LANDOWNER Incentive Program

L.I.P. Bulletin

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CATHERINE BROWN, PROJECT SUPERVISOR, O2 RANCH
AND JONAH EVANS, TPWD DIVERSITY BIOLOGIST

Terlingua Creek Watershed Restoration

In 2010, the landowners of a 276,000-acre West Texas ranch, began a multi-year landscape scale watershed restoration project with the help of the Landowner Incentive Program and TPWD biologists.

The ranch is located in the Trans-Pecos ecological region of West Texas, which lies in the northern Chihuahuan Desert approximately 50 miles north of Big Bend National Park. The Chihuahuan Desert is the most botanically diverse region in the state and has undergone significant ecological changes as a result of land use practices and climatic conditions.

The ranch was historically used for livestock until 1998, when a large portion of the ranch, including the proposed project site, was deferred from grazing. The combination of drought and grazing followed by heavy rainfall events has

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Photos courtesy of Catherine Brown, Project Supervisor, O2 Ranch

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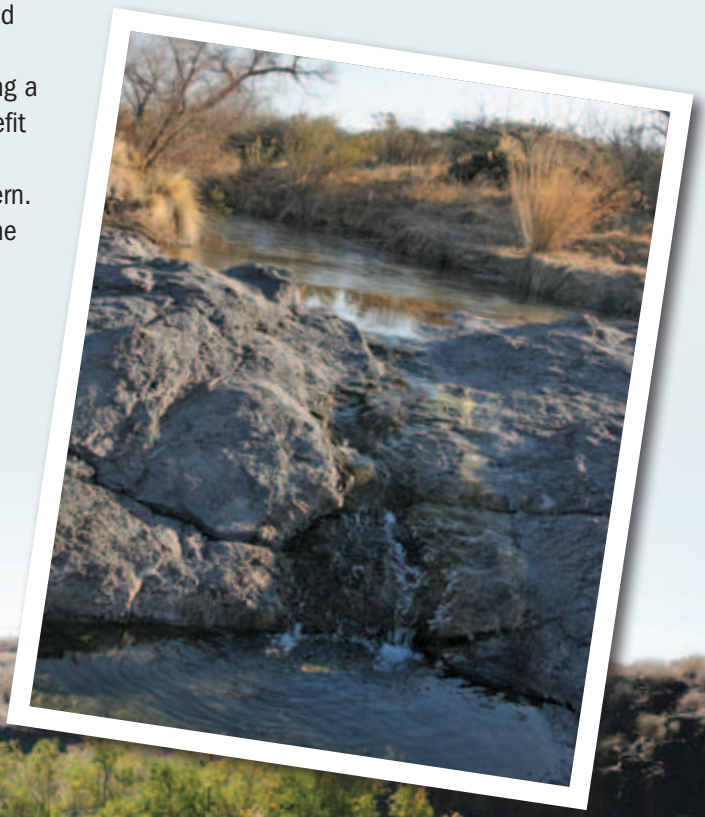
Terlingua Creek Watershed Restoration

resulted in woody plant encroachment and soil erosion, which over time has degraded many of the riparian areas on the ranch. This project focuses on one such riparian area, Duff Spring, which is located within the Terlingua Creek watershed. Specifically, our project site is located near the confluence of Duff Creek and an unnamed watershed which, when combined, drain an estimated 10,000 acres on the O2 Ranch.

The primary goal of the project is to restore native grass cover in a severely degraded watershed. Two main components of this project are mesquite removal and the re-vegetation of the riparian corridor. In the summer of 2010, roughly 300 acres of mesquite were mechanically removed with an excavator and piled into selected channels in order to slow water and reduce soil erosion. In the spring of 2011, 7 acres of mesquite within the riparian area will be cut by hand and stump-treated with herbicide to minimize soil disturbance. This will be followed by revegetating with a variety of native grasses, cottonwoods and willows along the creek. All seeds and tree cuttings will be harvested from the ranch. In addition to protecting/conserving a valuable watershed resource, habitat improvements will benefit pronghorn antelope, Texas horned lizard, northern harrier, ladder-backed woodpecker and many other species of concern. Vegetation, weather and other factors influencing the outcome of the project will be monitored before, during and after restoration to determine project success.



This watershed restoration project has the potential to improve water quality well beyond the boundary of the project site. The Terlingua Creek watershed is approximately 2,050,975 acres and encompasses many private landowners and eventually drains into the Rio Grande.

WADE HARRELL, PARTNERS FOR FISH AND WILDLIFE PROGRAM, U.S. FISH AND WILDLIFE SERVICE

Texas Community Riparian Enhancement: A New Tool for Texas Landowners

There's nothing quite as refreshing as a swim in one of our state's cool, clear rivers on a hot day. As Texans are becoming more aware of the need to conserve this precious resource, proper management of the watersheds that contribute to the water quality and quantity of our streams should be emphasized. After hearing about the Texas Parks and Wildlife Department's (TPWD) exciting new Watershed Conservation Program, the U.S. Fish and Wildlife Service (FWS) asked how we could help. Together, we devised a new cooperative agreement in which the FWS Partners for Fish and Wildlife Program contributed funding to TPWD's Landowner Incentive Program for watershed habitat improvement. The idea was to work directly with private landowners to develop on-the-ground conservation projects to restore and enhance the ecological function of key watersheds in the state. TPWD's Watershed Conservation Program has been working to educate landowners throughout the state on the importance of healthy watersheds and this new cooperative agreement would leverage those education and outreach efforts by providing funding for private lands habitat restoration.

