

CAESAR KLEBERG Tracks

=====*A Newsletter from the Caesar Kleberg Wildlife Research Institute*=====



CAESAR KLEBERG *racks*

Volume 1 Issue 1

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Learn More About CKWRI



The Caesar Kleberg Wildlife Research Institute at Texas A&M University-Kingsville is a Master's and Ph.D. Program and is the leading wildlife research organization in Texas and one of the finest in the nation. Established in 1981 by a grant from the Caesar Kleberg Foundation for Wildlife Conservation, its mission is to provide science-based information for enhancing the conservation and management of wildlife in South Texas and related environment.



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Cover Photo by Dr. David Hewitt

From the Director

by Dr. Fred Bryant- Leroy G. Denman, Jr. Endowed Director of Wildlife Research



Dear Friends of the Institute,

Welcome to our first edition of *Caesar Kleberg Tracks*! Many of you have received our newsletters over the years from several of our research programs. In an effort to be more efficient and cost conscious, while still keeping you updated on important research information, we created this newsletter to bring you research information in one document twice a year. You will still receive the South Texas Newsletter, Annual Giving Report and Current Research Report. We hope you enjoy the new *Caesar Kleberg Tracks* and would really appreciate your feedback!

This year the Caesar Kleberg Wildlife Research Institute celebrates its 35th Anniversary. I am confident that at its inception, the Trustees of the Caesar Kleberg Foundation for Wildlife Conservation had a vision for a premier wildlife research program to be stationed in South Texas, but whose influence would reach the far corners of the globe. Thanks to their vision and dedication, that dream has been realized. Over the years we have continued to add new research programs, develop cutting-edge techniques for advancing wildlife research, and recruit top graduate students from all over the US, all while maintaining a unique private lands approach. We boast 26 of the best wildlife and habitat scientists in the world. They have published over 25 books and 820 scientific publications and we are grateful they have chosen the Institute to dedicate their expertise. The combination of a committed Advisory Board, forward thinking science team, superior graduate students, and outstanding staff make CKWRI what it is today. We know that **Caesar Kleberg** would be proud of the Institute that bears his name and continues his legacy of conservation.

There are new and exciting things on the horizon for CKWRI. As 2016 ends, I will step down as the Executive Director of the Institute and move into a half-time appointment in support of the Institute's mission. My 20 years here have been a blessing to me and my family and I am thankful to all who shared my passion, but also allowed me to be a part of the great things they have accomplished. **Theodore Roosevelt**, considered to be the Father of Conservation said, "*Far and away the best prize that life offers is the chance to work hard at work worth doing.*" I am grateful that I have been given the opportunity to do work that I believe is worth doing; it has been my life-long passion.

Along with our many supporters, Advisory Board, scientists, and staff, I am excited about where the next 35 years will take CKWRI. There is still much to be done and I am confident that, as we move into the future, the Caesar Kleberg Wildlife Research Institute will meet new challenges head on in order to conserve for future generations the land and wildlife we treasure.

With great respect,

A handwritten signature in black ink that reads "Fred C. Bryant". The signature is written in a cursive, flowing style.

Fred C. Bryant, Ph.D.

Leroy G Denman, Jr. Endowed Director of Wildlife Research

The Deer Research Program's International Reach

by Dr. David Hewitt - Stuart Stedman Chair for White-tailed Deer Research



The Caesar Kleberg Wildlife Research Institute's research is focused in southern Texas and Northern Mexico but the Institute's sphere of influence extends around the world. Through international engagement CKWRI scientists can apply what we have learned in South Texas to wildlife management challenges around the world. In return, the Institute's scientists learn about management practices and research findings from around the world, thereby improving their teaching and research. Following are some recent examples of the growing international reputation of the CKWRI's Deer Research Program.

