WATERSHED WEEK IN REVIEW





Twenty Years Ago

Former Alliance President Scott Richardson came across this photo of a canoe trip with his father down the South Llano River at the State Park.

Scott recently returned to take a new photo 20years after and shares some of his observations from enjoying the river for the past 40 years.

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The Water We Cannot See

By Vanessa Puig-Williams -Environmental Defense Fund

Groundwater in Texas is the source of about 60%

of the state's annual water use. This vital water supply also provides an estimated 30% of the flow in rivers across the state — and even more during droughts.

With the state's

population booming and its climate ever more susceptible to drought, underground aquifers are increasingly vulnerable to overpumping in Texas. That's a huge risk to farmers, ranchers, big cities, small towns and wildlife. It also threatens the rivers and streams that the state is trying to protect.

Beneath the Surface [PDF], a report by EDF, outlines five major groundwater management challenges facing Texas in an effort to build a foundation for meaningful advances to more sustainable groundwater management in the state.

Editor's Note: EDF was our original partner in the formation of the Alliance and have a long-history of working on solutions to Texas' water issues.



Two Photos and 40 Years of Observation of the South Llano River



By Scott Richardson

The two labeled photos were taken from approximately the same point on the South Llano River at the Main Day Use Area in the South Llano River State Park, but nearly 20 years apart. The first was taken in April, 2001 and the second in February, 2021. From the photos one can see changes that have occurred during those 20 years in both the morphology (the shape of a river channel), the vegetation of the riparian area, and the flow of the river. These changes tell a story or illustrate much of what I've observed



40 Years...South Llano

First, let's compare the two photos and see what the comparison shows us. The capital letters "A-D" on both photos are marking the same natural reference points that can be found in both photos. For example, if you look closely at the branching of the tree in both photos, labeled "B", you will see that it's the same, indicating that this reference point is the same in both photos. The tree labeled "C" in the 2001 photo is the same as the large stump labeled "C" in the 2021 photo. If you look closer you will find additional trees that are in both photos. The "D" is between two of these trees. The point labeled "A" in both photos is not a tree but a depression along the top edge of the cut bank. This depression is actually an outlet for a drainage coming from the south. These labeled points help us orient the two photos for comparison.

By comparing the two photos one sees how erosion and deposition change the morphology of a river over time, specifically in a growing meander or curve in the channel. On the right side of the channel, deposition is creating a growing "point bar" or what we might call a gravel bar. Where on the left side, erosion is creating an expanding "cut bank." These together are a natural process in the aging of a river, creating new flood plains and channels. However, when things are out of balance the results can be excessive erosion along the cut bank in order to dissipate the energy from floods. This imbalance can be the result of several factors including natural ones, such as the severity of a flood due to rain event, and land management practices along the river and in the uplands.

Now let's compare vegetation in both photos or in other words let's look at the health of the riparian area in both photos. Both the "point bar" and the cut bank side have much more vegetation in the 2021 photo compared to the 2001 photo. Both banks now have a good stand of Baccharis willow and immature Sycamore trees, along with other desirable plants, and the cut bank is less vertical and has more of a slope. From my observation the amount of vegetation was about the same just over 2 years ago and before the devastating October 2018 flood occurred. This probably helped dissipate the energy from the flood in this area. So, this riparian area in 2021 with increase vegetation could be considered more functioning and healthier than the same riparian area in 2001.

The other change in vegetation one can see is that of the understory of the trees. Note how open and clear it looks under the trees in the 2001 photo compared to the 2021 photo. Most of the understory you're seeing in the 2021 photo is Honey mesquite and immature cedar. Over the past 20 years due to heavy browsing by both overpopulated whitetail deer and especially Axis deer, there is practically no regeneration of the more desirable pecans, oaks, etc. TPWD is beginning to address this by protecting both existing immature and newly planted desirable woody species, as well as holding public hunts for both species of deer and hogs. This is part of a larger natural resource plan for the park, which will also include prescribed fires overtime. Otherwise up and

and down the river these mature desirable trees are dying from old age and disease and unless addressed, the lack of regeneration could eventually lead to what's called a climax forest of Mesquite and Cedar.