The areas included in the 2010 agreement were the Nueces, Frio and Sabinal rivers and associated watersheds of the Southern Edwards Plateau. These areas are critical to aquifer recharge and provide habitat for numerous threatened and endangered species. They also provide drinking water and an important recreational resource to many people throughout Texas. In addition, the Terlingua Creek and Alamito Creek watersheds in the Trans-Pecos region were chosen because of their importance in providing inflow to the Big Bend reach of the Rio Grande. Like the Southern Edwards Plateau river systems, these Trans-Pecos watersheds provide water that is important not only for wildlife but also people. We are currently evaluating which watersheds to include in future agreements.

Several outstanding projects in both the Southern Edwards Plateau and the Trans-Pecos were chosen this year and are discussed in more detail in this newsletter. The primary focus of these projects is on restoring riparian areas, reducing soil erosion and runoff, increasing infiltration and aquifer recharge, improving water quality in streams, enhancing spring flow, and improving habitat for both aquatic and terrestrial species. Our long-term success in this cooperative effort will be judged by our ability to engage local communities and to demonstrate both economic and ecological benefits of maintaining biologically diverse and healthy watersheds for wildlife and people.

Stay tuned for more details on the 2011 edition of the Texas Community Riparian Enhancement agreement!

CHARLES COFFMAN,
TPWD WILDLIFE BIOLOGIST

Great Plains Landowner Conservation Cooperative

TPWD LIP Partners with USFWS for Conservation on the Texas Panhandle Portion of the Great Plains Landscape Conservation Cooperative

"Our Cooperative Agreement with TPWD has allowed our two agencies to more effectively target our habitat restoration efforts in the Southern Great Plains of Texas. It is our hope that this collaborative effort will provide opportunities to private landowners to improve habitat for the lesser prairie chicken and other grassland dependent species.

DON WILHELM
STATE COORDINATOR,
PARTNERS FOR FISH AND
WILDLIFE PROGRAM

In the spring of 2010, the U.S. Fish and Wildlife Service, prompted by climate change and its impact on invasive species and native habitats, entered into a cooperative agreement with the Texas Landowner Incentive Program to implement conservation on the Texas Panhandle portion of the Great Plains Landscape Conservation Cooperative. In addition to funding projects on the ground, the agreement also supports a staff position to increase landowner awareness and provide technical assistance to landowner cooperators.

Charles Coffman was selected as the on-the-ground biologist to work hand in hand with landowners and professionals to implement the agreement. Coffman stated, "This opportunity has been great. Many landowners see the need to improve their habitat and have jumped at the opportunity to utilize the program."

The lesser prairie-chicken (LPC), a candidate species, has been greatly impacted by changes in its habitat. The LPC is found in the northeastern Panhandle and the southern High Plains west of Lubbock. The LPC has been targeted as a priority in carrying out this cooperative agreement. To date, landowner agreements directly impacting more than 1,325 acres of LPC habitat have been approved through this funding. While priority is given to projects targeting the LPC, projects enhancing habitat for other at-risk species are eligible for funding, as well.

Lesser Prairie-Chicken, TPWD

Photos courtesy of Charles Coffman, TPWD

Since the cooperative agreement was established, project applications have been approved in Donley, Hemphill, Wheeler, Dawson and Bailey counties. These agreements have provided cost incentives for native grass planting, brush management, livestock and wildlife water development, and are leading to improved grazing management and monitoring of wildlife species populations.

Wetland habitat improvement is another goal of the agreement. Work is underway with landowners in Floyd and Lynn counties to restore the functions of two playas and eliminate salt cedar impacting several saline lakes.

Another aspect of landowner assistance through this funding involves development of LPC management plans that will allow landowners to participate in Candidate Conservation Agreements with Assurances (CCAA). In the event that the LPC is listed as threatened or endangered, for some landowners there are benefits to being enrolled in this program. Candidate Conservation Agreements may benefit landowners in several ways. First, if the actions preclude listing, the landowner is not regulated by the Endangered Species Act. Second, if the conservation actions are not sufficient and the species is listed, the agreement automatically becomes a permit authorizing the landowner for incidental take of the species. Thus, the agreements provide landowners with assurances that their conservation efforts will not result in future regulatory obligations in excess of those they agree to at the time they enter the CCAA. Third, for landowners who want to conserve the species or want to manage habitat on their land, the agreement provides an avenue to potential federal or state cost-share programs. To learn more about CCAAs go to www.fws.gov/midwest/endangered/permits/enhancement/ccaa/index.html

This cooperative agreement continues the LIP program's commitment to on the ground conservation through partnerships. Unique and valuable to this particular partnership is the biologist position. The more biologists on the ground, the better opportunities landowners have to obtain assistance in developing habitat and meeting the needs of all Texas wildlife species.

