



Photo by Kevin Huffaker and Audra Moore

This photo of the beautiful, cypress-lined Blanco River was taken near the Burnet Ranch River Park before the flood.

THE BLANCO RIVER FLOOD

The Healing Has Begun

Article by STEVE NELLE

The river giveth and the river taketh away. This is the blessed and cursed truth of living near rivers. Riverside landowners have now experienced the best and the worst of the Blanco River.

The TWA family grieved over the losses that many families suffered during the catastrophic Blanco River Flood of May 2015. Our thoughts and prayers were with them. The human loss, emotional pain and financial devastation were tragic and heartbreaking. In a sense, we all suffer when we try to identify with those who have been through such a nightmare. Fortunately, from a human and an ecological viewpoint, the healing process has begun.

Rain Bombs in Flash Flood Alley

The Hill Country is notorious for terrible floods that can happen with little warning. According to veteran hydrologist Raymond Slade of Austin, "Rivers in central Texas are among the flashiest, most flood-prone, and highly variable rivers in the world." Slade and others studied 256 Texas floods that occurred from 1853 to 2002. They noted that about half of these floods were along the

Edwards Plateau. This region holds six of the top worldwide records for rainfall amounts received within 48 hours or less. Earth scientists have come up with a descriptive name for these monster flood-producing storms: "rain bombs." No wonder the area is called Flash Flood Alley.

The reasons why this area is unusually prone to flooding are well known. First, the soils are typically thin and rocky, and cannot absorb or retain much water. Secondly, the rolling to steep topography causes fast runoff and less time for infiltration and attenuation. Third, is the proximity to the Balcones Escarpment, the first major rise in elevation for moisture laden air from the Gulf of Mexico. Along with cooler air from the north, the orographic effect of lifting and cooling incoming moist air masses causes heavier and more prolonged rains along the escarpment. These three factors work in combination to increase the frequency and severity of floods.

Floods of this enormity should not be a surprise to anybody in the Hill Country. They can happen on any stream at any time, and the law of averages says that catastrophic floods will occur sooner



or later on every Hill Country stream. The 100 year floodplain means very little in the context of these catastrophic floods. Many of the floods of the last century exceed the 100 year flood discharge by a large margin.

If you live on the Gulf coast, you should be prepared for hurricanes. If you live in certain parts of California you should be prepared for earthquakes, wildfires and mudslides. If you live in Flash Flood Alley, be prepared for floods. Although the probability of a great flood hitting a particular spot in any given year is low, the chance that they will someday hit any area is high. The secret is not dodging the bullet; the secret is to know it is coming and minimizing your exposure and risk.

The Perfect Storm

May 2015 was one of the wettest months in history. After several weeks of heavy rains across the Hill Country, the thin saturated soils could absorb no more water. By the time Memorial Day weekend arrived, any new rain quickly became runoff regardless of the vegetative cover. With no place to soak in, runoff was quickly funneled into creeks and rivers. Starting on Saturday, May 23, southern Blanco and northeastern Kendall Country received 10 to 13 inches, most of which poured directly into the Blanco River and its upper tributaries.

By late Saturday night, the Blanco began to rise. To make matters worse, the rainstorm was moving downstream following the peak in the river, causing flood levels to rise even faster and higher. The Blanco River at Wimberley rose 35 feet in only four hours. Just prior to midnight, the river was rising five feet every 15 minutes.

The peak of the flood occurred at about 1 a.m. on Sunday, May 24, cresting at 40.2 feet at Wimberley, or 27 feet above flood stage. At this time, the discharge was measured at 175,000 cubic feet per second, an all-time record for the Blanco. At this rate, the discharge would have been enough to completely fill Canyon Lake from empty in just 27 hours.

Are We to Blame?

Some well-meaning environmentalists and natural resource professionals have made claims that the flood was made worse by poor land management practices. Some have even suggested that the damage and destruction would not have occurred if the

watershed and riparian area were in better condition. Some journalists have picked up on this sensationalism. *Newsweek* headline, Sept. 13, 2015, "Blanco River Flood Exacerbated by Manicured Lawns on the Riverbanks."

Hydrologists and flood scientists such as Raymond Slade and others, strongly refute these opinions and allegations. They say that this flood was a natural occurrence in a flood prone area and that the condition of the watershed and riparian area had no

effect on the peak discharge or the height of the flood. When 10 to 13 inches of rain falls in several hours on steep topography composed of thin, pre-saturated soils, catastrophic flooding is inevitable.

