

South Texas Natives

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South Texas Natives Update

*Paula D. Maywald, Coordinator
South Texas Natives*

The year 2002 was one of rapid growth! In brief, we have over 29 grass species and 8 forb species in production at the E. “Kika” de la Garza Plant Materials Center. Due to project growth, we have expanded into a new greenhouse on the Texas A&M University-Kingsville campus. In addition, a drip irrigation system is being installed near campus to aid with seed production. Two Texas Department of Transportation demonstration projects are underway on Highways 1017 and 77. Pogue Agri Partners and Bladerunner Farms are new project partners, helping to broaden seed production in different soils, and to minimize potential crop losses by localized storms or other threats.

Experiments are now being conducted on seed coatings. Seed coatings facilitate planting for chaffy seeds or those with awns or bristles, protect seeds from competition, and provide added microbial and nutritional assistance. We have also partnered with The Nature Conservancy of Texas to establish a permanent shrub nursery and seed bank at Southmost Preserve in the Lower Rio Grande Valley. An economic impact study funded by Bank of America, and a bilingual restoration handbook sponsored by Ken Leonard and Reliant Energy, will be completed this fall. And, educational seed collection field trips for youth continue thanks to Bank of America. *South Texas Natives* is making a difference! Thank you for your continued support.



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The Bush family, including Shannon, Christopher, Bennett, and Eleanor.

The Complexities of Stewardship

*Shannon Wood Bush
Madero Cattle Company*

When approached to write this article, trying to figure out the best angle was a most perplexing problem. After thinking about it for a while, it suddenly came to me. Over Thanksgiving weekend, while walking around a ranch in Jackson County, I realized there was a noticeable lack of native grass spe-

cies that I have been monitoring and collecting in Refugio and Goliad counties. I began to think about the differences in the ranch my husband Chris and I have versus the ranch I was visiting. Grazing, brush control, environmental concerns, and overall management practices were opposite of that practiced on our ranch and it showed.

Managing a ranch involves many complex issues, based on environmental, financial, governmental, and historical variables. Stewardship of the land means mak-

ing all facets concerning the land (i.e., grazing, hunting, farming, oil and gas activity), work together and balance out. It is part usage and part conservation/preservation. The cultivation and use of native plant species is taking on a greater role in our range management practices by forcing us to think about what is in the ranch's best interest.

It is popular for groups and individuals far removed from the land to attack management practices and control of the environment. But economic realities such as property taxes have to be addressed and, in most cases, income has to be generated to meet these and other types of obligations. Misguided ideals and principles take over from common sense and feasibility. Like many issues, extremes from both sides can often cause more harm than good. Over-grazing or over-regulation can cause imbalance.

If you sit idly by and do nothing, the balance will become out of sync. If you focus on, or encourage one element over the others, the balance is disrupted. Being on the ranch every day puts us more in touch with all the variables: our goal is to see both the little picture and

the big picture and to be able to make the balance work. Over-grazing, brush issues, environmental concerns, and financial options need to be considered at every turn. Food plots are great for wildlife and cattle, but so are native species. There are many sites on our ranch that contain native species preferred by wildlife, almost like a special seed mixture was scattered around, only it did not cost us a cent and we do not have to replant next year.

It is very important to be able to identify and manage plant and wildlife species you have on your property. We have 2 young children and we get them involved with plant identification by making up funny nicknames for grasses we are collecting and make it a game. What animal eats what plants? Do deer eat this plant as well as cattle or does anything eat it? It's fun to see our 7 year old hold up the entire plant (roots and all) and ask if quail will eat it. It's all part of educating the next generation and fostering responsible values. Our 3 year old will proudly tell you some of the collection sites he has been to and that he "picked seeds." Our kids live their own biology class. What's that

worth? It's priceless.

When the land is disturbed by oil and gas activity, by knowing what kind of native plants are found in our area and what seeds are available, we can go back with the right species of plants that will benefit cattle and wildlife. The idea of letting the pipeline companies reseed with whatever grass seed may be the cheapest is now non-negotiable. In our recent leases and ROW agreements, these companies will reseed with grasses of our choice. Working with Paula Maywald and her staff gives credibility to the idea that some day, landowners will have a menu of native plants not only suitable for wildlife and cattle, but suitable for their geographic region.