DR. BILL EIKENHORST, DVM –
PRIVATE LANDOWNER AND MEMBER OF THE PRIVATE LANDS
ADVISORY COMMITTEE FOR TEXAS PARKS AND WILDLIFE

The Texas Landowner Incentive Program from a Landowner's Perspective

> Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values as yet uncaptured by language.
>
> ALDO LEOPOLD, *A SAND COUNTY ALMANAC*

Texas would not be Texas without the large expanses of healthy and wild lands that we all are so lucky to call home. Making and keeping these lands wild and healthy is what we loosely define as conservation. Because the vast majority of Texas' lands are private, the future health and integrity of these lands and the wild things and wild places they sustain, depends on the conservation efforts of Texas' private landowners.

Conservation effort is always important; however, what matters most is when that effort produces conservation action. The Texas Landowner Incentive Program (LIP) nurtures, facilitates and incentivizes the conservation efforts of Texas landowners into conservation action.

Texas is extremely fortunate to have many landowners who produce conservation effort and action without need of the LIP program; however, landowners who apply and are approved for LIP funding are active conservationists and their combined efforts and actions represent a significant and measurable contribution to Texas conservation.

The best and most sustainable conservation actions always spring from, and are ultimately advanced by, people who live on and love the land. The best and most sustainable role of government is to help nurture and facilitate these efforts to meet conservation needs. LIP provides funding which leverages the conservation efforts and investments of qualifying landowners into conservation actions which exceed what would happen without LIP.

The Texas Landowner Incentive Program is the single most efficient and effective pathway to deliver conservation action to the ground that I am familiar with. I have been fortunate to experience LIP as a landowner participant and now as a member of TPWD's Private Lands Advisory Committee.

The scope and scale of interagency and private landowner cooperation typified by LIP is exemplary. LIP is interactive with and complimentary to many other land stewardship and conservation funding programs. LIP is available to any qualifying landowner and ultimately benefits many species however, LIP directly incentivizes conservation actions targeted specifically to aid at risk plant and animal communities versus traditional agricultural production based funding models.

Conservation actions through LIP are not limited to what happens on the ground and within the fence lines of the participating landowner. Increased population security and habitat integrity produced directly through the project yield ecologic impacts well beyond the physical boundaries of the participating property.

Positive effects on targeted species and habitats contribute economically through increased nature tourism, outdoor recreation and land management opportunity. These combined with the direct and indirect impacts on water quality and quantity and other game and non-game wildlife create immeasurable economic benefits.

Additionally, the positive and interactive networking and information exchange provided to me through technical guidance by TPWD and other agency and private biologists was a meaningful aspect of my application and ultimate participation in LIP. This interaction has been ongoing after the completion of my project and has resulted in educational and networking opportunities over these last 10 years.

The most positive and powerful part of my LIP experience was how it affected my neighbors and community relative to advancing conservation action. People that I never expected to have any interest in prairie habitats have visited my LIP project during field days and privately throughout the intervening years with significant impacts on how they view and manage their lands.

These attributes of LIP's contribution to Texas conservation certainly are not unique to my circumstances. Landowner by landowner and community by community, LIP has nurtured and supported all elements of conservation action and helped to enhance the ecologic, economic and social values that land is capable of producing.

I became involved as a volunteer with TPWD's Private Lands Advisory Committee primarily as a means of paying back part of the value I received as a LIP participant. The Landowner Incentive Program is a sterling example of best governmental practices in action, as it relates to private lands stewardship. It deserves to be held out as a working model of how agencies and landowners can and do work together efficiently and effectively for the benefit of Texas and Texans.

"There is as yet no social stigma in the possession of a gullied farm, a wrecked forest, or a polluted stream, provided the dividends suffice to send the youngsters to college. Whatever ails the land, the government will fix it.

ALDO LEOPOLD, *ROUND RIVER*

GARY GARRETT, TPWD FISHERIES
BIOLOGIST / PROGRAM DIRECTOR
WATERSHED POLICY & MANAGEMENT

TPWD Watershed Conservation

Wildlife Division LIP Program and Private Lands Staff Partner with the Inland Fisheries Division in Support of the Watershed Policy and Management Program

The TPWD *Land and Water Resources Conservation and Recreation Plan* directs the department to work with landowners, regulatory agencies and river authorities on a watershed management approach to improve water supplies for people and wildlife. The Watershed Policy and Management Program provides inter-divisional coordination and collaboration that will enable the department to leverage knowledge, effort and resources to conserve the aquatic resources of Texas.

Our goal for watershed management at TPWD is to plan and implement means of protecting and improving habitat quality and quantity so as to provide environmentally and economically healthy watersheds that benefit the natural resources of the state. Watershed management also helps to raise awareness of the resource value of watersheds and provides recreational benefits to our constituents.

Our goals are best served by guiding development of watershed management projects throughout the state and coordinating these efforts among Inland Fisheries, Wildlife and Parks as well as with land owners, NGOs, other agencies and appropriate local governments. There are many tools that can help us reach these goals, including watershed conservation partnerships, conservation workshops and one-on-one work with landowners. Incentive programs such as Watershed LIP are essential to the success all of these.