Several faculty and students from the CKWRI attended the 5th International Wildlife Management Congress during August 2015 in Sapporo, Japan. There were several reminders of the Institute's renown at this meeting attended by 1,000 international biologists and wildlife managers. First, Masahiro (Masa) Ohnishi, a CKWRI graduate student from Japan, was invited to give two symposium talks on his experiences in the United States and his research regarding the effects of selective harvest in white-tailed deer. One of his presentations was entitled "Japanese Cowboys" and in it he explained the benefits of studying wildlife biology at the CKWRI. Masa emphasized the large, diverse, and welcoming cadre of graduate students, faculty with a wide range of expertise, and the applied program with nearly unlimited opportunities for fieldwork.

Through Masa's efforts to share his experiences at TA-

MUK and from presentations by other CKWRI graduate students and faculty, two unique opportunities arose through which the CKWRI could influence wildlife management in Asia.

The first opportunity is with Dr. Koichi Kaji, a professor at Tokyo University of Agriculture and Technology who studies sika deer, brown bears, and other large mammals. Dr. Kaji approached the CKWRI about establishing an exchange program for students from Tokyo and Kingsville to learn about the wildlife management challenges in each country. An agreement between the two Universities is being crafted and within a year CKWRI students and faculty can share their experiences with Japanese students and our students will be able to benefit from the experiences of biologist in Japan.

The second opportunity is based on the strong Texas hunting tradition that underpins much of the work at the CKWRI. Japan has an overabundance of sika deer. Recreational hunting can be a great tool to control deer populations but the hunting tradition and infrastructure has largely been lost in Japan. Thus, there are few people interested in hunting sika deer. Dr. Hiromasa Igota, a professor at Rakuno University in Japan working on sika deer, came to the CKWRI this spring to learn about hunting in Texas, how to recruit new hunters, and management of urban wildlife, especially deer.

The International Deer Biology Congress is held every 4 years and Randy DeYoung and David Hewitt have participated in the past 4 meetings. In 2015, collaborating with deer biologists in Colorado and Arizona, they submitted a bid to host the next International Deer Biology Congress in the United States. Their bid was accepted and thus in 2018, the CKWRI will be a prominent player in hosting deer biologists from around the world.

A fascinating link between the International Deer Biology Congress and the Caesar Kleberg Institute was revealed at this summer's International Wildlife Management Congress when Dr. Chunyi Li, a prominent Chinese scientist studying deer antlers, mentioned that his career path was determined by the book *Antler De-*

