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The Landowner Incentive Program (LIP) is administered by the Private Lands and Public Hunting Program of the Texas Parks and Wildlife Department Wildlife Division. In partnership with the TPWD Inland Fisheries Watershed Conservation Program, LIP strives to meet the needs of private landowners wishing to enact good conservation practices on their lands for the benefit of healthy terrestrial and aquatic ecosystems. The LIP Bulletin is the venue for showcasing the great work of our landowner partners as well as providing program information and opportunities to get involved.

SCOTT HOLT, PRIVATE LANDOWNER

BRENT ORTEGO, TPWD BIOLOGIST

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La Paloma Ranch

Habitat Enhancement LIP Project Targeting the Texas Horned Lizards

Every time I mention horny toads to someone (at least someone of my baby-boomer generation or older), I get a reaction like “Oh I used to see them all the time, we played with them when we were kids, but I haven’t seen one in years.” Unfortunately, many folks in younger generations have never seen one at all, at least not in the wild.

The horny toad, horned frog, or more correctly Texas horned lizard (*Phrynosoma cornutum*) ranges from Kansas and Colorado to Arizona, Texas and northern Mexico and has dramatically declined in abundance over its entire range. Although it is listed as the state reptile of Texas, it is also listed as a threatened species in Texas, such is the severity of the population decline in the state. There are multiple factors thought to be responsible for the decline, among them are loss of habitat through changing land use practices, collection for the pet trade, the invasion of the imported fire ant, and the overuse of pesticides.

The story of their decline hinges not only on how the factors mentioned above directly affect the horned lizard, but also on how they affect the red harvester ant (*Pogonomyrmex barbatus*). Red harvester ants are the primary food for

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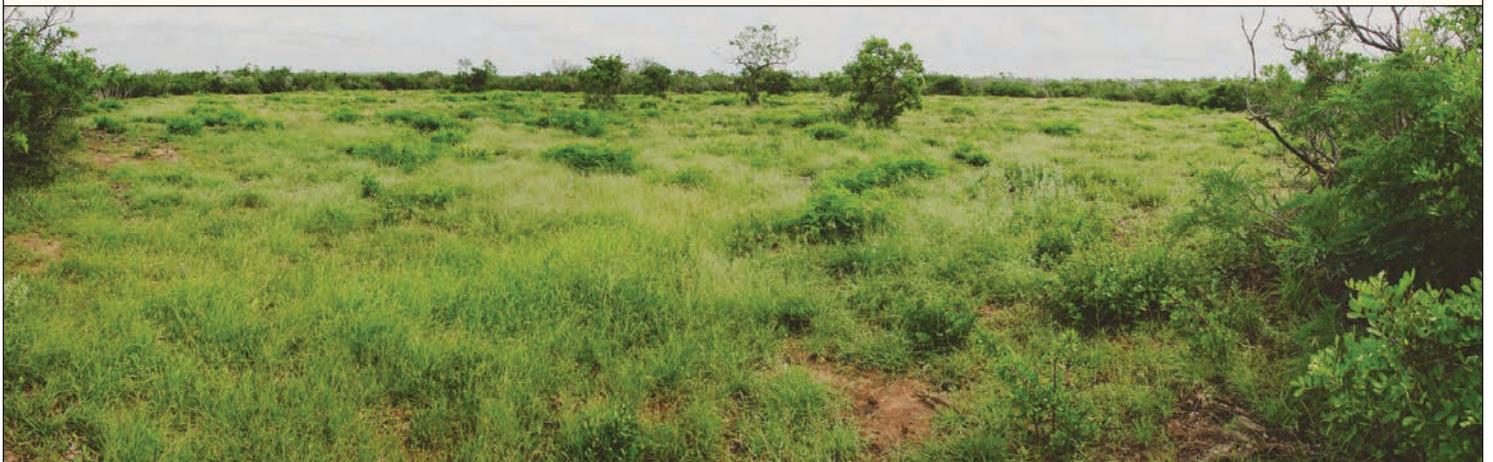
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horned lizards, making up over 75% of their diet in most places. Fire ants are direct competitors with harvester ants for grass and forb seeds that both use for food. Harvester ant colonies can be starved out by large populations of fire ants that outcompete them for limited food resources. In addition, the insecticides used to eliminate fire ants are also lethal to harvester ants and in some cases, harvester ants are directly targeted with insecticides. Without their primary food source, horned lizard populations will suffer. Finally, the historic conversion of native prairie to cultivated cropland and improved pasture, not to mention urban landscapes, has denied the horned lizard access to essential habitat.

When we bought our property in northeast Duval County in 2004, it was almost completely covered in dense thorn scrub – classic South Texas brush country. The only open land, aside from a 3.5-acre old field, was along an old road and a few overgrown senderos left over from a previous seismic survey. Although the South Texas brush is well known for supporting high biodiversity of both plants and animals, the extensive brush cover provided little habitat for grassland and prairie species, including horned lizards. A mid-grass prairie habitat originally dominated the region, once called the “Wild Horse Desert,” and we were interested in redeveloping open prairie over portions of the property to provide some of that lost habitat. As we visited with personnel from various state and federal agencies in search of advice, and potential economic assistance for our project, our local Texas Parks and Wildlife (TPWD) biologist suggested we look into the Landowner Incentive Program (LIP) run by TPWD. A site visit by Jesús Franco, our region’s non-game biologist at the

time, included a discussion about the near absence of horned lizards and the genesis of a LIP project.

As is true over most of the state, there are few horned lizards on our property, although we have encountered one or two per year. There is no cookbook, no recipe, for restoration of horned lizard populations. The key to recovering populations of most threatened or endangered species is determining what factor(s) is/are responsible for the decline and trying to reverse or correct that factor. For horned lizards, proper habitat appears to be an essential component, both for the lizards themselves and for their primary food, the red harvester ant. Since both require extensive areas of open grassland habitat, the idea of prairie restoration fit in well with our overall objective for managing the property. As is so often the case, however, the devil is in the details; how much open habitat is desirable, how should it be configured, what plant community is optimal? We relied heavily on the work of Scott E. Henke and W. Scott Fair titled *Management of Texas Horned Lizards* published by Caesar Kleberg Wildlife Institute for guidance in developing the LIP proposal. We proposed developing a uniformly spaced array of half-acre plots that would be cleared of brush with a Hydro Ax brush cutter (essentially a giant mulching machine) to avoid the surface disturbance that would be created by a bulldozer. The plots were to be reseeded with native grasses selected for their production of relatively large seeds to provide food for the harvester ants and kept clear of brush by a combination of mechanical and chemical means. The long-term plot maintenance was a major component of the cost-sharing required for a LIP project.



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Unfortunately, our project was not approved for LIP funding the first year we submitted! Not to be deterred, and with significant help from our TPWD non-game biologist and other TPWD staff, we produced a revised proposal that responded to the reviewers comments from the first version. One common theme of the reviewer's comments was that it was not clear that our uniformly distributed, half-acre plots were the appropriate size. No argument there, but what size should they be, and where? The answers to those questions were unknown. For the revised proposal we devised an experimental plan that would look at plot size and soil depth as factors that might affect the success of the project. The new proposal called for eight paired one-acre and half-acre plots and for average soil depth to be determined for each plot. With that, plus a few additional modifications recommended by the reviewers, the project was approved in the next funding cycle (the take-home message here is do not give up).

The plots were cleared in May 2011. The Hydro Ax indeed cleared the land with little disturbance to the soil surface. The primary reason for trying to avoid disturbance of the soil surface was to avoid the flush of invasive grasses that often follows such disturbance. We indeed seemed to be successful in that regard as very few non-native, invasive grasses came up in the cleared plots. One downside of using the Hydro Ax is that it does not clear the brush right to soil level and the array of short but stiff stubs of brush left in the plots led to a number of flat tires on my tractor used to maintain the plots! Another revelation was that the seed bank of native grasses and forbs in the soil was quite rich. Although our property had been heavily grazed in the past, there had apparently been no effort to create "improved" grazing land through range management practices such as roller chopping or root plowing nor had there been extensive planting of non-native grasses. Consequently, the grasses and forbs flourished on the cleared plots once they had been freed of competition for light, water, and nutrients by the heavy brush cover. Cattle had been removed from all the property in 2005 but the cleared plots clearly have a more diverse and luxuriant cover of grasses and forbs than most of the untouched brush land. The dominant grasses include Hall's Panicum, Texas Grama, Southwestern Bristlegrass, and Purple Threeawn with lesser amounts of Green Sprangletop, Four-flowered Trichloris, and even a bit of Sideoats Grama.