Some of the projects currently underway or in development include:

Giant river cane (*Arundo donax*) eradication in the Nueces Basin – working with David Rios, TPWD wildlife biologist, the Nueces River Authority and landowners, a program is underway to eradicate this invasive plant before it becomes more fully established. It is estimated that arundo now covers as much as 5 percent of the flood plain in the upper reach and around 1 percent in the lower sections. It creates problems by replacing native riparian plants, choking flows, consuming water (estimates of 5.5 acre-feet of water per acre per year), possibly interfering with stream meander and reducing the ability of the river to dissipate energy.

Photo courtesy of Sky Jones-Lewey, Nueces River Authority

Guadalupe Bass Restoration Initiative – Working with Arlene Kalmbach, TPWD LIP program coordinator, Texas Tech, the South Llano Watershed Alliance and the city of Junction, we have begun the first phase of this initiative. Broodstock were collected last fall and in early summer we should begin stocking pure Guadalupe bass fingerlings to help rid the system of hybrids with small-mouth bass. Additionally, this summer we will begin riparian restoration at South Llano River State Park and have begun developing a design for a low water crossing in the area. Specific actions include stream bank stabilization and reestablishment of native vegetation to support functional riparian zones, removal or redesign of road crossings that serve as barriers to fish passage or that alter natural fluvial processes in the river, instream structural habitat enhancements, including placement of root wads, log and boulder complexes that support sustainable populations of Guadalupe bass and other native fishes, and upland grasslands restoration to support recharge of springs and restored hydrologic flows. The full Guadalupe Bass Restoration Initiative has been accepted by the National Fish and Wildlife Foundation and when funding is secured will entail more than $10 million to address watershed conservation and restoration projects throughout the Edwards Plateau.

Texas L.I.P.

LANDOWNER INCENTIVE PROGRAM

Winter/ Spring 2011

The Texas Guadalupe Bass Restoration Initiative – LIP Funding Series

The National Fish and Wildlife Foundation has begun an initiative to focus and coordinate actions to conserve rare species of black basses in the United States. Although the initiative plans to address all species of endemic black bass in the southeast, the first project will address the State Fish of Texas, the Guadalupe bass. This initiative will be coordinated by the Texas Parks & Wildlife Department and one of the initial focal areas will be the South Llano River.

The Guadalupe bass (*Micropterus treculii*) is a Central Texas endemic, naturally occurring only in streams draining the Edwards Plateau region (San Antonio, Guadalupe, Colorado and Brazos river systems). In 1989, it was designated the State Fish of Texas by the Texas Legislature, in recognition of the unique character of both the Guadalupe bass and its habitat. Guadalupe bass has long provided a popular sport fishery in the Edwards Plateau region of Texas.

Guadalupe bass numbers have decreased over recent decades and for that reason the Guadalupe Bass Restoration Initiative was developed to reverse the trend. The decline in abundance is due to a combination of factors, including decreased stream flow, habitat degradation and hybridization with smallmouth bass (*M. dolomieu*). Habitat loss and genetic contamination problems are pervasive throughout the range of Guadalupe bass. Stream flow declines and a decrease in habitat quality are due mainly to human cultural activities and population growth, and thus are likely to continue.

The Texas Guadalupe Bass Restoration Initiative – LIP Funding Series is dedicated to protecting Guadalupe bass populations and their habitat by developing networks of willing landowners interested in implementing coordinated landscape conservation actions at ***watershed-scales***. Conservation actions implemented by private landowners will promote functional riparian and stream systems, and emphasize the conservation of native fish communities and supporting habitats. The networks will attempt to reduce or eliminate activities on the landscape that degrade water quality, reduce water quantity, degrade riparian systems, favor non-native species, or fragment stream systems, while encouraging a wide array of sustainable land-use activities that are compatible with aquatic resource conservation.

For the 2010/2011 fiscal year this funding is specifically available to landowners located within the north and south fork reaches of the Llano River watershed (property does not have to include a riparian area to be considered). This allocation of Landowner Incentive Program (LIP) funding is made possible through a grant from the National Fish and Wildlife Foundation Southeastern U.S. Native Black Bass Keystone Initiative as well as partnerships with Anheuser Busch. All projects approved for funding are thereby subject to the terms and conditions of that grant including.

Important points:

- Applications should be submitted by a TPW biologist between January 1st 2011 – April 15th 2011
- Priority will be given to applications with 50:50 cost share.
- Match can be in-kind as well as monetary (labor, materials, etc.)
- This is a reimbursement program. Landowners submit invoices to TPW for reimbursement on project costs.
- Contracts are written for one year with two, one year renewals (a 3 year project period)

Interested landowners are encouraged to contact their local TPWD biologist to discuss their options.
Direct programmatic questions and application requests to Arlene Kalmbach Arlene.kalmbach@tpwd.state.tx.us 512.924.6987 and watershed questions to Gary Garrett gary.garrett@tpwd.state.tx.us 830-866-3356 (ext 212)

River-friendly low-water crossing in the Nueces Basin – Working with Joyce Moore, TPWD wildlife biologist and the USFWS, we helped to evaluate problems and solutions to low-water crossings and related detriment to normal river functions. Federal funding is now helping to replace a problematic crossing and provide an example of how to do it right.