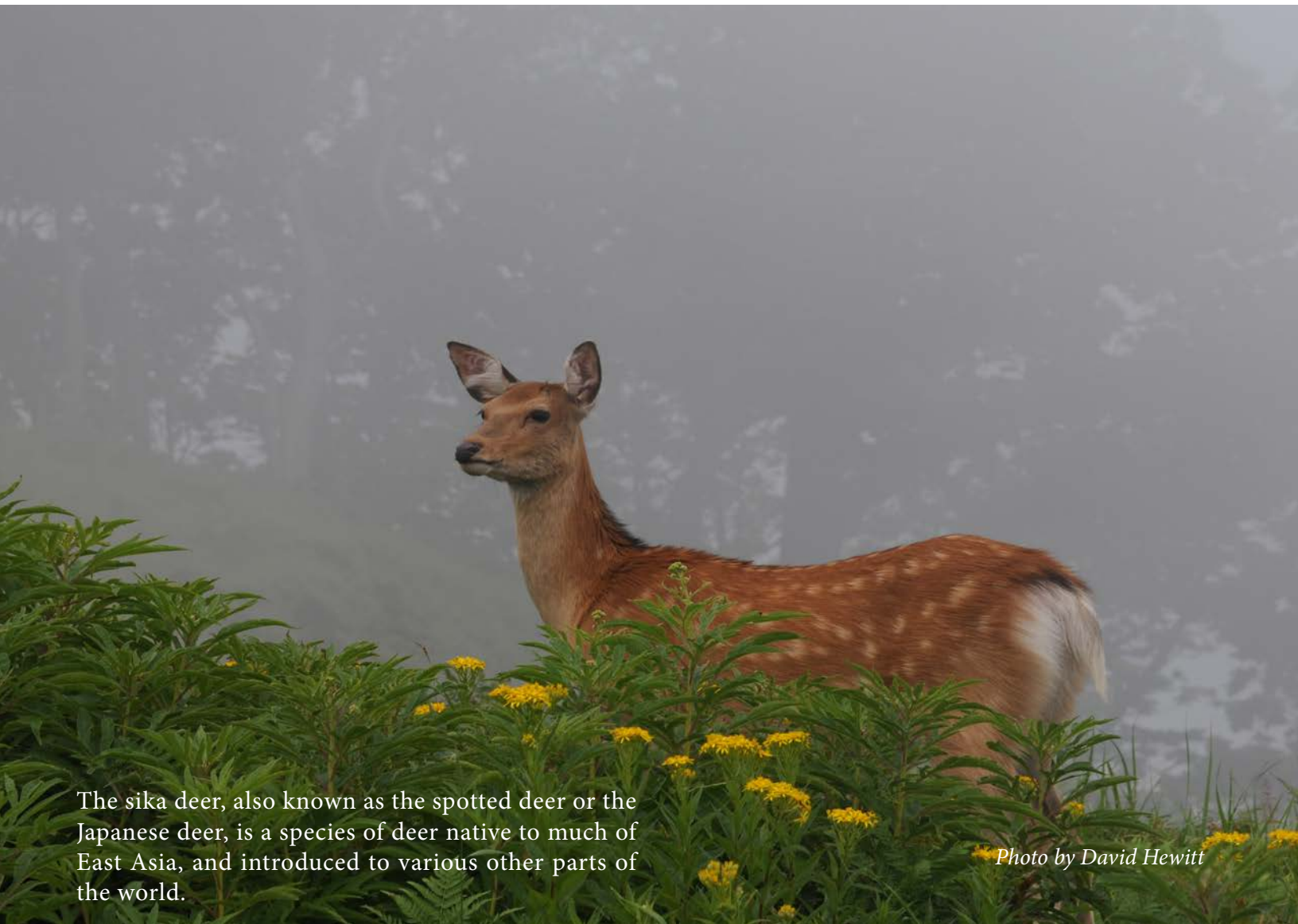
velopment in Cervidae, a collection of research papers published by the CKWRI from the first International Deer Biology Congress held in Kingsville in 1981. See the sidebar for this story of the CKWRI's influence on a Chinese scientist's career.

In the most recent example of CKWRI expertise helping deer research and management in other parts of the world, David Hewitt spent January 2016 in Argentina with 2 biologists who study huemul, a critically endangered deer species found in small, scattered populations in the Andes. They visited a Chilean facility which is the only research center with captive huemul. They also visited a large-scale community-led project in western Argentina to recover a remote huemul population.

Finally, Alfonso Ortega and the rest of the CKWRI Deer Research team have a long history of supporting deer management and research in northern Mexico. This support has been in the form of annual presentations at landowner symposiums, visits to ranches interested

in developing deer management programs, and a recent effort funded by the US Fish and Wildlife Service and headed by Sandra Rideout to engage ranchers in northern Mexico. This most recent project brought landowners to Kingsville for workshops, CKWRI deer scientists to northern Mexico to tour ranches, and was capped by publication of a wildlife management handbook written in Spanish for distribution to Mexican ranchers.

The CKWRI's Deer Research Program studies white-tailed deer in southern Texas. Knowledge generated from these efforts has benefits throughout the world. Because CKWRI scientists are internationally active, this knowledge impacts wildlife management far beyond South Texas. And, through international engagement, CKWRI scientists can borrow ideas and knowledge generated elsewhere and apply it to wildlife management in South Texas. The time and effort invested in putting the CKWRI on the international stage is great, but the benefits are greater still.



The sika deer, also known as the spotted deer or the Japanese deer, is a species of deer native to much of East Asia, and introduced to various other parts of the world.