We are currently working with a state university to co-op resources and to obtain a grant to study woody plants and their impact on the ranch. Our involvement means supplying the land, housing, some labor, vehicles, and access to computer and communication equipment.

Researching and gathering information has become second nature. Being directly involved means knowing what is taking place on your land. Buy the books (and USE them!), listen to the professionals, get involved with organizations like the Caesar Kleberg Wildlife Research Institute and Texas and Southwestern Cattle Raisers Association, and "take the tour." If you play a role in the management or use of the land, you need to know more about it. The rewards to you, your family, and the land will be well worth the effort.



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With a recent grant from Bank of America Foundation, we are now helping to educate students in South Texas about native plants and their role in the environment.

Shannon Wood Bush serves on the Advisory Group for South Texas Natives at the Caesar Kleberg Wildlife Research Institute, and is a member of the Institute's Quail Associates program. She serves on the Texas Parks and Wildlife Hunting Advisory Committee. Her husband, W. Christopher Bush, is the former President of the Refugio Underground Water Conservation District and a Director of Texas and Southwestern Cattle Raisers Association, serving on the Natural Resource Committee. Both are members of the Texas Wildlife Association's President's Council.

Tanglehead: Friend or Fiend?

Timothy E. Fulbright, Ph.D., Caesar Kleberg Wildlife Research Institute

Tanglehead (*Heteropogon contortus*) appears to be on the increase in South Texas, prompting concern on the part of some landowners and joy on the part of others. Tanglehead is a highly desirable native grass for livestock grazing and wildlife habitat, although it does have a few annoying traits for livestock producers. My first experience with tanglehead was in Big Bend National Park, where the reddish hue of its autumn foliage clothes the arid hillsides that have been protected from livestock grazing for half a century. I was surprised to find tanglehead when I came to South Texas because I associated it with the Chihuahuan Desert flora. After consulting A. S. Hitchcock's *Manual of the Grasses of the United States*, I discovered it is found throughout the world.

According to Hitchcock, tanglehead is considered a good forage grass in the southwestern United States. It is an important forage grass in the drier areas of the Hawaiian Islands, where it is called pili. Frank Gould and Thadis Box in *Grasses of the Texas Coastal Bend* noted "although tanglehead probably once contributed greatly to the composition of vegetation in the [Texas] Coastal Bend, it now persists only in well managed pastures. It is rated as a deceiver of excellent forage value." Dr. Fidel Hernández, a quail biologist at the Caesar Kleberg Wildlife Research Institute, suggests that tanglehead may be good quail nesting habitat because of its bunchgrass structure. Fidel mentioned that the late quail expert Val Lehmann referenced tanglehead as one of several grasses used as nesting cover by bobwhites on the King Ranch.

In South Texas, tanglehead flowers mostly during June through November. The grass provides palatable, nutritious forage from early spring until it flowers, but upon



© Timothy E. Fulbright, Ph.D.

American Snout butterflies on tanglehead.

flowering palatability declines. The grass produces long awns when it flowers, and the base of the floret, which contains the seed, has a sharp, hardened callus. These characteristics make tanglehead less palatable after it flowers because the callus may stick in the mouthparts of cattle and the awns interfere with grazing. They are particularly troublesome for sheep, and can reduce the value of wool. Tanglehead plants are very conspicuous late in the year because production of seed heads reduces grazing pressure on the plants, and other grasses that do not possess awns begin to receive the brunt of grazing pressure. However, it is important to remember that until the awns are produced, tanglehead provides forage that is as good or better than any grass on the range.

Despite their negative characteristics, the awns are a great competitive advantage for the grass. By adhering to the fur of grazing animals, tanglehead seeds are widely dispersed across the landscape. Tanglehead seeds plant themselves. Once the seeds fall to the soil, the awns twist and turn with changes in moisture, driving the seed with its

sharp callus into the soil.

Little research has been conducted on tanglehead in the United States because forage agronomists have focused primarily on introduced grasses such as buffelgrass, bermudagrass, and many others. More research has been conducted in India, where tanglehead is harvested for hay. In one Indian study, tanglehead produced 134% more hay tonnage than buffelgrass.