West Texas watershed projects – Working with Arlene Kalmbach, TPWD LIP program coordinator and Jonah Evans, TPWD wildlife biologist, a series of projects are in various stages that entail grassland restoration and spring enhancement in the Alamito Creek, Terlingua Creek and Maravillas Creek basins. They complement the work planned under the Big Bend Conservation Cooperative which is a collaborative effort among agencies of the Department of Interior and TPWD that will help to coordinate conservation of more than 3,000,000 acres in the Big Bend region.

Statewide watershed conservation workshops – Coordinated by Melissa Parker in Inland Fisheries, this series of workshops is designed to help TPWD staff guide landowners on proper watershed stewardship. It will include details on physical and biological functions, species identification, conservation methods and funding sources.

Numerous watershed conservation partnerships – We are currently involved as members or advisors in six watershed conservation partnerships around the state.

Terlingua Creek Project
Photo courtesy of Catherine Brown, Project Supervisor, O2 Ranch

Paddling Trails – This program has been highly popular and successfully promotes awareness of conservation efforts, recreational opportunity and value of a holistic watershed approach. We will be developing these in appropriate locations that can help to complement our efforts with private landowners.

Lake Arlington Paddling Trail
Photos courtesy of Earl Nottingham, TPWD

SKY JONES-LEWEY, RESOURCE PROTECTION AND EDUCATION DIRECTOR, NUECES RIVER AUTHORITY

Who's Stealing the Water?

Battling the Big Cane and the Little River Rat

Riparian Landowners Band Together to Combat Perfect Storm of Invasives on the Nueces and Sabinal Rivers

In the water-rich, riparian environment of the Nueces and Sabinal floodplains, arundo, also called river cane or giant reed, is spreading like wildfire as the downed, floating stalks take root from its multiple joints. Gnawed stalk ends point to part of the problem. A water-centric, rat-like animal called nutria is cutting the stalks and exacerbating the spread of the already prolific arundo colonies along the upper reaches of these floodplains.

"It appears that nutria and arundo, both non-native species, have crossed paths to create a perfect storm of invasive damage," according to Sky Jones-Lewey of the Nueces River Authority.

Arundo donax is an aggressive, non-native plant considered an invasive species in these river bottoms. Technically a grass, arundo forms thick colonies that can grow to more than 20 feet in height. It sprouts from nodes at joints of the stalk, forming a compact mass of interconnected fibrous roots and dense stalks, often creating an impenetrable wall of vegetation.

The genotype of *Arundo donax* colonizing the upper Nueces basin is native to the Seville area of Spain. The plant was considered useful by Spanish colonists and initially propagated on upland sites for its value as building material, as livestock forage, and even used for piping water because of its hollow center. First reported on the Nueces River headwaters in 1996 in the Montell area, arundo is now rapidly colonizing sections of the Nueces and Sabinal rivers in Bandera, Uvalde and Zavala counties. It is estimated that arundo covers as much as 59 percent of the floodplain in these headwaters.

Photos courtesy of Sky Jones-Lewey, Nueces River Authority

Why is this a problem?

Arundo is out-competing native vegetation, forming dense monocultures and dramatically altering aquatic and riparian habitat. Physically, the plant is choking flows and in places is completely blocking the river's channel. Biologically, arundo is consuming what appear to be enormous quantities of water. It's also believed to be altering water quality with tests showing a marked rise in PH value and visual changes within the algal community.

The USGS stream flow gage on the Nueces River at Laguna, reflects about 12 miles of arundo infestation. The gage has recorded unusual and increasing diurnal (day/night) fluctuation of up to 15 cubic feet per second (cfs) during the 2010 peak growing season. Diurnal fluctuations are thought to represent water evaporation or evapotranspiration by riparian plants, with flows dropping off during the daylight hours when plants are photosynthesizing. The fluctuations recorded at the Laguna gage before arundo, when only native riparian vegetation was present, were around 3 cfs. "This is strictly anecdotal information, but it does align with what is known about arundo's capacity to consume water," according to Jones-Lewey with Nueces River Authority.

In places of greatest density, the thick arundo colonies may also be interfering with stream meander, reducing the river's ability to dissipate energy and creating excessive bank erosion. Dormant in the winter, arundo is quick to burn and can create a fire hazard for structures along the river bank.

Observant riparian landowners have noticed arundo is inhibiting riparian function which produces the values people appreciate about the upper Nueces basin—clear flowing water and abundant fish and wildlife. The arundo and nutria nexus is putting the stream and river systems into a dysfunctional mode.

What is being done to address the problem?

A multi-pronged invasive-combat project is underway with riparian landowners leading the charge. The effort kicked off in fall 2010 with TPWD's Watershed Landowner Incentive Program (W-LIP) funding a cooperative of 12 landowners who have created a demonstration control project. So far, control methodologies involve volunteers hand-pulling new sprouts in combination with aerial and ground herbicide applications on the large monoculture colonies. The USDA, APHIS Wildlife Service Division is organizing a nutria control effort to help stop the creation of new stalk sprouts.