Photo by David Hewitt

My Story

by Chunyi Li, Ph. D. - Deer Biologist



I started my antler research in the summer of 1983 when I was doing my master degree in the Graduate School of the Chinese Academy of Agricultural Sciences. After a year of theory lessons, I entered the Institute of Wild Economic Animals and Plants to do my experimental work for my thesis. Surprisingly, I was told that I must find a research project myself and the project must be related to deer. I started to search the literature and very quickly became interested in deer antlers. As an organ unique to deer, antlers are fascinating because each year they drop off and fully grow back, and they grow in an astonishing speed (up to 1 inch/day!). Unfortunately, almost

all references in Chinese were related to velvet antler composition and pharmacology, but not antler biology. Even worse, we only had very limited access to English literature at that time in the early days after the Cultural Revolution. Coincidentally, the deputy director of the Institute, Prof. Yun Gao, came back from United States and brought me a conference proceeding called “Antler Development in Cervidae” (R. D. Brown, Ed.), from the Caesar Kleberg Wildlife Research Institute in Kingsville, Texas. It was these Proceedings that taught me the updated knowledge of antler biology and these Proceedings have been cited almost by every paper later on I have published, and is still an indispensable reference book for me.

Now 32 years has gone by since I obtained these invaluable Proceedings and my career remains focused on deer antler biology. Now I have published approximately 90 papers in peer-reviewed journals, attended over 30 relevant conferences, and co-authored 4 books. The highlights of my academic career are the delivery of the plenary lectures in the 1st (Banff, Canada, 2000), the 2nd (Queenstown, New Zealand, 2004), and the 3rd (Changchun, China, 2011) International Symposium on Antler Science and Product Technology; and in the 6th (Prague, Czech Republic, 2006), the 7th (Huilo Huilo, Chile, 2010), and the 8th (Harbin, China, 2014) International Deer Biology Congress; and in the 5th World Deer Congress (Changchun, China, 2010). I sincerely thankful for the Antler Development in Cervidae proceedings, without which I would have never dreamed of having such an influence in the antler research field.

About the Deer Research Program at CKWRI

Scientists associated with the Deer Research Program are committed to conducting research relevant to free-ranging white-tailed deer in southern Texas and northern Mexico. This research seeks to increase understanding of white-tailed deer ecology and thereby increase the effectiveness of deer management. Scientists at the Institute are committed to promoting habitat management and conservation because of its importance to deer and all other wildlife and to working with landowners and deer managers in southern Texas.

To learn more about white-tailed deer research, please visit www.ckwri.tamuk.edu.

CKWRI

Deer Researchers & Faculty

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Stuart Stedman Chair for White-tailed Deer Research
Research Scientist and Associate Professor
(Ecology and Nutrition)

Charles A. DeYoung, Ph.D.

Research Scientist and Professor Emeritus
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Meadows Professor in Semiarid Land Ecology
Research Scientist and Regent's Professor
(Wildlife Habitat)

Randy DeYoung, Ph.D.

Research Scientist and Associate Professor
(Molecular Genetics)

Ocelots and Roads - A Lethal Combination

by Michael Tewes - Frank Daniel Yturria Endowed Chair for Wild Cat Studies

On April 22nd of every year, Americans recognize efforts to improve the environment on our planet - a celebration known as “Earth Day.” Ironically, Earth Day 2016 was marred for me personally when I received a phone call at 10:30 am from a Texas Parks and Wildlife Department game warden in Port Mansfield, Texas, which is located along the Lower Laguna Madre of South Texas. He called to report the remains of an ocelot road mortality found on the easternmost stretch of FM 186 in northeastern Willacy County.

My graduate student was in Port Mansfield and retrieved the specimen within minutes. A quick examination of the teeth revealed an old male. Although the non-functioning radio-collar was still present, identification information was worn beyond recognition. Most of the cat’s body was consumed by scavengers, but enough remained to discern the spot pattern, and to determine this ocelot as Y7.