All this, remarkably, without the need for reseeding. We occasionally find an Old World Bluestem plant or a Buffleggrass plant coming up in the plots but the quick application of a Gerber® folding shovel dispatches the unwanted plant!

Despite the flourish of grasses in the cleared plots, the brush plants do not give up easily. The meticulous, plant by plant application of a broad-leaf herbicide has slowed down brush regrowth but the plots have required mowing at least once a year. The most problematic brush species has proven to be Guajillo (*Acacia berlandieri*). It regrows so much faster than the other species that it clearly would come to dominate most of the plots if not directly targeted with both mechanical and chemical controls.



It seems the conversion from brush dominated to grass and forb dominated habitat has been relatively successful, especially during the 2013 growing season (the third year after clearing) with the help of timely but still limited rainfall. The recovery or expansion of the target animal populations has been, not unexpectedly, much slower. New red harvester ant colonies have appeared in two of the plots (both one-acre plots) and several colonies of honeypot ants (*Myrmecocystus* sp) have developed in the plots as well. It is not clear whether honeypot ants are suitable food for Texas horned lizards but they do serve as an important food for round-tailed horn lizard in the Chihuahuah Desert. The expansion of ant colonies into the newly cleared areas is a very positive development. The expansion of grassland habitat has seemingly benefited some non-target species as well. Last winter we found grasshopper sparrows and lark sparrows in several of the plots and Bob-white quail are found regularly in the plots.

CONTINUED FROM PAGE 3

Horned lizards hibernate during the winter and are active and above ground only during April through October. During the 2013 summer we found three different horned lizards on the property; one of those was very small and clearly represented recent reproduction. Although our three observations are better than the one (or none) per year we had seen previously, it did not indicate a population explosion. We were nevertheless encouraged by the progress and hopeful that this LIP project would lead to an improved Texas horned lizard population on our northeast Duval County ranch.

Observations from the summer of 2014 tell a different story. In June I found a Texas horned lizard in a prairie restoration plot not formally part of the LIP project but under similar management protocol. In mid-July, my wife Joan and I conducted a formal horned lizard survey in our LIP experimental plots. Our survey technique was to drive (in our golf cart) across each plot in transects running N/S and E/W and to circle half the perimeter connecting the N and E edges and the S and W edges. We determined that we could observe a horned lizard within about 10 feet either side of the cart. I have not calculated what portion of each plot we covered but I suspect it is in the 5–15% range. To our astonishment, we found four horned lizards in the plots and another in a non-LIP but similar plot. One of these was a baby. In one of the plots we found a horned lizard fecal pellet near where we

found a lizard. In another plot we found three fecal pellets but did not find the lizard; it must have been there somewhere so I am tallying five lizards in the 16 plots!

This is the first time we have done a systematic search of all the plots. Over the past several years I have treated the plots by mowing and spraying herbicide but some plots are more “lush” than others and nothing has been done to any of the plots since last October. We are still quite dry in this part of Duval County and some of the plots are more sparsely vegetated than others. We found all of the lizards in the more sparsely vegetated plots but that may as likely be due to visibility as it is to actual lizard density; we may need to modify our survey methods to try to account for that. Unfortunately, the sample size (i.e. the number of lizard observations) is still too low to make an analysis of the influence of plot size or soil depth. We intend to conduct these systematic surveys a couple time a year for the foreseeable future and hopefully build a database that can provide other land owners useful information for Texas horned lizard restoration.

Photos of each of the horned lizards are posted on the iNaturalist website (www.inaturalist.org/observations/scottholt) and future observations will be posted there as well.



JONAH EVANS, TPWD MAMMOLOGIST
ROBERT POTTS, PRIVATE LANDOWNER

Las Cienegas Wetland Restoration

The Las Cienegas property is located near Fort Davis in a high desert grassland surrounded by the Davis Mountains. Multiple intermittent springs with large cottonwoods and other riparian vegetation are found near the center of the property along with a 5-acre natural depression that, according to long-time residents in the area, held water much of the year.

In the last few decades however, this wetland was most often dry, only holding water during very wet periods. Water in the desert is crucial for wildlife, but the water level in many of the streams and springs has decreased from historic levels. This is likely the result of a number of factors, including changing climate, shrub encroachment into grasslands, erosion, and historic land use practices.

The goal of this project was to provide a supplemental water supply to the intermittent wetland in order to create reliable habitat for migratory shorebirds and other wildlife. Migration is a very taxing time for birds and a reliable stopover location can dramatically improve their chances of success. During severe droughts, the importance of wet areas only increases.

Fortunately, an abandoned well was located approximately 1,000 feet upslope from the wetland site which greatly simplified the project. The existing well was uncapped and fitted with a low flow solar pump. No battery was used, so flow only occurs while the solar panels have sufficient sunlight. Approximately 1,000 feet of polyethylene line pipe was laid on the ground from the well to the edge of the wetland, allowing the water to flow down hill into the wetland. The landowner now monitors the wetland and turns on the water during migration if necessary, and turns it off when not needed. The wetland will still be allowed to go dry at times to allow the wetland vegetation to thin out.

The landowners have recently documented the following shore birds at the site: least sandpiper, western sandpiper, Baird's sandpiper, spotted sandpiper, lesser yellowlegs, Wilson's phalarope, killdeer, black tern, avocet, killdeer, chestnut sided-longspur, teal, Mexican mallards, and numerous sparrows.



DUANE LUCIA, USFWS PARTNERS PROGRAM PRIVATE LANDS BIOLOGIST

Curtis River Ranch Moist Soil Management Areas

The Curtis River Ranch is located in Hemphill County and contains both superb uplands and riparian habitats managed for wildlife. The Washita River runs through the property and the landowners have accomplished a lot of work restoration work along the river (removing salt cedar, large stands of Siberian elm and eastern red cedar as well efforts to reduce bank erosion along the river).

The Moist Soil Management areas that were funded by the LIP project were designed to capture some of the flood water when the river floods and use it to help grow forage for waterfowl and upland bird species that occur in the area. We had engineers come out and design some wetland management cells that would produce native wetland plants once we started wetting and drying these soils at different times. Since we began the project at the tail end of one of the worst droughts experienced, we are using surface water right now to wet the system. We have also designed this system to use solar pumps to move water back up to the reserve pond so water is “recycled.” Our plan is to flood and germinate seeds in the soil bank and then draw the water down to expose mud flats and allow the plants to grow. Water is added or removed seasonally depending on available rainfall to increase plant growth and also provide winter feeding areas. The first year of moist soil management, we were really just experimenting with what would grow and now we have started seeing the results with increases in smart weed and some curly dock growth in these areas. By October, once the trees in the area start going dormant and our water table rises, we capture water in the wetland management cells to allow for wetland feeding areas.

Both the landowners and agency folks that have been involved in this project are very pleased with the results and look forward to seeing what will be growing up out of the mud flats next year!



JONAH EVANS, TPWD MAMMALOGIST

02 Grassland Project – Follow Up Report

The O2 Ranch encompasses approximately 276,000 acres of the Chihuahuan Desert in West Texas. The property was primarily used for livestock until 1998 when much of the ranch, including the project site, was deferred from grazing.

The ranch contains several large grasslands, many of which have been encroached by creosote, mesquite, and other woody shrub species.

Chihuahuan desert grasslands are critical habitat for pronghorn, wintering sparrows, and numerous other species. As creosote and other shrubs encroach, the species diversity decreases, grasses decrease, and bare soil and soil erosion increases.

Much of the transition from grassland to shrubland is the result of historically heavy grazing pressure, fewer wildfires, and a changing climate. This pattern of historic land use and shrub encroachment is common across much of the southwestern United States and has resulted in significant declines in grassland dependent species. If left alone, these shrub encroached grasslands may never return to their original state. Additionally, because the encroachment of shrubs has resulted in fewer grasses, prescribed fires may not have an adequate fuel load to spread effectively.

The primary goal of this project was to restore native grasses to 955 acres of shrub encroached grassland in order to increase the quality and quantity of habitat for grassland dependent species. Creosote removal was primarily achieved through aerial application of the herbicide Spike 20P. After application, the roots absorb the herbicide, which begins a 3- to 4-year process of decline in creosote and an increase in grasses.

This project is part of a larger grassland restoration project that started in 2007 with the cooperation of multiple agencies including the U.S. Fish and Wildlife Partners for Fish and Wildlife Program (www.fws.gov/southwest/es/arlingtontexas/pfw.htm). Upon the completion of this project, the O2 will have restored over 5,000 acres of grassland habitat.