So why is tanglehead increasing in South Texas? Results of a study in Hawaii on competition between the native tanglehead and fountain grass, an introduced grass that is a close relative of buffelgrass, may provide some insight. The researchers found that fountain grass tends to out compete and replace tanglehead during wet years, but during dry years seedling establishment of tanglehead exceeded that of fountain grass because tanglehead is more drought tolerant. South Texas was in a cycle during the 1970s in which rainfall was well above the long-term average. Drought was common during the decade of the 1990s. The lower rainfall may have favored an

increase in the drought-tolerant native tanglehead. Unfortunately, the Hawaiian researchers found that once fountain grass became well established in an area, it maintained dominance over tanglehead regardless of moisture conditions.

Improved grazing management during the last 2 decades is probably another factor explaining the increase in tanglehead, based on the assertion by Frank Gould and Thadis Box that tanglehead decreases in response to heavy grazing. More education on the part of landowners has resulted in a reduction in cattle stocking rates on many South Texas ranches. Additionally, many ranches purchased for hunting are not grazed. This reduced grazing pressure has allowed tanglehead to make a comeback.

Increased tanglehead is an indicator of good management. Rather than alarm at its increase, ranchers should pat themselves on the back for good range management. More tanglehead means the range is more productive for cattle and wildlife.

Butterflies and South Texas

*Jeffrey Glassberg, Ph.D., President,
North American Butterfly Association*

Butterflies—what a wonderful bounty nature brings. They’re beautiful, they’re graceful, their wing patterns and shapes are as varied as the art hanging in galleries around the world, they don’t bite, sting or carry disease, and there are thousands of different kinds!



© Jeffrey Glassberg, Ph.D.

Jeff Glassberg visits South Texas often, as it has the greatest diversity of butterflies in the nation.

As a life-long butterfly aficionado, I could wax rhapsodic about how establishing an intense relationship with butterflies will enhance most aspects of your life, including your health and your love life, but here, I’m going to focus on the close relationship between butterflies and the plants that nurture them.

Most adult butterflies derive most, if not all of their sustenance from nectar they drink from flowers. The nectar is mainly sugar water, but also contains low levels of other nutrients. Some adult butterflies sip sap from trees and a few eat pollen as well. For most species of butterflies, the presence of flowers where they can obtain nectar is extremely important. In fact, in some cases the presence of sufficient nectar flowers is the most important factor determining the number of butterflies that can inhabit an area. So, establishing a butterfly “garden” may actually increase the number of butterflies on your land (see the free butterfly gardening brochures at the North American Butterfly Association website www.naba.org).

But remember, butterflies have a complex life cycle. Before they become adult butterflies, they are caterpillars. Without caterpillars there will be no butterflies. Butterflies in the caterpillar stage also use plants as a food source. But rather than drink the nectar in flowers, the caterpillars primarily dine on leaves and, in some cases, the flowers themselves.

Many gardeners have a strong antipathy toward caterpillars. However, the great majority of butterfly caterpillars do not permanently harm the plants. However, moth caterpillars are another story (*hey, I’m President of the North American Butterfly Association—I can make this statement*). Moth caterpillars tend to be more gregarious and more destructive than butterfly caterpillars, and because many moth caterpillars have catholic tastes in plants, they’ll eat a wide variety. In contrast, each kind of butterfly uses only very specific plants, sometimes

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“Butterflying” has become a popular pastime. Unlike birding, however, “close focus” rather than traditional binoculars are used to enhance the butterflying experience.

only a single species. Thus, butterflies are quintessential botanists. The females study our native plants, differentiating among even closely related species, then lay their eggs only on those plant species that will provide a tasty meal for their caterpillars. For example, here in South Texas, Definite Patches use only shaggy tuft (*Stendandrium barbatum*), while Xami Hairstreak caterpillars feed only on Texas sedum (*Sedum texanum*). How do they find the right plants? Well, like people searching for plants to eat in nature—or in the supermarket—they use a combination of vision, smell, and taste.