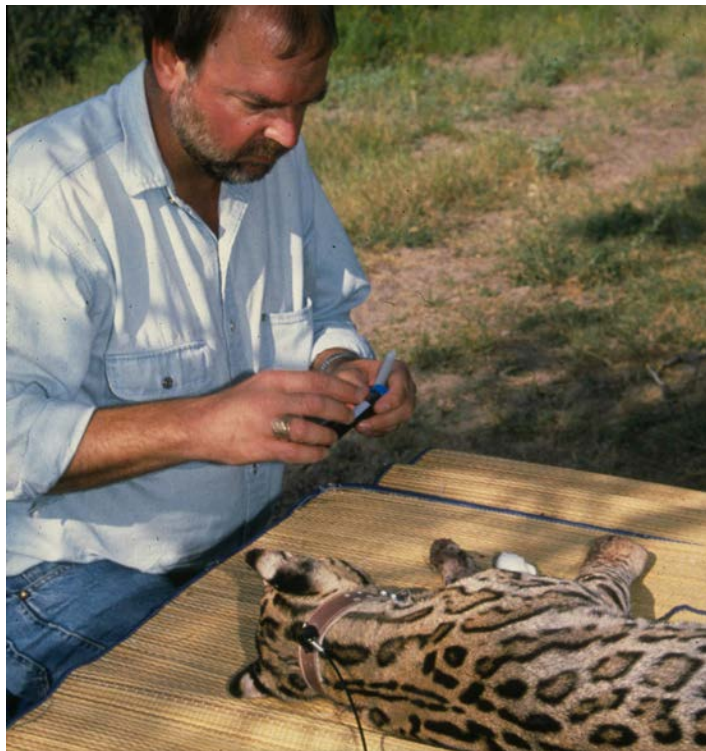
Photo by Larry Ditto

We checked the past records indicating that I trapped Y7 on the Yturria “San Francisco” Ranch in early February 2005 as an adult. Quick calculations confirmed this ocelot was at least 12 years old since it was initially captured as an adult. I remember that four-day period where I opened 20 box traps and trapped nine new ocelots - a record for our Feline Research Program.

Side story: The only reason the success stopped after four days in 2005 was that my primary field assistant, Lon Grassman, laid on the ground moaning with a belly ache. The vultures were circling overhead above Lon. So I closed the traps and took Lon to the hospital for his emergency appendectomy. Otherwise the record may have been better. They don't make the tough biologists anymore.

Ocelot Y7 eventually dispersed east from the Yturria “San Francisco” Ranch. Over recent years, our remote cameras detected Y7 using the north and south parts of the East El Sauz Ranch. In summary, this ocelot used a wide area over many years providing a lot of valuable biological information. Unfortunately, the southern ranch area abuts FM 186 and chance caught-up with Y7 resulting in the April 22nd mortality. Over the years, our long-term research has documented several ocelots living past 10 years of age.

Unfortunately, our research also demonstrated many years ago that the primary source of known ocelot mor-



Dr. Michael Tewes has been conducting research on ocelots for over 30 years.

tality were from cars and trucks. This population drain has continued to occur, and likely has expanded with the rapidly increasing human population and related traffic volume.

Ocelot roadkills have recently been a particularly significant problem. At least seven ocelot road mortalities have occurred in the Rio Grande Valley over the past 10 months, a concerning record since we believe there are fewer than 80 ocelots remaining in the United States.

Three of these mortalities occurred in Cameron County. These roadkills are particularly distressing because only 14 known individuals were identified in the Cameron population during summer 2015. Although there were likely at least a few other undetected individuals, three mortalities represents an alarming proportion of this small population.

We have repeatedly seen that the Willacy ocelot population with over 30 ocelots is not immune to road mortalities either. In addition to Y7, two other ocelots that we have been monitoring for several years died on FM 186 - one in July 2015 and the other in October 2015. We photographed both ocelots for several years with remote cameras on the southern part of the East El Sauz Ranch. A fourth ocelot from the Willacy population was killed on Highway 77 north of Raymondville in January 2016.