To learn about more conservation work done on this ranch go to LIP Bulletin volume #5 (http://tpwd.texas.gov/publications/pwdpubs/media/pwd_lf_w7000_1405_03_11.pdf) or watch their 2011 Lone Star Land Steward award video (www.youtube.com/watch?v=sW75IRxMkHY&feature=share&list=PL7ZG8MkruQh1RKIJJbVpvGP3VdOcl1CVK&index=26).



JILL NOKES, PRIVATE LANDOWNER

Follow up to the article in the summer 2013 Issue of the Bulletin www.tpwd.texas.gov/publications/pwdpubs/media/pwd_if_w7000_1405_07_13.pdf

Marshcall Creek Riparian Corridor Restoration – A Landowner's Notes Year 2

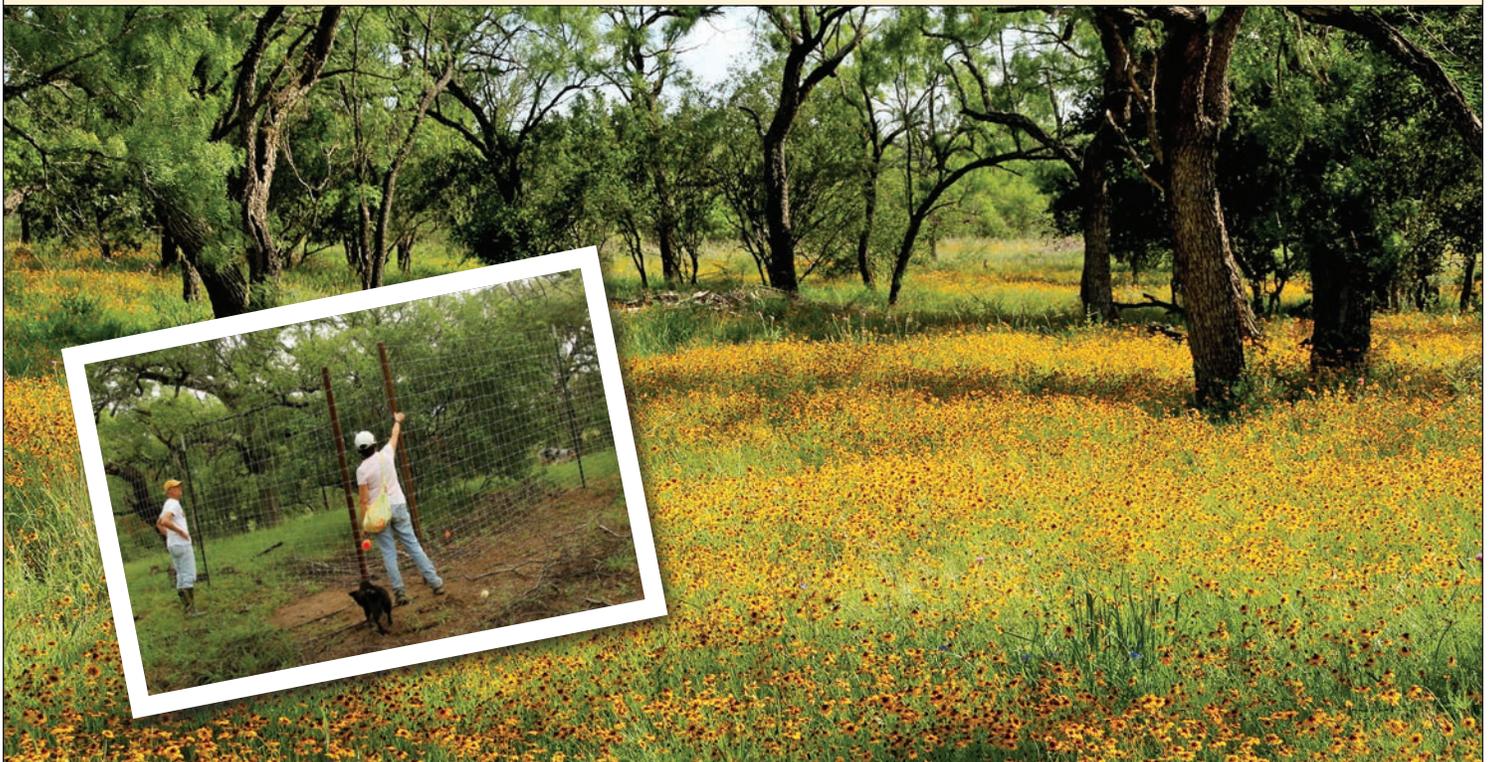
This spring, thanks to a second Landowner Incentive Program (LIP) grant from Texas Parks and Wildlife Department, we have been able to continue a steady pace of conservation projects along the riparian corridor of our property in southwest Llano County. Our guiding objectives for this year's project are very similar to our first LIP grant two years ago: "To improve water quality by reducing runoff, minimizing erosion, and stabilizing the stream bank."

From the lessons we learned in the past five years we would add to that the goals of enhancing the resiliency of the landscape and increasing biodiversity. We have observed that native grasses are the first to recover after prolonged drought cycles, and that selectively removing brush directly results in dramatic self-repair of the landscape and an increase in the variety of plants.

Our first task towards achieving these goals was to remove the whitebrush (*Aloysia gratissima*), prickly pear (*Opuntia lindheimeriana*), and tasajillo (*O. lepticaulis*) that had formed dense thickets throughout the 10-acre zone of the project. Although brush thickets provide cover for wildlife, these species had overwhelmed most of the woodlands, suppressing diversity of other plants, and seemed to appeal most to our burgeoning feral hog population.

Old, decaying brush piles scattered in the woods give some hint of how the woodlands became smothered by these few plants. The previous owner routinely hired a contractor to rotate throughout the property, using his bulldozer to "clear" it. However, white brush, like mesquite and prickly pear, is a vigorous re-sprouter, and this periodic "mowing" only exacerbated the problem. Within three or four years the white brush grew back, thicker and denser than before, and prickly pear and tasajillo took advantage of disturbed ground to sprawl even further. Grasses and forbs were found only in thin and scattered patches.

For LIP 2014, we asked our hard-working crew to return to help us with the arduous job of removing the brush. It's important to point out that we intentionally left scattered thickets undisturbed to provide nearby cover for wildlife.



We used our small tractor to lift big clumps of cactus, and to haul it to the brush pile. Some of the persimmons were cut into poles and positioned along the bluff as windrows to help repair eroded game trails.

Digging the white brush up with a pick was the only method available to us for a number of reasons:

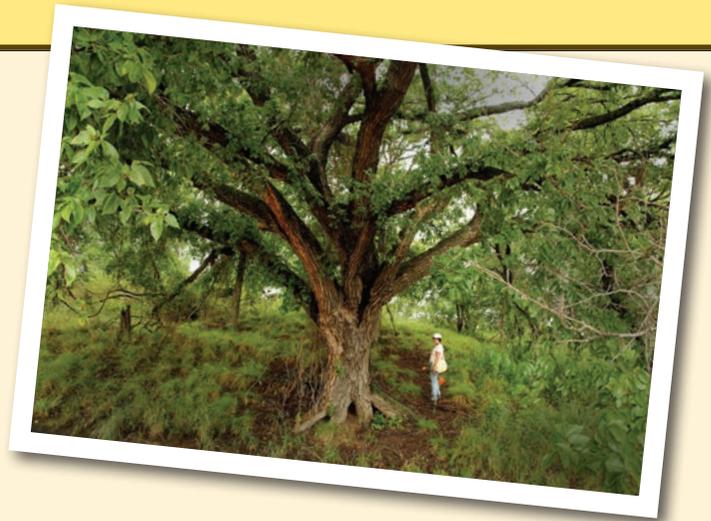
1. The only herbicide effective on white brush (Spike or tebuthiuron), would not be appropriate to use in the project area because it would pose too great a risk to trees and runoff could be harmful to Marshcall Creek.
2. The project area is near the confluence of two creeks where Paleo-Indians often preferred to camp. The U.S. Fish and Wildlife Service (the federal funders of the LIP program) would not permit the use of heavy equipment, due to concerns that about potential disturbance of relict sites.

