flows, accelerated erosion and increased the intensity of downstream flooding.

Across the west, there are numerous other well-documented cases of severe erosion, draining of water tables and loss of floodplains due to removal of riparian trees and shrubs. Fortunately, the practice is less common than it was in the past; yet some misguided people still advocate this technique.

Thanks to Wayne Elmore, former leader of the National Riparian Service Team for searching out and documenting the history of Bear Creek. For more information: <http://www.blm.gov/or/programs/nrst/index.php>
For previous issues of Riparian Notes: <http://texasriparian.org/riparian-education-program/riparian-lessons/>