

Riparian Notes

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The Riparian Sponge – Bigger is Better

There is no greater social or political or economic or biological issue in Texas than water. Many folks have put their water hopes in such grandiose plans as reservoirs, inter-basin transfers, pipeline projects, brush control, desalinization and other such “solutions”. Yet, there is another large and mostly unrecognized source of water that can be developed in nearly any part of the state.

One of the attributes of a properly functioning riparian area is the sponge effect and water storage capacity within the riparian area. This does not refer to water storage in the creek channel itself, but water detention in the land. This large absorbent sponge of riparian land will soak up, store, and then slowly release water over a prolonged period. This riparian sponge can be managed in a way to greatly increase and improve this storage or it can be managed in a way to decrease and degrade water storage.

The best example to illustrate the riparian sponge effect is from Bear Creek in central Oregon (12 inches annual precipitation; 3500 feet in elevation). Veteran riparian specialist Wayne Elmore has observed, measured, photographed and followed the changes in this creek for the past 28 years. Prior to 1976, the area received no specialized grazing management. As a result, the riparian vegetation was sparse and inadequate. Creek banks were actively eroding and the channel was cutting down. Flow was intermittent and no fish life could exist. During runoff events, the volume of sediment was high. ***The size of the riparian sponge was only 3.8 acres per mile of stream and this sponge was storing less than 500,000 gallons of water per mile*** – far below its potential.

Following a change in grazing management, including several years of rest, the riparian area began to respond. In 1985, a specialized grazing plan was implemented to continue the recovery of the area – both the uplands and the riparian area.

By 1996, riparian vegetation was full and thick. ***The riparian sponge had increased to 12 acres per mile and this sponge was now storing 4,000,000 gallons of water per mile.*** The improved riparian vegetation was now filtering and capturing sediment and the streambed was raised by 2.5 feet. An 8 fold increase in water storage! Side benefits were a return of perennial flow and the return of fish. The rancher has benefited too, with a tremendous increase in riparian vegetation and greatly increased grazing capacity. Now the vegetation is properly grazed in a sustainable manner and riparian functions are maintained.

Just think, 12 acre feet of water (4,000,000 gallons) being stored in the banks and the riparian floodplain on each mile of the creek. This water is absorbed during periods of runoff, stored in the riparian sponge and then slowly released for continuous flow in between runoff events. The shallow aquifer is being continually recharged. This natural phenomenon can be duplicated on thousands and thousands of miles of creeks all across Texas. While each creek is different, the principles of riparian management and restoration work in Texas just as they do in Oregon and other places.

The key to building a bigger and better riparian sponge starts with the right kinds and amounts of vegetation. If grazing is continuous or if livestock are concentrating their grazing in the riparian area, a change in grazing management is recommended. Fencing to create a separate riparian pasture can alleviate these problems and allow appropriate management. In some cases, a complete rest from grazing for a few years is recommended to jump-start the recovery process. In other cases, a change in the timing and duration of grazing is all that is needed to allow restoration to begin. Rest during most of the growing season and light to moderate grazing during the dormant season will allow recovery in many cases.

Slowing the flow of water as it moves downhill and keeping water on the land longer is the key to good land and water management. Good stewardship by private landowners can be a critical link in helping solve the water problems of Texas.