As they fly across the landscape (lazily drifting on air currents or speedily dashing in beelines, depending upon the species), they keep their eyes out for other butterflies and for plants. The eyes they keep out are different from our eyes. Each of their eyes consists of a great many individual “eyes” and thus is called a compound eye. Because of the way their eyes are positioned, butterflies can see what’s in front of them at the same time they are seeing what’s in back of them. Butterfly eyes see a wider range of colors than do human eyes, including

ultraviolet light, and are very sensitive to movement, but they cannot see clearly at a distance. In fact, in Texas, a butterfly couldn’t get a driver’s license because their distance vision is so poor that they would be declared legally blind! So, if they see a likely spot of color, they fly closer to investigate. Wear a bright orange blouse or shirt and orange-colored butterflies may land on you; wear blue and blue-colored butterflies may become friendly.

Once a butterfly has found something that may be an interesting plant or flower, its sense of smell comes into play. Butterflies don’t really have a nose to smell through. Rather, they smell through the ends of their antennae. If the smell seems promising, the butterfly will alight on the flower or plant and taste it. Although butterflies do have a tongue, through which they sip nectar as if through a drinking straw, the tongue has no ability to taste, nor does anything else in the butterfly’s mouth. So, how do they “taste” plants? Through their feet. When a female butterfly lands on the leaf of a plant that she may want to lay eggs upon, her feet “taste” a tiny sample of the plant. If the taste is to her



© Dave Hanson

In Texas, Xami Hairstreak caterpillars feed only on Texas stonecrop (*Sedum texanum*), a rare plant—and thus, this is a rare butterfly.

liking, meaning that this plant will provide good food for her offspring, then she will lay her eggs there. Depending upon the butterfly species, she may lay single eggs on the upper surface of a leaf, or on the under surface of a leaf, on a stem, on a flower, or she may lay a few eggs at a time, or she may lay many eggs clustered together.

What has this to do with the *South Texas Natives* initiative of the Caesar Kleberg Wildlife Research Institute? Caterpillars of a great majority of butterfly species can



© Jeffrey Glassberg, Ph.D.

Definite Patches are uncommon in the United States. Their caterpillars feed on shaggy tuft (*Stendandrium barbatum*), and perhaps other plants in the Acanthus family.



© Jeffrey Glassburg, Ph.D.

Many people mistakenly believe that all butterflies are Monarchs. Monarch caterpillars feed only on milkweeds (*Asclepias*), a group of plants sometimes treated as range pests.

only survive on native plants. As our native plants disappear, so do our butterflies. It is probably obvious to you that when an area of thorn scrub is converted to a shopping mall the butterflies that lived in the thorn scrub are gone forever (they don't move somewhere else). What may be less obvious is when thorn scrub is replaced by a suburban development or a golf course, most of the land will still be covered by vegetation, however, the vegetation will be mostly non-native plants and the butterflies that live in the thorn scrub will still disappear.

But maybe we can bring them back, by bringing back the native plants. And, since encouraging the use of native plants is the mission of *South Texas Natives*, this initiative will help butterflies as well as other wildlife. The North American Butterfly Association (NABA), also encourages the use of native plants throughout North America. Here in South Texas, NABA is creating the world's first large-scale butterfly park, NABA Butterfly Park, in Mission, Texas on 100 acres of land along the Rio Grande River. The world's largest butterfly park will be in South Texas because the Lower Rio Grande Valley has the

greatest number and diversity of butterflies in the United States. Over the next 10 years, we will revegetate the land, recreating native Lower Rio Grande Valley woodland and thorn scrub, creating ideal habitat for a wealth of butterflies and other wildlife. A cutting-edge visitor and research center will help ensure that NABA Butterfly Park is the world's premier educational center for wild butterflies. To learn more about NABA Butterfly Park, visit the NABA website or contact us at 973-285-0907.



What Do I Plant?

*Paula D. Maywald, Coordinator
South Texas Natives*

In dealing with land that has been disturbed by mechanical brush suppression or disturbance from oil and gas activity, the most frequently asked question I receive is "**What do I plant?**" As you all know, we are working diligently to help answer this question with native seed. Meanwhile, however, what is a landowner or land manager supposed to do?