It seems absurd and hardly replicable in general to suggest that brute hand labor, especially when it's hard to come by, is the way to tackle brush management in this situation, but the woodlands are among the most precious assets on our property. Majestic but aging trees are mostly limited to the banks of the creek, yet few young specimens can be found to succeed them. Llano County has long been known for its heavy white-tailed deer population, which means that you seldom see trees under three or four feet tall that haven't been regularly gnawed into bonsai specimens. So for us, the extra effort was worth it, in the same way someone might take a slow, delicate, and laborious approach to protecting a spring, sinkhole, or a special habitat for endangered species. The most successful methods are often those that are site specific, based on deep place knowledge and experience, even though a particular site may be tiny in context of the entire property.

Right away we were pleasantly surprised by the variety of shrubs like Brazil (*Condalia hookerii*), Texas elbowbush (*Forestiera pubescens*), Wafer ash (*Ptelea trifoliata*), and lotebush (*Ziziphus obtusifolia*) that previously had been hidden and suppressed beneath the dense whitebrush. These are all valuable wildlife plants, and we will be interested to learn if more regenerate now that we have opened up the thickets.

After clearing, our next task was to construct enclosures or corrals around three distinct groves of trees in order to be able to visually verify the differences in hardwood seedling establishment between open areas and those protected from browsing by deer and rabbits. Although all three enclosures (amounting to a total of 420 linear feet) are located within the same ten acres defined by the project, each has slightly different soils and dominant trees. These areas include:

- Area 1: post oaks/Eve's necklaces (*Sophora affinis*)
- Area 2: cedar elms
- Area 3: mesquite/Western soapberry



Before fencing, noxious brush was removed. A plant inventory list was started in October 2013, and we will continue to monitor each area twice a year to see what new species appear. The post oak area had over two dozen small cedar elms and about 20 Eve's necklaces. We will compare the growth of those seedlings with those outside the fence.

Late in May and early June, rains returned after a five-month absence, and the sudden and spectacular revival of spring flowers and grasses was unbelievable and inspiring. Although we plan on sowing more grass seeds in the fall, by mid June the newly cleared areas were being colonized by pigeon berry, Plains bristlegrass, Canadian wildrye, three-awn, white tridens, and sand dropseed. Some of these grasses came from seed we had sown in nearby burn pile sites two years ago. We will be watching to see how much of this volunteer germination survives the summer.

Depending on the outcome, we may relocate the enclosures to other areas after five or ten years. In the meantime, we will continue to individually cage promising new seedlings to safeguard the "future forest."

The last phase of this year's LIP will be the seeding of the brush piles after we burn them this fall and winter. The seed mix will include sand lovegrass, yellow Indian grass, Canada wildrye, green sprangletop, little bluestem, sand dropseed, switchgrass and sideoats grama. To the grass mix we added some forbs: Illinois bundleflower, Maximilian sunflower, partridge pea, purple prairie clover, and blackeyed Susan. Horsemint or lemon balm will be added to all mixes as a "marker" to help us recognize those dispersed pocket areas where we tossed out a few seed.

Our little project along Marschall Creek will not have any significant effect on the watershed. But we hope to show our gratitude for the public funds that underwrite the LIP program by offering the lessons learned on our place to help other landowners, so that collectively our collaboration with Mother Nature will have a positive impact over a larger area of our fragile Hill Country.

GARY BOWERS, PRIVATE LANDOWNER AND NATIVE PLANT ENTHUSIAST
CHRIS HARPER, USFWS PARTNERS PROGRAM PRIVATE LANDS BIOLOGIST

A Small Landowner's Approach to Conservation in the Bandera Canyonlands

This story begins back in early 2010 when I purchased a small patch of land in Bandera County for recreational use. I was inspired to implement as many conservation and habitat improvement projects as I could afford and manage in my spare time. I began by reading and going to every workshop I could find on the subject of conservation in the Edwards Plateau.

It wasn't long before I had enough knowledge and confidence to start putting boots on the ground and commencing conservation work. Though I've learned a lot these first few years, consulting with subject matter experts and touring other properties that are examples of good hill country conservation is important and I know that my learning voyage will never end.

Initially, I wanted to use heavy equipment to remove every ashe juniper tree from the property, leaving only hardwoods and shrubs, and allowing the grasses to come back naturally with the additional sunlight and soil moisture resulting from removing the juniper. Thankfully this did not happen! After having a few contractors come out and take a look, I soon discovered that I really preferred a more holistic approach to conserving my patch of land. By using a natural holistic method I could step back and slowly visualize the long-term conservation goals and sculpt my land into a mosaic of habitats with the different vegetation types already existing on the land.

My first steps were to identify the most important areas to thin or remove ashe juniper, and to identify problem erosion areas. I wanted to promote hardwoods and native grasses without going overboard. I started my brush control in areas with severe erosion and under hardwood canopies crowded with juniper, and working out from there. I began recapturing lost soil in those areas with severe soil erosion and little grass cover thus beginning the healing process the land needed. These areas were improved by building contour berms using cut juniper slash placed strategically in piles perpendicular to the natural flow of water. Over time the contour berms began trapping sediment, plant litter, and seeds that will rebuild the soil organic matter and generate new vegetation including quick-establishing native grasses. In many areas I already had a good diversity of hardwood trees such as escarpment black cherry, walnut, cedar elm, Spanish oak, live oak, blackjack oak, shin oak, blue oak, and many others that were being crowded out by ashe juniper. Many of my mature hardwoods were crowded by a solid understory of ashe juniper growing all the way out to the drip line. I used chainsaws to remove any juniper under my desirable hardwood trees to eliminate competition and ensure the future viability of these majestic trees. Simply thinning juniper under hardwood trees and treating erosion areas with contour berming had a tremendous impact on brush removal and transformed the landscape dramatically. I was amazed at how "a little bit here and a little bit there" made such a big change and how the land responded faster than I expected.





There are many ideas on the pre-settlement condition of the hill country and how a landowner should restore their land back to what it might have been. I guess as a landowner you have to decide which conservation path makes sense for you based on all of these ideas. For me, I want land that has a mosaic of habitats and supports multiple plant communities and wildlife species. In other words, having land that is primarily ashe juniper, or on the other hand, turning everything into grassland is not what I strive for. My vision is to maintain areas of open savannah grasslands intermixed with hardwood/juniper woodlands. Following this vision has led to increased diversity of habitats and wildlife species utilization of my land. It is possible to have golden-cheeked warblers in one part of your land and black-capped vireos on another part of your property even though these two beautiful song-bird species require different habitat types.

Many people in the hill country view “cedar” (Ashe juniper, *Juniperus ashei*) as a nuisance and see little value in its existence. Landowners often subscribe to the eradication idea. I decided early on in my conservation plans that I would not have this view. Instead, I choose to see many benefits provided by ashe juniper when growing in a proper/natural setting and have utilized a variety of conservation methods associated with brush management. Not only was brush control important, but slowing the water flow through my land has also been a major focus. By reducing the juniper cover, I allow more sunlight and soil moisture for the native grasses to reestablish, which has helped filter water back into ground instead of running off and increasing soil erosion. The cedar berming is a holistic approach that makes use of the cut slash and helps to conserve soil and regenerate plant life without the expense of chipping or shredding. After many hours of hand cutting juniper, I started to notice that often the cedar trees would be enclosing a young desirable seedling species such as evergreen sumac, Mexican silk-tassel, gum bumelia, or one of the many oak species. This is important to note because often this is the only way that new plant

species can get started on over-browsed land. After realizing this, I began to use the juniper slash to build loose cages around desirable plants to protect them from deer browsing. Another conservation practice I have implemented is bringing hunters back on the land to reduce deer density and reduce destructive feral hog populations. The “cedar cages” also provided shade from the summer sun in those areas where I chose to cut the juniper.

I was fortunate enough to have Steve Nelle (NRCS, retired) a well-known riparian expert, stop by and provide feedback on my progress and conservation plans. Steve was very patient and provided invaluable feedback not only in the riparian corridor but also on upland grasses and wildflowers that he called “forbs.” His knowledge was a tremendous help and I will consider his advice when implementing conservation practices moving forward. The most interesting thing I took from Steve’s visit were his comments about using cut juniper slash to make loose piles in the cleared areas, which I did not put too much thought into at the time. Later during the LIP conservation project, some areas were cut and juniper slash was distributed in the loose piles as suggested by Steve, without anyone being conscious of what they were doing ... it sort of happened by accident! Many months went by and some rain fell. When I returned to check on the condition of these areas I was amazed by the grass response under these loose piles of juniper slash. The slash piles were allowing filtered sunlight for the new grasses to re-establish. The little bit of rainfall was enough to activate these areas since the juniper slash helped conserve moisture and provide cooler surface temperatures. In these sites the grasses were taller and more robust than the sites in full sun without juniper slash. I caution though not to distribute the slash too thick in one area because you will eliminate sunlight altogether and seeds won’t be able to germinate.