Although a similar number of ocelot road mortalities have occurred in the two populations over the past year, I believe they reflect different acting processes. The smaller Cameron population occupies a few isolated fragments of woody habitat embedded in a landscape of mostly unsuitable habitat. Surrounding the small habitat parcels are extensive tracts of open rangelands, salty-dominated coastal prairies or agriculture fields barren most of the year. The few ocelots in the Cameron population are surrounded by a dense network of roads and traffic which are responsible for the roadkills.

The Willacy ocelot population occupies primarily extensive ranches with healthy rangelands between population subgroups. Although the road density in northern Willacy County is much less compared to Cameron County, the Willacy ocelot population is relatively larger providing more ocelot targets for vehicles.

Artificial ocelot crossings have been discussed for many years as a strategy to reduce mortalities. Previous trans-

portation projects have either constructed or modified numerous crossings with the intention of benefitting safer ocelot passages. Some of these crossings were placed on Highway 281 north of Alice, several crossings on a toll road near Laredo, and other passages were constructed at various locations in South Texas and the Rio Grande Valley. However, I am unaware of documented ocelot use of these sites, primarily because of the absence of resident ocelots in the immediate vicinity of the crossings.

Following 10 years of discussions, planning and delays, ocelot underpasses are finally being constructed on FM 106 adjacent to ocelots using the Laguna Atascosa Refuge. Some of these culverts will likely be used by ocelots, and hopefully will reduce some of the road mortalities in this small population.

The traffic volume is predicted to worsen particularly around the Cameron population with new road improvements, expanding developments and housing associated with a rapidly increasing human population. A projected development of particular concern will be the new causeway planned to link the northern end of the City of South Padre Island across the Laguna Madre to the mainland. The proposed causeway entry point on the mainland is immediately south of Laguna Atascosa Refuge which will place a busy transportation corridor

adjacent of this fragile Cameron ocelot population.

Another urgent need for ocelot recovery are protected crossings on the eastern end of FM 186 in Willacy County. In addition to the three ocelot road mortalities that occurred over the past 10 months, I have encountered numerous reports of ocelot mortalities over the past 30 years along this stretch of road. This represents another example of how this road mortality serves as an unfortunate index that reflects the larger cat population in this Willacy area.

Ocelot crossings on FM 186 would likely be highly utilized by ocelots because of the larger nearby ocelot population. It would serve as a critical tool to maintain demographic and genetic stability by enhancing landscape connectivity of the ocelot population while reducing ocelot mortality from vehicular traffic.

In addition to the few ocelots remaining in the Cameron population, the Willacy ocelot population appears to be the last major stronghold of this endangered feline in the United States. Urgent attention and recovery actions should be devoted to the Willacy ocelot population. I am convinced that properly designed and placed crossings on the eastern segment of FM 186 would be extremely valuable to ocelot conservation.

Photo by Larry Ditto

Wild cat research has been ongoing since the inception of the Caesar Kleberg Wildlife Research Institute, and under this program, it currently represents one of the leading efforts directed toward the study of wild cats in the world. The quarter-century history of wild cat research and the long-term commitment to multi-year studies demonstrates the critical role the Feline Research Program has played in unraveling the ecological mysteries of these elusive and complex predators.



With the availability of native seeds, why are non-native grasses still used in South Texas?

by Forrest Smith - Director of South Texas Natives and Texas Native Seed





Since 2001, South Texas Natives (STN) has worked to make native seeds available for restoration and revegetation needs in South Texas. These efforts have been fruitful, with over 30 native seed source releases having been developed and commercialized. When STN began, many agencies stated their desire for viable alternatives to the non-native grasses that had historically been used in South Texas. In fact, one of the standard defenses for non-native seedings in the late 1990's was the lack of available native plant material.

Today, native seed alternatives are available for South Texas, supplied in sufficient quantities for even the largest revegetation plantings we know of, and the seeds are competitively priced with most non-native seed options. Still, agencies continue to recommend non-native grasses. We are also aware that some landowners request non-natives. That is prerogative of every landowner. Our concern lies with agencies who recommend non-natives.