One of the primary concerns to consider after disturbance is the protection of the soil from wind and water erosion. Growing cover crops, applying native hay mulches, or seeding native prairie mixes are great options for initiating restoration projects. Not only is soil built up and protected, but these techniques also help initiate succession toward a native habitat.

Soil organic matter breaks down quickly in our hot South Texas climate. The resulting mulch created by cover crops, however, can give our soils an added boost of protection from climatic extremes. When crops are planted primarily for protecting the soil, a mix of leguminous and grassy-type species will yield the highest amount of cover per surface area. Cover crops help in the reduction of soil temperatures and water evaporation. The plants take up space and light, thereby shading the soil. As the cover crop decays, it produces a water conserving mulch. In addition, this process causes microorganisms and humus to increase, thus providing newly established plants with increased nutrient availability. With the addition of organic matter, soil becomes more friable thereby improving water infiltration. The soil becomes more favorable for beneficial insects, because as the organic matter breaks down, it provides insects with shelter and food. Healthy soils cycle nutrients better, they don't erode or crust over, and they quickly absorb water after each rain.

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Cover crops can be annual, biannual, or perennial. For the purposes of this article, however, we’ll focus on cool and warm season annual cover crops. In South Texas, most cool season crops are planted in the late fall, and include clovers, vetches, medics, winter peas, and cereal grains such as oats and wheat. I do not suggest planting grain or cereal rye because they sometimes suppress the germination of other plants. Warm season annuals are planted in early spring, and include cowpeas, medics, soybeans, clovers, sorghum, sudangrass, millet, and forage sorghums. Establishment techniques include aerial and ground broadcast applications, and drill seeding.

Cover crops can be used in conjunction with the application of native hay or native prairie seed mixes, or be used alone. When used alone, organic matter left over from the dead crop is used to build up the soil, and native seed from the

already existing seed bed re-establishes. Applying native hay or a combined prairie seed mix are good options when you have the luxury of planning ahead, and have a location to harvest the hay or seed. A cover crop may be planted and allowed to cycle before native hay or prairie seed mix is applied. Planting cover crops also provides the land manager with an extra growing season to harvest native hay or native combined seed, if available. Harvesting native prairie produces a diverse seed source, but is labor intensive, and is not practical for most of us because of the brush and terrain. If the application of native prairie seed is an available option, your first step is to locate a suitable location to harvest, and ensure that the majority of the seed is mature and ready for harvest.

For hay, use a sickle-type mower to cut the swaths and lay them down gently to minimize seed loss. It is best to cut hay in the morning when the grass is damp to minimize seed shatter. Minimize handling when windrowing the swaths to prevent additional seed loss. The hay should then be baled or gently forked into a trailer and transported to the restoration site. Seed shatter can also be avoided by baling prairie hay when it is still green, but it is

important to put the hay out within the next 2 days to prevent the bales from igniting. Prairie hay does store well, but it needs to be properly cured. If using bales, you will need to break them apart and spread them as evenly as possible by hand, with a manure spreader, or you can hire a company with a hay blower. For loose hay, slowly fork it out of a moving trailer to evenly distribute the hay across the target area.

There are various types of seed strippers, such as the Flail-vac, that work well for harvesting native prairie seed. Unfortunately, your seed will be bulky and trashy. Planting this seed is similar to planting hay, but the material is spread much more thinly. With combined seed, you will get a mixture of seed and finely chopped chaff that can be planted with a specialized grass drill that has agitators, or with a broadcast spreader or blower. If your mixture contains a great deal of fluffy seed, a broadcast spreader will not work.

After you apply the hay or combined seed mix, it will be necessary to press the material into the soil. For native hay, I have used a disk with the blades set at a minimum cut, a Lawson aerator, or a drag type harrow for native hay. The aerator was the most effective at keeping the



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This aerial view shows an example of a cover crop at a restoration site.

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hay in place. For seed that has been stripped or combined, a roller or a drag will give you good soil/seed contact. Because of the small size of many of our native grass and forb seeds, be careful not to bury them.

With native seed in particular, we are

pioneering many of these techniques and are still working out the details.

For more information, please contact:

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Succession takes time, and many of the native seeds will lie dormant for several years before germinating. As many of you know well, restoration requires patience, but the end result will be a healthy and native habitat of which you can be proud.



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