As with any conservation plan, improving habitat is the goal and at the top of that list is building plant diversity. Each year



I plant a few new native trees that I have not found on my patch of land that either would have once existed on my land or fit into the native ecosystem I am taking care of. Examples include big tooth maple, chinkapin oak, and Carolina basswood or linden tree. I build tree rings around each newly planted tree because of the high deer densities in my area. I also take extra measures to ensure the trees receive enough moisture through an unconventional planting technique involving phone books! Knowing the right sites to plant a tree and how it first starts in the wild is half the battle. Some of the more rare trees such as chinkapin oaks and big tooth maple persist in mesic microhabitats usually found in canyons and east-facing slopes, where the afternoon shade provides cooler temperature and moister soils. Often Ashe juniper is also abundant in these locations, where it can be harvested to provide protection to seedlings. Here is another example of juniper providing a good service to conservation!

I will sometimes cut a corridor through the “cedar breaks” leaving good canopy cover to block intense sunlight where the trees get only morning sun. These locations work good for big tooth maple. Once the tree establishes and grows larger you can begin to cut the juniper back more and more, allowing for more sunlight.

In some areas my goal is to increase grass abundance, but in other sites I want to manage for woodland birds. With golden-cheeked warbler habitat I focus on selective juniper thinning. This includes under mature hardwood canopies and small juniper under 15 feet tall and clustered in one area. I create a mix of closed canopy woodlands consisting of a mix of hardwoods and mature Ashe juniper along with small openings. Other areas are better suited for black-capped vireo, where I focus more on open woodland or savannah habitats by promoting low growing shrubs and high quality hardwoods that will provide for quality nesting cover.



“I guess as a landowner you have to decide which conservation path makes sense for you based on all of these ideas. For me, I want land that has a mosaic of habitats and supports multiple plant communities and wildlife species.

In addition to the conservation practices I have discussed so far there are a few other things I have done such as “cedar sculpting” in areas where Ashe juniper is beneficial and better left intact. For example, in sloping terrain many times grass establishment is minimal and the juniper helps hold the soil together mitigating erosion. Also I use “cedar sculpting” in areas managed for golden-cheeked warbler on mature juniper not removed with hand saws. I use debranched juniper logs, too small for fence post use, positioned perpendicular to the natural water flow for breaking sheet flow of water. This will slow and spread the water out reducing soil erosion and allowing more filtering into the ground. I also use “cedar cages” around shin oak and Spanish oak to promote growth at base of tree. This re-sprout vegetation will become scrubby in form and provide additional nesting sites for black-capped vireo. I also chip some of the juniper slash and spread this “cedar mulch” over bare spots on very rocky soils to help facilitate the eventual establishment of native grasses like little bluestem and yellow indiagrass.

Looking ahead I am very motivated to continue habitat conservation and learn new approaches that will benefit my land and get the best response from plant communities and

wildlife. I will also focus on improving the land's ability to absorb or filter water to recharge the underlying aquifer. I would love to discover an old spring or seep that once flowed when the land was in better condition. Already I have seen tremendous improvement and response from my patch of land and can't wait to see the results many years down the road with all the hard work and effort so far.

Following up with these conservation practices I have started coordinating with Rebecca Flack of the Texas Nature Conservancy to conduct bird surveys on my land to help measure habitat improvement. In the future I will continue to work with Rebecca and The Nature Conservancy to monitor the status of birds and butterflies as indicators of good land stewardship.

I would like to give a special thanks to my wildlife biologist Chris Harper with the U.S. Fish and Wildlife Service for his valuable input and patience working with me. He has been very supportive and provided excellent pathways for a determined landowner to get quality conservation work achieved. Also I want to thank Arlene Kalmbach for her patience and all the leg work she does to keep LIP projects on track and ensuring that valuable conservation is applied across Texas.





RUSTY WOOD, TPWD BIOLOGIST

Longleaf Legacy

Longleaf pine was once the dominant forest type in the southeastern U.S., covering some 90 million acres. The longleaf pine ecosystem is one of the most diverse ecosystems known to North America boasting some 150-300 species per acre. Large-scale fires maintained this rich diversity including many species which are threatened or endangered today. Sadly, only 3 million acres remain in fragmented parcels across the southeast. With the help of the Landowner Incentive Program, two East Texas landowners are working to change that.

Clear Creek Farm

The first LIP project takes place in Angelina County on a unique property known as Pine Island. Pine Island is owned by the Henderson family and was created when the old Neches River diverted its course to the new river channel creating a 3,300-acre island. The island is characterized by deep sands with pines in the uplands and hardwood bottoms on tighter soils. Two large-scale hurricanes (Rita in 2005 and Ike in 2008) devastated the mature pine stands on the island. A series of salvage cuts to remove the dead and dying timber left the stand severely under stocked. The landowner had to decide to clear cut or try to manage what was left of the stand. Not wanting to remove the historic longleaf trees that remained on site (which fared pretty well even after two hurricanes), the landowner decided to plant containerized longleaf seedlings under the residual trees on the 144-acre stand. Along with prescribed burning, selective herbicides were used to help control competing vegetation and brush on 80 acres in the stand. A one-year post-planting evaluation showed that despite continued drought conditions, enough seedlings survived to create a viable stand. Future management of the stand will primarily consist of periodic prescribed fire to control hardwood encroachment and promote understory diversity.

The second LIP project took place in southern Sabine County on Clear Creek Farm, a former Lone Star Land Steward Award winner. Clear Creek Farm was heavily logged and abandoned before it was acquired by the current landowner from an investment company. The property borders a part of the Sabine National Forest that maintains several groups of the federally endangered red-cockaded woodpecker.

Additionally, the property boasts a breeding population of Bachman's sparrows (a state threatened species), bobwhite quail (nearly as rare in East Texas) and eastern turkey. Since acquiring the property, the landowner has successfully restored over 800 acres of longleaf pine with assistance provided by several programs. The current longleaf restoration project started out as an 80-acre planting project but was successfully expanded to 200 acres when additional funding became available. The restoration area was logged to salvage all merchantable pine timber while groups of hardwoods were retained to provide hard mast and maintain stand diversity. A low impact skidder was used to apply a selective herbicide formulated to control reforestation pests like yaupon and sweetgum while minimizing damage to desirable residual hardwoods. Again, containerized seedlings were used and planted at a rate of 605 trees per acre.

In addition to the reforestation project, the landowner agreed to host a pine growth study comparing longleaf to loblolly on the site. Four one-acre study plots were established to measure the growth of containerized longleaf and loblolly seedlings grown under identical conditions. Permanent vegetation sampling plots were also established to determine which historic plant species would return on a heavily degraded site with proper management. Over time, this study should provide useful information about comparative growth rates of longleaf versus loblolly pine on sites along the longleaf ridge corridor that landowners can use to make sound management decisions based on economic and ecological returns.

Pine Island



RUSSELL MARTIN, TPWD BIOLOGIST

Collaborative Restoration on the South Plains Landscape

Originally founded in 1883, T-Bar Ranch covers nearly 10 percent of Lynn County and is one of the last-standing working cattle ranches that historically dominated the South Plains landscape. At its peak in the 1890s, T-Bar Ranch's Tahoka Cattle Company operated 87,000 acres and its herd was the main engine of the Lynn County economy until the early 1900s when farming became the primary economic driver of the South Plains. Fortunately, T-Bar's founder, Cass Edwards, was able to spare over 44,000 acres from the plow that has perpetually cultivated the regions soils over the last 100 years. In doing so, Mr. Edwards unknowingly conserved one of the most environmentally sensitive and ecologically diverse pieces of the South Plains landscape.

Today, the ranch provides over 44,000 acres of remnant shortgrass prairie habitat and encompasses numerous playa lakes as well as seven of the region's largest saline lakes.

The saline lakes throughout the South Plains are the sole habitat provider for the salt playa fairy shrimp, as well as critically important roosting habitat for sandhill cranes that migrate south each winter from Canada, Alaska, and even as far away as Russia.