Resistance to change

The use of non-native grasses such as Old World blue-stems, buffelgrass, Lehman lovegrass, and bermudagrass is ingrained in the psyche of many practitioners and agencies. Changing courses, or even acknowledging some deficiency of logic of continuing to plant non-native grasses today, is met with staunch opposition in some circles.

There is little doubt that based on the concerns of the era when non-native grasses were extensively used that most anyone would have followed suit in using them then. But it is perplexing, that today, knowing as much about the negatives associated with non-native grasses as we do, that some of these plants are still recommended by agencies. Today, we know that planting non-native grasses is problematic for wildlife, generally results in invasion of surrounding lands, and reduces biological diversity. Yet we the tax payer still publically fund revegetation, wildlife habitat, and conservation plantings including non-native grasses through federal cost share programs. It seems there is no way something like this could continue to happen in the 21st century, but it does.

Douglass King Seed Company in San Antonio, and other growers, is a producer of certified South Texas Natives (STN) plant varieties. For over 10 years STN has been testing and selecting native species to give the landowners of South Texas a choice for restoration work on their property.



Photos by Forrest Smith

The problem is too big to solve already, so why bother?

Many claim that in South Texas, buffelgrass, Old world bluestems, and Lehman lovegrass are everywhere already so worrying about planting more is unimportant. It is quite true South Texas has an abundance of non-native grasses; but it is untrue that these plants are already everywhere. Take for instance a recent gas pipeline right of way that traversed some of the world's best quail habitat in the Sand Sheet of Brooks and Jim Hogg Counties. Much of this habitat was as virgin from a native plant standpoint as any landscape in the United States. Had non-native grasses apathetically been planted throughout, instead of natives, and it would not be virgin anymore.

Adding more fuel to the fire of non-native grasses by continuing to plant them is not a neutral practice. From small plantings, non-native grasses literally take root in new areas of South Texas. Many recently constructed pipeline right of ways in the Eagle Ford Shale demonstrate this clearly. After being planted, buffelgrass has established, and is subsequently spreading to adjacent areas. Oftentimes, these are areas that otherwise would have supported native vegetation indefinitely had buffelgrass not been introduced by man. Research from the Welder Refuge by Stephen Goertz and Tim Fulbright documented an exponential increase of non-native grasses over the last few decades on the Welder, from relatively benign amounts as recently as the late 1980's.

Habitats in many areas of South Texas have no doubt suffered from similar invasions of non-native grasses

from small plantings. Planting more non-native grasses, especially in areas where they were not present prior to a need for revegetation, is additive to a concerning problem in our region, and apathy about planting more, is illogical.

Cattle vs. wildlife

Wildlife managers and stockmen often have dueling interests when it comes to non-native grasses. I was told once that "natives are for wildlife people, and this is a cattle ranch, so we plant buffelgrass". That said, when that same ranch went on the market, as more and more places seem to each generation, it was marketed for its value as wildlife habitat. But alas, it was by then covered in buffelgrass. The wildlife-focused land customer of today is well informed, and ranchlands dominated by non-native grasses are viewed as less desirable than native areas by most. This is in large part because savvy real estate buyers (and agents) know that restoring natives once non-native grasses are present is a daunting as well as financially breathtaking endeavor. In some years, we get almost as many requests for plant id from realtors selling ranchland than anyone else. They are asking because their customers care.

Although recent historic highs in cattle prices may have temporarily provided some support from a financial standpoint to establish non-native grasses on some South Texas rangelands, long term trends in land values show that hunting and recreational property ownership are clearly the principle drivers of real estate sales. Furthermore, recent economic analyses prepared by Megan Clayton of Texas AgriLife makes further light of deficiency of planting anything for the singular goal of

South Texas Natives Certified Seed Growers & Distributors

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increasing livestock profits. Her work clearly indicated that planting neither natives, buffelgrass, nor bermudagrass is profitable for livestock production alone. But, a safe bet is that scales begin to tip toward being in the black when wildlife lease revenue is added to the equation, and native pastures obviously bring a premium in that regard. I think it is worth noting, that today's informed-prospective-hunting lessee, is loath to pay premiums for either buffelgrass or bermudagrass pastures for hunting, especially for quail. They have likely read CKWRI newsletters on the topic.