No doubt land cover and land condition plays an important role in the water cycle. On lesser rain events under more normal conditions, watershed management and riparian condition can help mitigate flood damage. This rain bomb event overwhelmed the natural water-slowing



The flood caused extensive damage to many miles of riverbank. In some places, severe bank erosion has doubled the width of the channel.



Thousands of mature cypress trees were either broken, or uprooted by the flood. It will be many years before the cypress will once again line the banks.





Hundreds of thousands of tons of gravel were moved and deposited to new locations by the flood. Recovery of vegetation on naked gravel bars is likely to be slow.

and water-absorbing characteristics of a healthy watershed. The best science developed by professional hydrologists tells us that storms such as this will produce massive flooding regardless of watershed or riparian conditions.

The Beloved Cypress

Bald cypress is the signature tree of many Hill Country creeks and river. Cypress adorns and defines these streams more than anything else. Hill Country residents, landowners and visitors all revere the

cypress-lined rivers.

Riparian experts explain that the strong bulwark of cypress roots helps stabilize the channel, reinforce the bank, slow down the water and reduces flood energy. For normal floods, this is all true. Cypress is extremely strong rooted and able to resist the forces of most normal floods. But the Blanco River flood of 2015 was not a normal flood. Even the cypress was no match for the energy of this massive flood. Large cypress trees that had withstood other mighty floods

were uprooted, bent or broken in half. Some survived, but many were washed downstream.

In addition to cypress, many miles of the Blanco also had healthy, diverse riparian areas with sycamore, pecan, walnut, elm, maple and other native trees and shrubs. Underneath and in between the tree canopy, much of the river had a cover of stabilizing riparian grasses including switchgrass, eastern gamma grass, Emory sedge and sawgrass. This flood was of such



Ironically, one of the benefits of the flood was the addition of thousands of logs and downed trees to the banks and floodplain. Logs such as this will form new stronger bank as new soil material is deposited behind the log.



In almost miraculous fashion, grasses have made a remarkable recovery along some portions of the river after only five months following the flood.





Button bush is one of the strongest rooted riverside shrubs. Many of them re-sprouted after the flood and have flowered and made seed. Button bush flowers are a favorite source of nectar for butterflies.



Clammy weed is one of the most common “pioneer plants” that is now colonizing new sand deposits along the river. It represents the first step in healing.



Where flood energy was the greatest, nearly all riparian vegetation was swept away. Here, a small remnant clump of Emory sedge survived.



Many native riparian grasses survived the flood by lying over, but the root system survived. Inland sea oats is one of the important riverside grasses and is already making seed.



Many of the older sycamore trees were uprooted and swept away by the flood. A few baby sycamore trees have begun to grow.

Ten Historic “Rain Bombs” in Central Texas Flash Flood Alley

Year	Location	Amount and Duration
1978	Medina	48 inches in 3 days
1932	Kerrville	35 inches in 2 days
1921	Thrall	32 inches in 12 hours
1998	San Marcos	30 inches in 2 days
1952	Stonewall	26 inches in 2 days
1935	D’Hanis	22 inches in 3 hours
1913	Montell	20 inches in 19 hours
2007	Marble Falls	19 inches in 8 hours
1972	New Braunfels	15 inches in 5 hours
1936	Junction	14 inches in 3 hours



Despite the immense damage of the flood, beauty is easy to find along the river. Here, white top sedge and mist flower are growing just inches from the edge of the river – a testament to the resiliency of nature.



an enormous magnitude that even many well stabilized and naturally vegetated banks were badly damaged.

Paradoxically, the loss of thousands of cypress and other trees can actually help the recovery and future stability of the river. For decades, river scientists have known that large logs and downed trees play an essential role in river stability. The wood helps dissipate energy and slow the water. The logs function as large strong retaining walls to help build and support new banks. As the wood is eventually buried by future floods, it reinforces the banks and floodplain, similar to rebar in a foundation.

The many large piles of woody debris deposited by the flood are also important for riparian recovery. These piles will be the places where new tree seedlings begin to grow. Here is where seed and new sediment will be caught and where the young seedlings will find protection from deer and livestock. Landowners are urged to retain these woody debris piles which serve as nature's way of starting the next generation of trees.

Thinking Like a River

A river is much more than just the normal gentle flow that we see most of the time. A healthy, functional river system depends on periodic floods of all sizes to maintain and perpetuate itself. Flooding is not something bad that happens to a river; it is a necessary part of the river.