Several dozen playa lakes, frequently called the "gems" of the High Plains, also dot T-Bar's surface like shimmering diamonds sitting atop the superficially barren, sandy landscape. In the semi-arid South Plains, these seemingly out-of-place wetlands are highly productive, biodiversity hotspots teeming with wildlife; they provide a year-round home for the region's amphibians and a winter resting place for thousands of migratory waterfowl and shorebirds. Historically, the playas and the springs that fed into saline lakes provided the only surface water available to support the Comanche Indians and the vast herds of bison and antelope that previously roamed this nearly uninhabitable landscape. In addition to the ecological and cultural significance of the playas, they are also the primary source recharging the Ogallala aquifer that is paramount to the local agricultural and energy sectors.

The ranch's remnant shortgrass prairie is home to the Texas horned lizard (horny toads) and numerous, large black-tailed prairie dog towns that cover several thousand acres. In cooperation with U.S. Fish and Wildlife Service, Texas Wildlife Services, and Texas Parks and Wildlife, the ranch's prairie dog towns could act as potential release sites for black-footed ferrets in the future. If such a release were to occur, the effort would mark a truly historic feat by reintroducing a federally-



listed mammalian predator to privately-owned property within its historic range and aiding in the removal of this species from the Endangered Species List.

The South Plains is very fortunate that Mr. Edwards unknowingly conserved this ecological and cultural treasure at the turn of the previous century. The ranch's historic operators successfully managed the cattle company over the last century by navigating multiple economic downturns and several extreme droughts during which they were forced to make difficult decisions to remain stocked and stay in business or destock and go out-of-business, which would have likely resulted in more acres being sacrificed to cultivation.

Thankfully, the cattle company decided to make short-term sacrifices to the ranch's "natural capital," or grazing production potential, by remaining stocked during droughts. These short-term sacrifices allowed the cattle company to stand the test of time and remain in business, thus resulting in long-term conservation the region benefits from today. The operators, like others in their day, viewed fire as an unpredictable, destructive threat that took away grass that could have been used to support more cattle and so suppressed fires on the ranch for nearly a century.

Historically, the shortgrass prairie was dominated by highly productive and desirable grasses, such as buffalograss and blue grama, forbs, and woody plants covering less than 10 percent of the ranch's acres. The combination of migrating bison herds and periodic fire relegated mesquite to the draws or very shallow soils where fuel moisture was too high or fuel loads were too low to carry a fire intense enough to kill the mesquite sprouts that were spread by ungulates that deposited mesquite beans in nutrient-rich fertilizer beds. During drought decades when grazing continued, mesquite, a native shrub, was thus helped to slowly invade areas that it previously did not occupy. This, combined with over a century of fire suppression allowed the ranch's vegetative community to shift from a shortgrass prairie to a mesquite savannah. Prior to initiating our restoration program, a large portion of the ranch most closely resembled a mesquite savannah where mesquite infestation had reduced carrying capacity by as much as 40 percent.

Today's generation of ownership and management has a deep desire to restore the ranch to its former natural glory. Through a collaborative, strategic effort between T-Bar Ranch, the U.S. Fish and Wildlife Service Partners for Fish and Wildlife Program (Partners), and the Texas Parks and Wildlife Department Landowner Incentive Program (LIP), approximately 10,000 acres, or about 25 percent, of the ranch has been restored from mesquite savannah back to shortgrass prairie with plans to restore the remainder of the ranch over the next few decades.

On the surface, T-Bar's cattle operation appears to be the primary beneficiary of the restoration efforts. The thousands of

once grazable acres that were lost to a century of mesquite infestation have now been reclaimed and are considered grazable again. This achievement was accomplished through the very precise application of brush management techniques while simultaneously increasing grass production back towards historic levels through a very flexible prescribed grazing program.

Moreover, the local and migratory wildlife that call the T-Bar home will benefit from these efforts as much, if not more than, the ranch's cattle operation will. By exchanging each water-hungry mesquite plant with its single, deep taproot canopy that covers an average of 100 square feet for sod-forming grasses and forbs of an equal area with thousands of tiny roots that allow precipitation to more easily infiltrate the soil surface, this project will positively impact the species that depend on the remnant shortgrass prairie and wetland habitats the ranch provides. Numerous playa and saline lake watersheds, the freshwater springs that feed into the lakes, and the wildlife that depend on these scarce water resources will benefit from increased water quality and quantity across the ranch for decades to come. The restoration will also provide high quality Texas horned lizard habitat in addition to opening up thousands of acres of historic prairie dog, black-footed ferret, and pronghorn habitat that could be used as possible reintroduction sites if the ranch decides to pursue such efforts in the future.

One of the neatest aspects of this project, like many other LIP projects across the state, is that the benefits don't stop at ranch boundary; they spill over into the local community and economy. Not only does this work improve recharge for the aquifer and improve the watershed — arguably the widest reaching benefit of this work — but also, by improving migratory waterfowl habitat that allows the South Plains landscape to support more robust populations, this project helps bring hunter dollars to local restaurants, motels, and gas stations. By increasing the grass production back towards historic levels and implementing a sustainable, prescribed grazing management system, this project is helping to create and maintain local jobs in the form of cowboys that work the cattle, veterinarians that care for the herd, truckers that haul the cattle, and feed yards that prepare the cattle for market. Additionally, by restoring the remnant shortgrass prairie, this project is creating opportunities for local students at every level to study native wildlife in their natural setting and better understand the relationships between wildlife and the habitat they depend on to survive.

The collaborative restoration projects of the South Plains landscape were supported through the Great Plains Landscape Conservation Cooperative grant between the U.S. Fish and Wildlife Service, the Texas Parks and Wildlife Department, and the outstanding landowner land stewards that worked with these agencies to improve the South Plains landscape.

MEGAN BEAN TPWD WATERSHED ECOLOGIST, HABITAT CONSERVATION BRANCH

Habitat Restoration in the Llano and James River Watersheds through the Guadalupe Bass Restoration Initiative

The Guadalupe Bass Restoration Initiative is a conservation program initiated in Texas through a partnership of willing landowners, the National Fish and Wildlife Foundation, Texas Parks and Wildlife Department, Southeast Aquatic Resources Partnership, and private foundations and partners to implement watershed conservation projects benefiting the state fish of Texas, the Guadalupe Bass.

Projects have been implemented through the Landowner Incentive Program to work with landowners promoting functional riparian, aquatic, and upland systems and encouraging healthy land-use activities that support aquatic resource conservation. Protection or restoration of watershed habitats includes reducing or eliminating activities in the watershed that degrade water quality, reduce water quantity, degrade riparian/upland/streamside habitats, favor non-native species, or fragment stream systems.

Several landowners in the Llano and James River watersheds have completed projects that are benefiting aquatic systems (especially springs and tributary creeks), riparian, and upland habitats. These watershed conservation projects integrated a holistic approach to project planning and implementation. A holistic approach considers many different biological, social, and economic factors for the watershed habitats, wildlife, and landowners. Economic factors include raising livestock or providing hunting leases; social factors include providing recreational opportunities for the landowner; and biological considerations include protecting or restoring habitats or species, restoring habitat and wildlife diversity, and managing habitats for different species life history requirements. Holistic projects must also consider all parts of the watershed: upland, riparian, and aquatic habitats.





The Llano and James River watershed projects worked to restore habitats by improving grazing practices, restoring native vegetation through fencing, implementing brush management, and installing alternate water sources. The implementation of more habitat-friendly grazing practices and installation of fencing is restoring upland and riparian habitats by allowing vegetation to become established in areas that have been overgrazed. Native vegetation establishment in the upland and riparian areas provides diverse habitats for wildlife and stabilizes soil preventing it from mobilizing and depositing into springs and streams. This can have considerable beneficial impacts to spring and stream water quality. Vegetation establishment also prevents soil compaction in the upland and riparian areas and provides more opportunities for rain water infiltration.

Fencing and re-established vegetation in spring and riparian areas will also provide a buffer to filter out nutrients from livestock waste further protecting water quality. Several springs and riparian areas were fenced to restore habitats from degradation caused by feral hogs. These fences were constructed with net wire which has been very successful limiting access to hogs and preventing the damage they

cause to these sensitive aquatic systems. Alternate water sources have also been installed on some of the ranches to promote a more even distribution of livestock across upland habitats and to provide water to livestock when springs are fenced out.

Another method of restoring habitat diversity with these projects has been through brush management. Invasive plants like re-growth Ashe juniper can quickly dominate the landscape when land management practices change natural processes. After land management strategies were addressed (like implementing more habitat-friendly grazing practices and prescribed burns), landowners targeted invasive brush for removal to encourage other native vegetation to become re-established. Slash created from removing re-growth Ashe juniper was used on site as natural cages to protect vegetation from grazing and browsing as it is becoming established. These slash piles also slow the flow of water over the landscape further preventing soil erosion.

