

A Vision of Trees

Article by **BONNIE J. WARNOCK, PH.D.**

Photos courtesy of **DEPARTMENT OF NATURAL RESOURCE MANAGEMENT, Sul Ross State University**



The best time to plant a tree was 20 years ago. The second best time is now.
 ~Chinese Proverb

The cottonwood and willow restoration project on Terlingua Creek on the O2 Ranch in Brewster County began with a vision. The Lykes family and their foreman, Homer Mills, envisioned a healthy riparian area with stands of cottonwood and willow, shade and cool water in the middle of the Chihuahuan Desert.


To bring that vision to life they reached out to Sul Ross State University and decided to partner with me, then a young Assistant Professor. I shared their vision and saw the possibilities and the potential of restoring Terlingua Creek and its tributaries. That was 14 years ago.

When I first saw Upper Terlingua Creek there were a few live cottonwoods (*Populus fremontii* ssp. *mesetae*), giant trees left from the past. They had survived harvest by early settlers and had weathered countless floods, but they were not reproducing. The spring season did not bring masses of cotton containing seeds floating on the wind and catching on sandbars along the creek channel.

Cottonwoods are dioecious with male and female trees. The male trees tend

Cottonwoods and willows planted from pole cuttings, thrive along Terlingua Creek. Debris captured at the bases indicate that they have weathered the first flood event of the year.

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to be hardier and longer lived, and if you buy one at a nursery it is probably a male. Females produce cotton, and both are necessary for viable seeds. All the surviving trees on Terlingua Creek were male trees. There was no hope of reproduction and a sustainable population without planting trees.

So the focus of the project turned to growing and planting trees. Over time we have learned the challenges of restoration in the desert, made mistakes, corrected those mistakes, tried different techniques, and seen success. But this is a slow process. It was two years before we had the first tree survive to see the next year.

One of the first things we learned from the process is that locally adapted trees are important. We had no survival of cottonwood cuttings taken from populations that were further north or at higher elevations than Alpine. We needed trees that were adapted to the hotter drier environments of the lower elevation deserts and grasslands.

Through trial and error, we developed two successful techniques for establishing cottonwoods along Terlingua Creek. The first is based on growing cottonwoods from seed. We collected cotton from local trees focusing on the Alamito Creek watershed and the springs in Brewster County. I learned quickly not to try to get the seeds out of the cotton. They are tiny brown specks held tightly in the cotton, a giant tree in a seed the size of a sand grain.

HOW TO SUCCESSFULLY GROW COTTONWOODS FROM SEED

- Fill a flat with sand or a seed starting medium.
- Lay the cotton across the surface and water it well.
- Keep the tray warm and moist.
- Once the seedlings germinate use a spoon or scoop to pick up each seedling and transplant to a tree pot.
- Keep moist and grow in the pots until late summer or early spring of the next year.
- Plant in a sandy area with moist soil year round.

The second technique creates clones of a cottonwood tree from cuttings. This is a great technique to quickly establish trees but you must be cognizant of the



A cottonwood that is approximately 8 years old, grown from seed, with a row of pole cuttings of willows less than 2 months old.

sex of the parent tree. The cuttings will be genetically identical to the parent tree. For the restoration, we took cuttings from Terlingua Creek and Alamito Creek.

HOW TO SUCCESSFULLY GROW COTTONWOODS FROM CUTTINGS

- In the early spring, before cottonwoods begin to leaf out, find a healthy stand of cottonwoods that has a variety of age classes.
- Cut poles from softwood or semi-hard wood that is less than 2 years old for best rooting. Look at the bark to determine this factor. You want smooth bark on the stem with no evidence of bark thickness. You will see multiple buds along the stem. Poles can range in size from ¼ inch to 2 inches in diameter.

- Once you have selected a pole to cut, make a 45 degree cut straight across the branch. Do not include any older wood in the cut.
- Soak the cut poles 1-2 days in fresh water.
- To plant, dig holes 1-3 feet deep until you reach saturated soil.
- Trim the pole to fit the depth, making sure that you have at least three buds above the soil surface and the base of the cutting in the saturated soil.

Another lesson learned was on timing of planting. Although summer provides the most moisture for growth, this season is problematic for seedling survival. Young transplants did not have the root systems to survive high water flows and washed out of sand banks.





Sul Ross students plant willows and cottonwoods in Terlingua Creek.

Survival was highest with late spring planting. For cuttings, planting must be done in early spring. This can decrease the good planting habitat area as the riparian water table can be at its lowest in the spring prior to the monsoon season.

Protection from herbivory is key for cottonwood seedling survival. Young plants are highly palatable to both wildlife and livestock. Waiting to plant seedlings until after growth initiated on forbs and shrubs provided alternate forage for deer and decreased herbivory but gave enough time for root growth before high water flows in most years. Young plants may need to be protected by cages if alternate forage is sparse. Exclude livestock during the late spring and summer months from riparian areas and springs to allow for cottonwood seedling and cutting growth.

The final lesson learned from this project is how important collaboration is for long-term success. Lykes Bros. Inc. has collaborated with many agencies and groups to move the restoration project

forward. The Department of Natural Resource Management at Sul Ross State University has provided expertise, equipment and student volunteers for planting and cutting. This group not only plants trees along the creek but increases knowledge for future generations of natural resource professionals. Cost share funding and expertise has been provided through government agencies such as Texas Parks and Wildlife, U.S. Fish and Wildlife and U.S. Department of Agriculture.

Ranches throughout the region have provided access to harvest cottonwood cuttings and seed. Over the past two years, two major collaborations have moved the restoration forward. The collaborative project with World Wildlife Fund, with funding from Wildlife Conservation Society and the Coca Cola Foundation, and planting with Rio Grande Scientific Support Services focused on planting willows in two miles of creek channel. The second collaborative project, a Landowner

Incentive Program with Texas Parks and Wildlife with planting by the Department of Natural Resource Management at Sul Ross State University, increased plantings of both cottonwood and willow.

This collaborative process has created a success story along Terlingua Creek. To date we have planted over 2,500 cottonwoods and nearly 14,000 willows. The first successfully planted cottonwoods are now 12 years old and are successfully reproducing. The first seedling from seed produced by trees on the creek was recorded in 2012. Cottonwoods and willows now grow along more than eight miles of Terlingua Creek and its tributaries.

We still share a vision of trees, but now that vision has expanded to other riparian species such as Eastern gamma grass and button bush that need the habitat provided by the trees. There is conversation about Rio Grande Turkeys and Zone-tailed Hawks, and maybe, in another decade, habitat for fish and fishermen. ☺