Beyond the changing morphology and vegetation in the two photos another visual difference is the flow or the amount of water coming down the river. The 2021 depicts a much smaller shallower channel with less water. This visual observation might be considered subjective, but when one

looks at the USGS recorded flows of the river over time it can be found that the normal or average flow is roughly half of what it was around 2001.

How did we get to where we are today along the South Llano River? From my observations and what I've learned from experts over the past 40 years it's a combination of natural processes, weather patterns, and land management practices. My wife and I began paddling down the South Llano in 1981 about a year after we moved to Kimble County from Arlington. So, we were novices and naive to it all. To us in those first 20 years it was a very clear, well flowing river with a gravel or clay bottom. The river frequently formed new single or multiple channels flowing amongst bare gravel bars. We learned later that what we were experiencing would be called a scoured river with braided channels, indicating a river trying to heal itself.



During and prior to those years there were at least 1-2 major rises on the river every year or two, due to major rain events within the watershed. So, channels and gravel bars would change each time. To us this was great because we would experience a different river every year or so, not knowing what these changes meant to the health of the river. About the only vegetation we'd see on the frequently moving gravel bars were mature and dying Sycamore trees.

We can't do much about the weather, but we can temper its effects by learning more of the science related to these changes and applying good land management practices to the watershed. Our observations over the years have helped our understanding of the changes we've seen in the river and the watershed, but a much better understanding came from our involvement in various organizations related to natural history and specifically to the watershed and riparian of rivers. Through our participation with organizations, such as Texas Master Naturalists, the Llano River Watershed Alliance, Friends of the South Llano River State Park, and many others we've been fortunate to have been exposed to and learned from knowledgeable experts, who are passionate about our natural history of our rivers and watersheds. There are many more land owners and users on the South Llano River today and throughout our watersheds, so our impact on the natural processes of the rivers and watersheds are greater than ever. Let's all try and do the best we can at keeping our rivers flowing and clean.

Got Axis?

2021 AXIS DEER CONTROL PROJECT: DROP-OFF LOCATIONS



PARTICIPANTS WILL BE ENTERED INTO A DRAWING FOR PRIZES FROM LOCAL BUSINESSES LOWER JAW BONES SHOULD BE BROUGHT UNCLEANED (I.E. GUM & MUSCLE TISSUE INTACT) AND FROZEN IN A BAG LABELED WITH THE GPS COORDINATES, SEX, AND DATE HARVESTED. IF GPS COORDINATES ARE NOT KNOWN, PLEASE INCLUDE THE NAME OF THE NEAREST TOWN AND PUBLIC ROAD INTERSECTION~

FEB 12TH (1 PM - 3 PM) AT BANDERA COUNTY RIVER AUTHORITY IN BANDERA FEB 18TH (9 AM - 5 PM) AT BLANCO COUNTY AGRILIFE EXTENSION IN JOHNSON CITY FEB 19TH (9 AM - 5 PM) AT BLANCO COUNTY AGRILIFE EXTENSION IN JOHNSON CITY FEB 19TH (1 PM - 3 PM) AT BANDERA COUNTY RIVER AUTHORITY IN BANDERA

FEB 22ND (9 AM - 12 PM) AT TEXAS TECH UNIVERISTY LLANO RIVER FIELD STATION -ADMIN BUILDING IN JUNCTION

FEB 23RD (9 AM - 12 PM) AT TEXAS TECH UNIVERISTY LLANO RIVER FIELD STATION - ADMIN BUILDING IN JUNCTION

 FEB 25TH (9 AM - 4 PM) AT TPWD OFFICE ON CHURCH STREET IN NEW BRAUNFELS FEB 25TH (1 PM - 4 PM) AT CIBOLO NATURE CENTER IN BOERNE
FEB 26TH (1 - 3 PM) AT BANDERA COUNTY RIVER AUTHORITY IN BANDERA
MARCH 10TH (9AM - 5PM) AT GILLESPIE COUNTY AGRILIFE EXTENSION IN FREDERICKSBURG

THE GOAL OF THE AXIS DEER CONTROL PROJECT IS TO RAISE AWARENESS ABOUT THE IMPACTS OF FREE-RANGING AXIS DEER, RECOGNIZE LAND STEWARDS FOR THEIR EFFORTS TO CONTROL THIS EXOTIC SPECIES, AND SUPPORT RESEARCH THAT WILL INFORM CONTROL EFFORTS. www.hillcountryalliance.org/wildlife