The continued collaboration of hard-working landowners committed to land stewardship and conservation partners through projects like these will benefit the persistence of Guadalupe Bass and many other native Texas wildlife and habitats.

For more information about methods used for these projects or starting a project in the Llano watershed, please contact Megan Bean at megan.bean@tpwd.texas.gov.

MEGAN BEAN TPWD WATERSHED ECOLOGIST, HABITAT CONSERVATION BRANCH
TOM ARSUFFI, ROBERT STUBBLEFIELD, AND KAREN LOPEZ
TEXAS TECH LLANO RIVER FIELD STATION, TEXAS TECH UNIVERSITY

Texas Tech Llano River Field Station Restoration and Community Outreach Project

The Texas Tech Llano River Field Station is located in the Texas Hill Country just outside Junction, Texas, along one of the most pristine rivers in the state, the South Llano River. The 411-acre research station is actively involved in watershed and conservation issues at the local, state, and national levels by hosting workshops, conferences, field days, and professional development classes; conducting and participating in a variety of research projects; administering the Junction Outdoor School; and is an important partner in the Guadalupe Bass Restoration Initiative (GBRI).

The GBRI is a conservation program in Texas that protects and restores populations of the state fish of Texas, the Guadalupe Bass, and their associated habitats. Guadalupe Bass are Texas endemics (found nowhere else in the world) and provide important recreational and economic opportunities in the Hill Country. Funding from the National Fish and Wildlife Foundation, Southeast Aquatic Resources Partnership, Texas Parks and Wildlife Department, and other partners has given willing landowners and TPWD biologists the opportunity to work within the range of Guadalupe Bass to restore and protect watershed habitats. These projects employ a holistic approach to planning and implementation to promote healthy and functional riparian, aquatic, and upland systems that support aquatic resource conservation. The Field Station has participated in the GBRI by collaborating on research projects, hosting stakeholder meetings and workshops, and implementing habitat restoration projects. The Landowner Incentive Program project completed selected upland and riparian restoration, controlled non-native riparian species, and developed demonstration sites associated with an interpretive terrestrial and riparian trail system that will be integrated with the South Llano Paddling Trail.

Staff members at the Llano River Field Station have contributed numerous hours to implement upland and riparian habitat restoration projects on the campus. Re-growth mesquite had invaded several areas on the property, so one of the project goals was to remove the re-growth mesquite and provide other native vegetation with a chance to become established. This re-establishment process will allow the landscape to become more diverse and resilient providing better wildlife habitat and erosion control. One of the treatment areas also included re-seeding native plants. A variety of native grasses and forbs were used to reseed an area that lacked species diversity. Riparian restoration included planting native trees and shrubs and removing exotic vegetation and establishing no-mow zones. The Field Station purchased trees and plants from a local nursery to plant within wire enclosures. Enclosures were constructed for the project to protect newly planted trees and plants from deer browsing. Local students were then brought in to learn about the native plants and to help



plant the trees and plants in the exclosures. This involvement was extremely popular with the students and taught many about the importance of native species and habitats. An exciting community outreach and education component to the project was the construction of an upland and riparian trail. Approximately one mile of trail was installed and highlights the conservation best management practices and restoration projects implemented through this effort. The trail winds along the deer exclosures with native vegetation, along unique riparian and upland habitats, bird blinds, and provides a beautiful view of the river to hikers. Interpretative

signs explaining the importance of the restoration work, native plants, the South Llano River, and Guadalupe Bass are currently being developed and will be displayed along the length of the trail. To monitor the success of the all these project components, baseline assessments were conducted of plant species in the upland and riparian areas and photo points were established to visually document changes over time.

For more information about this project or starting a project in the Llano watershed, please contact Megan Bean at megan.bean@tpwd.texas.gov.



RICHARD HEILBRUN, TPWD CONSERVATION
OUTREACH PROGRAM LEADER

Can I Hitch a Ride?

Wildlife conservation in Texas has another ally these days, and they're driving 70 mph down the highway. Wildlife enthusiasts can choose from seven conservation license plates that benefit causes you care about: Wildlife Conservation, Bass Fishing, Wetland Conservation, and State Parks. The White-tailed Deer plate and the Horned Lizard plate both fund wildlife conservation throughout the state. Revenue from the Horned Lizard License Plate (HLLP) is used in several ways. First, it's used to study rare and sensitive wildlife species. These studies are typically conducted by researchers and universities, and focus on species of greatest concern, as listed in the Texas Conservation Action Plan. Last year, the Fort Worth Zoo received a starter grant to create a reintroduction program for Horned Lizards. Universities working with private landowners have received grants to study imperiled plants and at-risk ecosystems.

HLLP grants are also given to projects that improve access to wildlife, especially for youth groups and groups with little access to nature. Two such programs were funded this year. The Chihuahuan Desert Research Institute received money to improve their outdoor education program, and the Wildlife Conservation and Education Society of South Texas received money to build photo blinds for underserved youth in Brownsville. Last year, the Wildlife Conservation Camp received a grant to improve their summer camp experience for high school students.

HLLP money is also available for restoration of imperiled habitats. Last year, Horned Lizard license plates funded the

purchase of a seed drill that is now loaned out at no charge to landowners to re-establish prairie habitat. Grants were given this year to help protect a popular bat cave in Central Texas. Private landowners are eligible for Horned Lizard License Plate grants. Applicants can increase their chance of success by focusing on rare and sensitive species (those listed in the Texas Conservation Action Plan), providing access to groups for wildlife viewing/wildlife recreation, providing educational opportunities, or by partnering with research institutions. All grant amounts from \$2,500-\$30,000 are considered, but we particularly encourage small grants so that more projects can be funded. Grants are posted on our website each September/October, and announced through our Facebook page (search Facebook for Texas Wildlife Diversity Program and like our page to receive notifications of all our grants).

Even if you don't apply for a Horned Lizard grant, you can still show your support for wildlife conservation in Texas. Plates cost just \$30, and \$23 of that goes straight to conservation projects. More information can be found at www.conservationlicenseplate.org. Show what drives you on your car, truck, trailer, or motorcycle!

www.tpwd.texas.gov/huntwild/wild/wildlife_diversity/grants/horned-lizard/



JON HAYES, OAKS AND PRAIRIES JOINT VENTURE



Oaks and Prairie Joint Venture Grassland Restoration Incentive Program Combats Grassland Bird Species Decline in Texas

If you have ever spent time in the Texas countryside on a spring morning you are probably familiar with the sweet, lazy, song of the eastern meadowlark. This distinctive melody is as much a part of Texas rangelands as cows, cattle guards, and barbed wire. In fact, it is often on a barbed wire fencepost that you'll see these chunky little yellow breasted birds perched, belting out their iconic song, allowing it to slowly drift across the landscape.

Texas has historically supported large numbers of these birds throughout the breeding season and even more when their northern brethren decide to travel south from higher latitudes to spend their winters enjoying the relative warmth of Texas. Probably due to their past abundance, meadowlarks, like many other grassland birds, are often taken for granted as common and unremarkable members of the Texas avifauna. Perhaps it is because of this perception that people are surprised to hear that meadowlark populations have actually dropped by over 75% throughout much of their Texas breeding grounds over the course of the last 50 years. Likewise, since the National Breeding Bird Survey began collecting landscape scale bird data in the mid-1960s, grassland birds in general have experienced a greater population decline than any other group of birds in North America. The list of declining grassland associated birds includes the northern bobwhite quail, a popular game bird and an icon of the American south. Since 1965 the population of bobwhite in Texas has decreased by over 90%. Recent droughts have accelerated this decline, prompting various sportsmen and conservation organizations to call for immediate action to address this rapid loss of a beloved species.

There are many factors that contribute to these disturbing trends, but unquestionably, the loss of available suitable habitat needed to sustain these birds throughout their various life stages has been the primary driver. This habitat loss is a result of changes in land use that have led to the conversion of native grasses to exotic grass pasture or cropland, improper grazing, suppression of fire, and brush encroachment; each of which has had a significant negative impact on the ability of

Texas grasslands to support populations of meadowlark, bobwhite and other grassland-dependent species.