Rivers must be given plenty of room. Rivers must have room to flood, room to meander, room to erode, room to deposit their loads, room to remove weakened banks and build new ones. The natural dynamics and natural function of rivers requires that they be given plenty of room. When manmade structures are placed in the river's territory, conflicts will ultimately occur. Everything in the river bottom is eventually moved; nothing is permanent. It may take a century or it may happen this next spring, but everything will be moved.

Obviously, from a human perspective floods can be very bad including loss of life and loss of property. However, most of this loss is preventable if we avoid building homes, cabins and businesses in the pathway of floods. This flood should be a sobering reminder to be extra conservative and extra cautious when making future



Riverside areas that were in good condition before the flood will usually heal up faster and better. Here, a full thick re-growth of Emory sedge along the lower Blanco is already covering the bank.



Two weeks after the flood, this bank of sawgrass along the upper Blanco remained intact. Sawgrass is one of the most strong-rooted stabilizer plants in the Hill Country.

building and development decisions. The advice given by Slade is straightforward: "Stay out of the 500 year floodplain."

We all love rivers and we love to live, work and play near them. However, this nearness comes at a high cost. Rivers are best loved from a safe distance. We can come down and enjoy them when they are gentle, but we must not reside too close.

Nature is Resilient

Following any catastrophic storm or natural disaster, people and nature both suffer incredible loss. The emotional and

ecological pain was extreme and the wake of destruction immense. However, despite the devastation, both nature and human nature are resilient. Healing begins and the pain diminishes little by little.

In many areas, riverbank and floodplain recovery is already occurring naturally and at a remarkable pace. In other places natural recovery will be slow. Riverside areas will heal on their own, but in some cases, the process may be too slow from the human perspective. Some landowners have chosen to take a more active role in





Along the upper Blanco where the flood was less severe, switchgrass, Indian grass, eastern gamma grass and others have made an amazing recovery.

river restoration. Planting of native, strong rooted grasses, sedges, shrubs and trees has begun on some properties and will continue this spring. Commercial growers are busy producing large quantities of native riparian seed and containerized plants to help hasten the healing process. Rivers heal up better and faster if they were in good natural condition before the flood. Riverside land that is manicured like an urban landscape will take longer to heal up.

The flood reset and redefined the benefits and risks of living near the river. Hopefully the flood also causes some serious and thoughtful introspection about our relationship to the river and how we can seek to enjoy the river in a different, better and safer way.

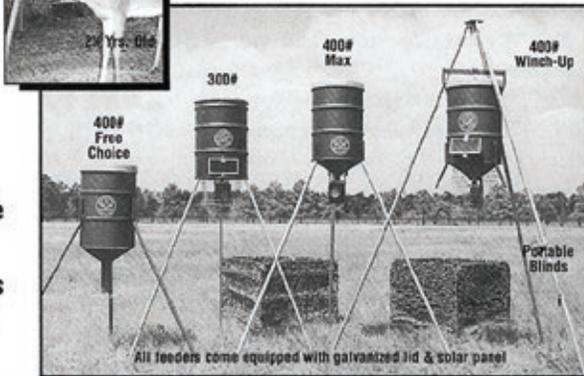
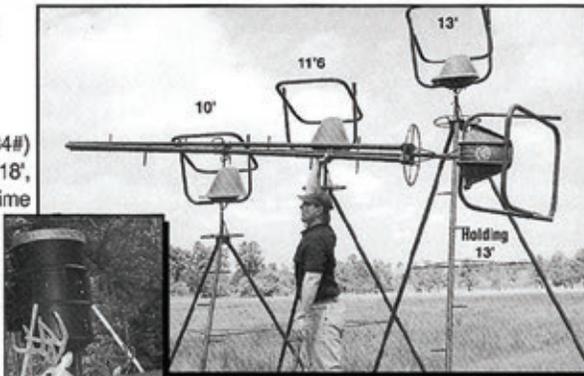
The Blanco River, like all other Hill Country rivers is both beautiful and awful; these two conditions can be only hours apart. The Blanco River will once again be beautiful; but it will be a different kind of beautiful for many years, and there will be scars to serve as reminders.

Thankfully, the next flood and the next flood after that will almost certainly be smaller less powerful events. But sooner or later, another mighty flood will come down the Blanco and every other Hill Country river. 🌪️

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