Data collection and photo documentation for the demonstration area is underway. Low level aerial photographs have been gathered and ortho-rectified and geo-referenced by Texas Agrilife Research and Extension Center for use in calculating the extent of arundo cover on both rivers. Botanists from U.S. Fish and Wildlife Service established vegetation monitoring transects in the demonstration area to measure the effectiveness of arundo control strategies, to monitor the herbicide impacts on non-target species, and to document the recovery of native vegetation.

Nueces River Authority is seeking additional funding sources to support a more comprehensive project and supplement landowner efforts. The NRA's successful Nueces Riparian Landowners Network is responsible for providing a keener understanding and observation tools to more than 600 people who manage about 1.5 million acres of land, most of it in the Nueces basin. It was a collective of these landowners who first rang the alarm about the recent proliferation of arundo along their stream and riverbeds.

Diane Dooley, landowner on the Nueces River and an active participant in the Riparian Landowners' Network speaks for many. "We're very thankful for the LIP support in controlling the river cane. It's just gone crazy out here — taking a lot of water from the river and actually creating more wild hog habitat, which we certainly don't need. Since learning about riparian function in 2008, I began to manage my riparian lands differently — changing my grazing and watering program and noticing beneficial riparian plants grow up and take hold. Now this river cane explosion is setting us back. We've just got to get a handle on this."

LINDA CAMPBELL, PROGRAM DIRECTOR, TPWD PRIVATE LANDS AND PUBLIC HUNTING

Private Lands Habitat Restoration and Enhancement — The Texas Landowner Incentive Program, 1997–2011

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 include wildlife management considerations in present or future land use decisions.

Currently, TPWD biologists are assisting over 6,700 landowners in implementing wildlife management plans on over 26 million acres. While much of our technical assistance is directed toward game species, 15 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.state.tx.us/lip] in 1997 as a way to provide technical and financial assistance to landowners interested in improving habitats for rare and declining species.

Since LIP's creation in 1997, Texas has provided over $4 million in state and federal cost-share assistance to 185 individual landowners and landowner cooperatives for habitat enhancement benefiting species of concern on 268,617 acres. Accomplishments include restoration and enhancement of 19,633 acres of longleaf pine forest in East Texas, grassland restoration on more than 60,000 acres of coastal prairie, improvement of over 22,000 acres of Central Texas land intended to benefit black-capped vireos and golden-cheeked warblers, and enhancement of over 40,000 acres of lesser prairie-chicken habitat. The Texas LIP program was used as a model for the national Landowner Incentive Program created in 2002 by the U.S. Fish and Wildlife Service. TPWD has demonstrated the national leadership, knowledge and experience necessary to identify and improve habitat for both game and nongame species.

In 2007 the program became dedicated to implementation of the Texas Conservation Action Plan and focused its selection criteria to prioritize projects targeting species and habitats identified as high priority by the action plan. Beginning in 2010, LIP initiated conservation projects on more than 145,000 acres across the state using funds from various federal and private funding sources. Much of this on-the-ground habitat work focuses on landscape scale watershed improvements through vegetation management, control of invasive exotic plants, riparian habitat enhancement, and water quality improvement benefiting both aquatic and terrestrial species. Collaborative efforts with the TPWD Inland Fisheries Division and the USFWS Partners for Fish and Wildlife Program are essential in leveraging staff and financial resources.

The LIP coordinator serves field and program staff throughout the state to manage both the grants that fund the program as well as the individual landowner contracts. Currently LIP is administering five separate funding grants/cooperative agreements using federal and private funding totaling over $1.3 million with more than 55 active landowner contracts/projects. Administration includes coordinating the application process, project review and selection, invoicing, addressing compliance with federal laws, tracking match, contracting, reports, assisting landowners and field staff, program budgeting, marketing and outreach.

In a state where the vast majority of land is in private hands, this program provides a valuable tool to assist private landowners in conserving the natural resources of Texas. LIP partners include Environmental Defense, The Coastal Prairie Conservation Initiative, The Nature Conservancy, the Grazing Lands Conservation Initiative, the Nueces River Authority, and many others. LIP helps fulfill multiple *Wildlife Division Strategic Plan* and TPWD *Land and Water Resources Conservation and Recreation Plan* goals and action Items. TPWD is grateful to our partners and to the financial commitment of the many private land stewards who have worked tirelessly to improve thousands of acres of Texas for the benefit of a diversity of wildlife.

BRENT ORTEGO,
TPWD DIVERSITY BIOLOGIST

Coastal Prairie Restoration

Continuing Efforts to Restore Coastal Prairie for Attwater's Greater Prairie-Chicken

This project was initiated in Goliad County as continuing efforts to restore Coastal Prairie for Attwater's greater prairie-chicken stocking. This ranch was selected for funding because of its position along a corridor of prairie connecting two larger blocks of native grasslands.