And this is far from a "uniquely Texas" problem. Across the tallgrass prairie of the United States, less than 5% of the native grasslands remain undisturbed. The grassland ecosystems of this country have historically supported an astonishing level of diversity and productivity. The prairies, meadows, and savannahs of the interior United States used to be teeming with an impressive array of wildlife species including antelope, bison, bears, and a dizzying variety of grassland songbirds, game birds, raptors, and others. As this habitat disappears we have lost and continue to lose many of these animals. If these historic declines continue, we risk losing some of the very species that contribute to the character, quality and functionality of our Texas grasslands. Coordinated and strategic action is needed to improve habitat at the landscape level in order to reverse this trend.

Considering over 95% of Texas land is privately held, any such action requires the participation and cooperation of private landowners. It is crucial that private landowners are encouraged and empowered to improve habitat for these birds on the lands they own and manage. The Oaks and Prairies Joint Venture (OPJV) partnerships' newly formed Grassland Restoration Incentive Program (GRIP) is a multi-organization effort aimed at doing just that. Through generous support from Texas Parks and Wildlife Department Upland Game Bird Stamp funds, ConocoPhillips, National Wild Turkey Federation, and the Texas Quail Coalition, GRIP is providing funding in the form of direct payment to landowners as an incentive for conducting approved grassland bird habitat improvement practices on their property. GRIP-eligible counties have been selected based on their potential for landscape scale grassland bird habitat restoration. These counties represent the receding edge of the bobwhite occupied range in Texas and are believed by experts to be the best areas to stage a concentrated effort to combat the loss of grassland biodiversity. By encouraging the use of time-tested habitat management practices in these areas GRIP will work to improve significant acres of habitat on

private lands. More information on the GRIP is available at www.opjv.org.

Over the course of the first two years of GRIP implementation the program is expected to improve 10,000+ acres of suitable habitat in the designated focus counties. This is a significant amount and will stand as a great achievement for all the partner organizations involved. Unfortunately, this represents only a fraction of the acreage of improved habitat needed if historic populations of grassland bird species are to be restored. Therefore, the OPJV partnership will be working to coordinate and concentrate various partner programs and efforts so as to best utilize all resources in the most effective and efficient way.

There are numerous consequences that can come from further loss of healthy grasslands. Whether it's decreased water quality

and quantity in our rivers and aquifers, loss of carbon sequestration capacity, or even loss of livestock and farming productivity, our continued prosperity can be directly impacted by the health of these ecosystems on which we so greatly depend.

Our management and use of natural resources has shaped our past and will continue to shape our future. We must recognize the value of the plants, animals, and minerals that our grasslands provide and realize that when wildlife suffers, we suffer. It is likely that we could survive in a world without meadowlarks and bobwhites, but when given the choice, is that the world we will choose to live in? Through their support of the GRIP and related efforts, the OPJV partner organizations have made their choice and are working to ensure that future generations of Texans will continue to know the song of the meadowlark and the beauty of our native grasslands.

DAVE HOLDERMAN, TPWD BIOLOGIST

TPWD Pastures for Upland Birds Program

Texas has been losing grassland acreage since the settlement period began in the mid-1800s. Historically, native tall grass prairie and oak savannah occurred over 24 million acres in east-central Texas. Over the last 150 years, the region's native prairies and savannah grasslands have virtually disappeared due to conversion to agricultural and other land uses. A landscape that was once dominated by native tall grass prairie and oak savannah is now a patchwork of non-native grass pastures and hayfields. The consequences of this massive prairie conversion have been profound losses of natural biological diversity and wildlife habitat. No group of animals has been more affected than grassland birds.

For over a decade, Texas Parks and Wildlife Department (TPWD) has administered the Pastures for Upland Birds program (PUB) to promote grassland bird conservation on private lands by restoring native prairie vegetation on lands converted to non-native grass pastures and hayfields. Specifically, PUB provides cost-share incentives and technical guidance to private landowners to restore native grass and forb vegetation on pastures and hayfields dominated by exotic grasses such as Bermudagrass, bahiagrass, and KR bluestem. Under proper management, restored native grasslands will provide nutritious livestock forage while having the simultaneous benefit of providing habitat for a wide variety of grassland birds (e.g. eastern meadowlark, short-eared owl, northern bobwhite, eastern wild turkey, and scissor-tailed flycatcher) and other wildlife.

The program services a 35-county focal area in east-central Texas coinciding with portions of Texas Blackland Prairie and Post Oak Savannah. In addition to technical guidance, TPWD PUB provides herbicides, native grass-forb seed mixtures, and a no-till seeder (as available) to qualifying landowners. The participating landowner contributes the labor associated with any treatments to existing non-native vegetation (grazing, prescribed burning, herbicide application, etc.), native plant seeding, and any supplemental treatments identified by the project plan.

For any landowner interested in participating in PUB the first step is to contact your local TPWD biologist to schedule a site evaluation. If the site is deemed to be a good candidate for the program the landowner will work with the biologist to prepare a project proposal and submit the proposal to TPWD for approval. Once approved the landowner will work with the local biologist to implement the plan and begin the process of restoring the native vegetation. When completed the landowner will have a native grassland containing up to 40 native species including little bluestem, big bluestem, indian grass, siteoats gramma, switchgrass, Engelmann daisy, Illinois bundelflower, purple coneflower, partridge pea, and butterfly milkweed.

PINES AND PRAIRIES LAND TRUST

The mission of Pines and Prairies Land Trust is to protect natural and cultural resources and promote sustainable agriculture through education and preservation of open space in Central Texas. This mission is accomplished working with landowners and concerned residents of Bastrop, Caldwell, Lee, Fayette and eastern Travis counties.

Pines and Prairies Land Trust works with landowners who wish to protect their land legacy from unwanted fragmentation by providing viable options that achieve long-term conservation and may also provide the landowner with tax benefits and the possibility they may be able to remain on their land. Pines and Prairies Land Trust can accept donations of development rights on private lands through a type of transaction known as a conservation easement. The willing landowner designates the type and intensity of development allowed in this legal instrument, the conservation easement. Where this lowers the value of the property, significant tax benefits may result. Conservation easements "run with the deed" to the property forever, and the land can still be sold or given to heirs. PPLT defends these conservation easements against future violations.

Current and future generations are the benefactors of this permanent conservation when they breathe fresh air and drink clean water and enjoy the scenery, and rural feel of open space. For more information about PPLT go to www.pplt.org. To find a land trust in your area: Texas Land Trust Council @ www.tlctc.org



LINDA CAMPBELL

When you turn on your tap and the water flows at your home, do you think about where it comes from? I would say most of us don't. We take it for granted and seldom think about what it will take to keep the taps flowing to 28 million Texans. Both ground and surface water for people, agriculture and wildlife originate with the rain that falls on the land. Since more than 95% of Texas is privately-owned, the stewardship of private lands is important to all Texans who count on a safe and secure water supply. If the land is healthy, the quality and quantity of water (both surface and ground) reflects that condition. When private land owners manage their lands well, they provide water for the rest of us.

Since the 1930s, TPWD biologists have provided habitat management assistance to landowners. Department biologists provide free guidance and recommendations to landowners and managers who want to do a good job of managing the natural resources on their land, including plants, wildlife, soil and water. Currently, TPWD biologists are assisting over 8,000 landowners in implementing wildlife management plans on over 29 million acres. Fifteen years ago TPWD saw a need for additional landowner assistance directed at nongame and at-risk species. In response to that need, TPWD developed the Landowner Incentive Program (LIP) www.tpwd.texas.gov/lip in 1997

as a way to provide technical and financial assistance to landowners interested in improving habitats for rare and declining species. Integral to this is the current focus on watershed enhancement and restoration. Projects that enhance riparian areas and adjacent uplands in ways that contribute to healthy streams and rivers from where the first raindrop falls all the way to coastal estuaries.

In this issue of the LIP Bulletin you will read about the work of dedicated land stewards who are investing their time and money in habitat work that will result in healthier land - land that provides the public benefits of protected soil, a diversity of native plants and animals, open space, and clean water for our rivers and aquifers. LIP is a valuable tool in assisting private landowners motivated to conserve the natural resources of Texas.

TPWD is grateful to our LIP partners, including USFWS Partners for Fish and Wildlife, the National Fish and Wildlife Foundation, the Southeast Aquatic Resources Partnership, the Hill Country Alliance, the South Llano Watershed Alliance, the Texas Parks and Wildlife Foundation, the Nature Conservancy, the Nueces River Authority, and most of all to the many private land stewards who have worked tirelessly to improve thousands of acres of Texas for the benefit of all Texans.

Executive Director
Carter P. Smith
Editor, L.I.P. Bulletin
Arlene Kalmbach



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