Brush control by shearing and spraying of stumps with appropriate herbicides were applied to approximately 2,000 acres of degraded coastal prairie. This work was conducted in conjunction with the Coastal Prairie Conservation Initiative whose members are U.S. Fish and Wildlife Service, The Nature Conservancy, USDA Natural Resource Conservation Service, Grazing Lands Conservation Initiative, private landowners, and Texas Parks and Wildlife Department. Brush shearing/spraying on additional coastal prairie was initiated by this ranch at the end of this project with funding from a USFWS grant, and a regular prescribed burning program was initiated with help from The Nature Conservancy.

Prairie-chicken have been documented to use this ranch on a regular basis as soon as the prairie corridor through the brush was created based on telemetry signals received from an ongoing Endangered Species Section 6 grant from TPWD to monitor chickens in this area. Northern bobwhite, northern harrier, white-tailed hawk, burrowing owl and eastern meadowlark were also observed on a regular basis when making site visits during the project.

Photos courtesy of Brent Ortego, TPWD

ARON FLANDERS,
TPWD DIVERSITY BIOLOGIST

Bog Restoration

Twin Branch Bog and Post Oak Savanna Restoration Cooperative 2008–2010

At first glance, quagmire may be a term used by a casual observer to describe a Texas bog. However, after walking into an open herbaceous bog, they may soon discover an exceptional diversity of specialized plants bursting forth that are anything but the norm. Indeed, deep muck bogs and hillside seepage slopes are among the most unique and specialized plant communities of the Texas Post Oak Savanna Ecoregion.

These plant communities are rare due to their restriction to small areas that are highly localized, forming when specific soil types and topography come together. Over 34 plant species occurring in West Gulf Coastal Plain bogs are recognized as rare and very few of these communities are protected. For instance, only around 248 acres of this community type are on state-owned conservation lands. On private lands, bogs easily go undiscovered and unmanaged. A healthy herbaceous bog is open and rich in species, especially grasses and sedges. However, they are best known for hosting orchids and carnivorous plants, such as sundews (*Drosera brevifolia*) and pitcher plants (*Sarracenia alata*). These plant communities are highly susceptible to hydrology changes, logging, overgrazing, fire suppression, impoundments and brush encroachment.

Photos courtesy of Aron Flanders, TPWD and Jason Singhurst, TPWD

Recognizing this rare resource, three landowners in northeast Leon County, within the Trinity River Basin and Post Oak Savanna Ecoregion, formed the Twin Branch Landowner Cooperative to restore bogs and hillside seepage slopes on their properties that had become overgrown with sweetgum (*Liquidambar styraciflua*), wax myrtle (*Myrica cerifera*), red maple (*Acer rubrum*) and other woody species. Invasion of seepage slopes and bogs by woody species is an extremely common occurrence, which leads to elimination of the bog plant community because woody canopy closure promotes shade tolerant species that replace the open herbaceous bog species. Additionally, these landowners had a goal to improve surrounding upland hardwoods by reducing dense yaupon stands in the understory and reclaiming openings. In order to accomplish these goals, the landowners harnessed resources made available by the Texas Landowner Incentive Program (LIP) to support their prescribed burn strategy. Regular applications of prescribed burns are by far the best management tool available to maintain an open herbaceous bog and maintain upland hardwood habitat. Funds were used to establish three miles of interior fire breaks and a low water crossing. This allowed the landowners to complete prescribed burns on 350 acres, significantly reducing invading brush. Burns carried well through yaupon stands that contained pine and oak overstory and bogs were blanketed in black immediately after reintroduction of the long time absent fire regime. The next growing season, a chorus of vigorous bog species sprang forth. The established fire breaks will allow for future maintenance of the bogs and savanna through regular cycles of fire every three to five years.

Research completed by Jason Singhurst and Edwin Bridges described this project site as a large beaksedge (*Rhynchospora macra*), trumpet pitcherplant, jointed spikesedge (*Eleocharis equisetoides*), harper's yellow-eyed grass (*Xyris scabrifolia*), and Chapman's yellow-eyed grass (*Xyris chapmanii*) herbaceous community (G1). They also reported that less than 15 known occurrences of this community type are recorded. This community arises from strong seepage emerging high on sandy hillsides, characterized by deep, sometimes quaking muck soils several meters above the nearest valley. Species diversity in these communities is exceptionally high. In fact, their surveys at this project recorded 147 different plant species, including the pitcher plant communities. Rare plants within the bog system were Chapman's yellow-eyed grass (G3S2), roughtstem yellow-eyed grass (*Xyris scabrifolia*) (G3S2) and large beaksedge (G4S2). Another species of concern documented in the area, state-threatened timber rattlesnakes (*Crotalus horridus*), will be positively impacted from the maintenance and restoration of the hardwood stands and bogs.

As an extra benefit, this area serves as an outdoor educational resource and a research project is being conducted on the pitcher plants by the Texas Christian University Biology Department. Due to the realization of valuable rare resources and proactive conservation-minded landowners, LIP was able to help conserve a unique part of Texas' heritage.

MEREDITH LONGORIA,
TPWD

Houston Toad Recovery Efforts

Making a Difference by Active Stewardship: LIP Houston Toad Recovery Efforts

Habitat Improvement and Head Start for Houston Toad

The Lost Pines area of Bastrop County (approximately 124,000 acres) supports the largest remaining population of the federally endangered Houston toad (*Bufo houstonensis*). The Houston toad has reached its lowest population numbers since monitoring began more than 40 years ago.

Declines for the species can be attributed to the vicious cycle of habitat loss and degradation associated with increasing urbanization and the legacy of more than one hundred years of fire suppression. The remaining suitable habitat in Bastrop County has been reduced in quality as a consequence, but the recent record drought conditions have exacerbated the situation and increased the pressure on already declining toad populations.

To begin the process needed to reverse that trend, a collaborative effort including funding under the Landowner Incentive Program sought direct habitat improvements in Bastrop County. With the combined efforts of the seven cooperating partners in this LIP project, consisting of four private landowners and three organizations including the Houston Zoo, Environmental Defense Fund and Texas State University, this LIP project helped fund habitat improvement projects on private lands, develop and maintain a captive assurance colony of Houston toads, as well as contribute to a “head start” program while monitoring the response of the Houston toad population to these efforts.

Habitat improvements were initiated on 6,890 acres of occupied Houston toad habitat in Bastrop County, owned by four separate private landowners along the Alum Creek watershed in the Lost Pines. These landowners are pioneers in active stewardship seeking to improve habitat diversity and overall quality specifically for the Houston toad, while also achieving improvements for other wildlife species common to the Lost Pines area of Bastrop County. Just as importantly, their participation provides a framework and serves as an example for other landowners who have since become involved in similar efforts. Specific habitat improvements included mechanical understory thinning that targeted yaupon and eastern red cedar using flail-mowers and other equipment that limited soil disturbance, as well as prescribed burning, all of which occurred outside of the breeding and emergence period of the Houston toad (January 1 to June 30).

At the same time that habitat improvement projects were taking place on private lands, LIP also helped fund the Houston toad captive assurance colony and the "head start" program for the species at the Houston Zoo. The captive assurance colony and head start program began as a last-resort attempt to recover from record low population numbers and to improve survivability and recruitment from egg to adult (similar to the programs used to help recover the American alligator, Kemp's ridley sea turtles and other critically endangered species). The results are dramatic. In the wild, only about 0.03 percent of Houston toad eggs result in recruitment (juveniles reaching sexual maturity). By collecting portions of egg strings from the wild, hatching and rearing them in the lab (head-starting) past the early high-mortality life stages, predation pressure was removed and survivability drastically increased to greater than 50 percent. Since the project began in 2009, LIP helped fund the collection, rearing and release of over 15,000 individuals at the breeding ponds where they were collected as eggs, with approximately 400 individuals remaining at the Houston Zoo to maintain a genetically-sound captive assurance colony. The captive assurance colonies allow substrate and leaf litter cover preferences and sex ratio bias from eggs to adults to be assessed, provide nutritional research opportunities, and have provided known-age toads for a variety of other applied studies on Houston toad populations that would otherwise not be possible due to the extreme rarity of the species in the wild. These captive animals also serve as a "last hope" for reintroduction efforts if the remaining wild populations were eliminated through further prolonged drought or catastrophic wildfires.

In the final connection back to the private lands and long-term benefits, LIP funds were also used to monitor Houston toad populations to assess the outcomes of habitat improvements, head start releases, and trends for Houston toads on these tracts. Since the initiation of this LIP project, additional landowners have sought LIP assistance to protect and enhance habitat for the Houston toad.

From the Desk of Arlene Kalmbach

TPWD LANDOWNER INCENTIVE PROGRAM COORDINATOR

New Partnerships Make for Exciting Year

With three new funding sources, new partnerships with USFWS, and teaming up with Inland Fisheries to address conservation on a watershed level, as well as focused efforts to improve habitat for the state fish, the Guadalupe Bass, LIP has had a busy year!

Overall, the program has initiated 38 new landowner projects in the past year and is especially excited by the new opportunities arising with work in the Trans-Pecos, partnership with the Nueces River Authority, new partnerships with USFWS and of course the continued work using the remaining traditional LIP funds. Specifically, traditional LIP funds started 12 new projects across the state addressing ocelot conservation, coastal prairie restoration, longleaf pine restoration, invasive species control, Houston toad habitat restoration and other important conservation efforts. This is in addition to the many LIP conservation projects initiated in the past few years which are underway across the state.

You'll find articles in this issue featuring some of the extraordinary LIP projects that reached completion within this past year. Finally, we're excited to have Charles Coffman join us this past year. Charles is helping to implement LIP projects in the Panhandle and support partnership efforts for conservation in that area (see article from Charles in this issue).

LIP will not host a call for projects this spring but is taking applications on a rolling basis for target areas. For more information, contact Arlene Kalmbach at (512) 924-6987 or in the Panhandle area, contact Charles Coffman at (806) 544-7657. Alternatively, contact your local TPWD biologist to discuss all potential opportunities available for conservation on your property.

LIP is hopeful to be able to continue providing private landowners across the state tools and assistance to conserve wildlife on their lands in the future.