Time for change

Most problem areas for large scale use of non-native grasses fall under three areas: 1) contractors on Clean Water Act mandated seedings that do not follow current specifications (in many cases when those specifications already require natives); 2) recommendations for planting non-native grasses in Environmental Quality Incentive Program (EQIP) seedings; or 3) livestock-oriented advice that fails to appreciate the impacts of non-native grasses on hunting lease value, ignores long term land value, or overlooks the entire economic picture of establishing forages. Much of this can be solved if public agencies changed outdated policy, or refrain from giving short-sighted advice. Substantial public support, particularly in the wildlife conservation community in other "quail states", exists for endorsing native grasses. We have come a long way in 15 years toward native plants being the go-to choice for revegetation and conservation seeding in South Texas, but we have some work left to do. Native seeds are here to stay, they work effectively, and they are available in quantities needed to meet demands on a regional basis. Now that we have the seeds, it is time that the policy, practice, and guidance starts playing catch-up, based on the science and culture of today. We commend agencies that have taken the lead in support of native seeding. Our friends at TxDOT have clearly made that commitment in their specifications and operations in South Texas and much of the rest of state. It is time others followed their lead.



South Texas Natives is committed to providing economically viable sources of native plants and seeds to both the private and public sector for the restoration of native plant communities in south Texas.

The objectives of this program are to:

- 1) collect, evaluate, and release seed of important south Texas native plants to commercial seed producers
- 2) develop and implement strategies to reestablish native plants and minimize the influence of introduced plants upon native habitats
- 3) disseminate information about the intrinsic and ecological value of native plants
- 4) promote the use of native plants in rangeland restoration, highway right-of-way plantings, oil and gas exploration remediation, and horticultural plantings



Technological Advances in Tracking Waterfowl and Waterbirds

by Dr. Bart Ballard - C. Berdon and Rolanette Lawrence Chair for Waterfowl and Wetland Birds

Recent advances in wildlife tracking technologies have really changed the way we conduct research, and have improved the amount and quality of information we are acquiring on highly-mobile species. These advances are particularly useful to our Waterfowl and Wetland Bird Research Program, as most of the species we work with are highly-mobile, migratory species. A little over a decade ago, the most commonly available tracking devices required researchers to locate individually marked birds with directional antennas at relatively close distances (within a couple miles), and then estimate their location. You can imagine the challenge of relocating a radio-marked northern pintail that freely travels up and down the Texas coast or that makes movements into Louisiana. We were lucky to relocate a high proportion of animals that we had attached transmitters to. The recent development of tracking devices that use satellites or the cell phone network have allowed considerably more consistent tracking with longer device life spans and much more accuracy than the old VHF-transmitter technology that was the norm a little over a decade ago. Additionally, these new tracking devices allow us to investigate many more questions that we were unable to consider when using the old technology. Recently, we have deployed transmitters that remotely report GPS-quality locations to satellites, which then transmit the data to a data server that we can access to download the information. Thus, there is no more effort put into searching the coast for radio-marked birds, but instead, the information is remotely acquired by satellites. This not only reduces

the considerable cost of traveling via truck and aircraft to search for radio-marked birds, but also reduces the dangers associated with flying by keeping researchers out of an aircraft. Additionally, the use of solar panels to recharge batteries not only lengthens the theoretical life of the device, but also allows the use of smaller batteries resulting in a lighter weight unit – something that is paramount when placing these on birds.

We have deployed satellite-based tracking devices on reddish egrets over the past several years and have learned considerable amounts of information about aspects of their ecology that were previously unknown, such as their migration routes, critical stopover sites, wintering sites, and their migration strategy. This infor-

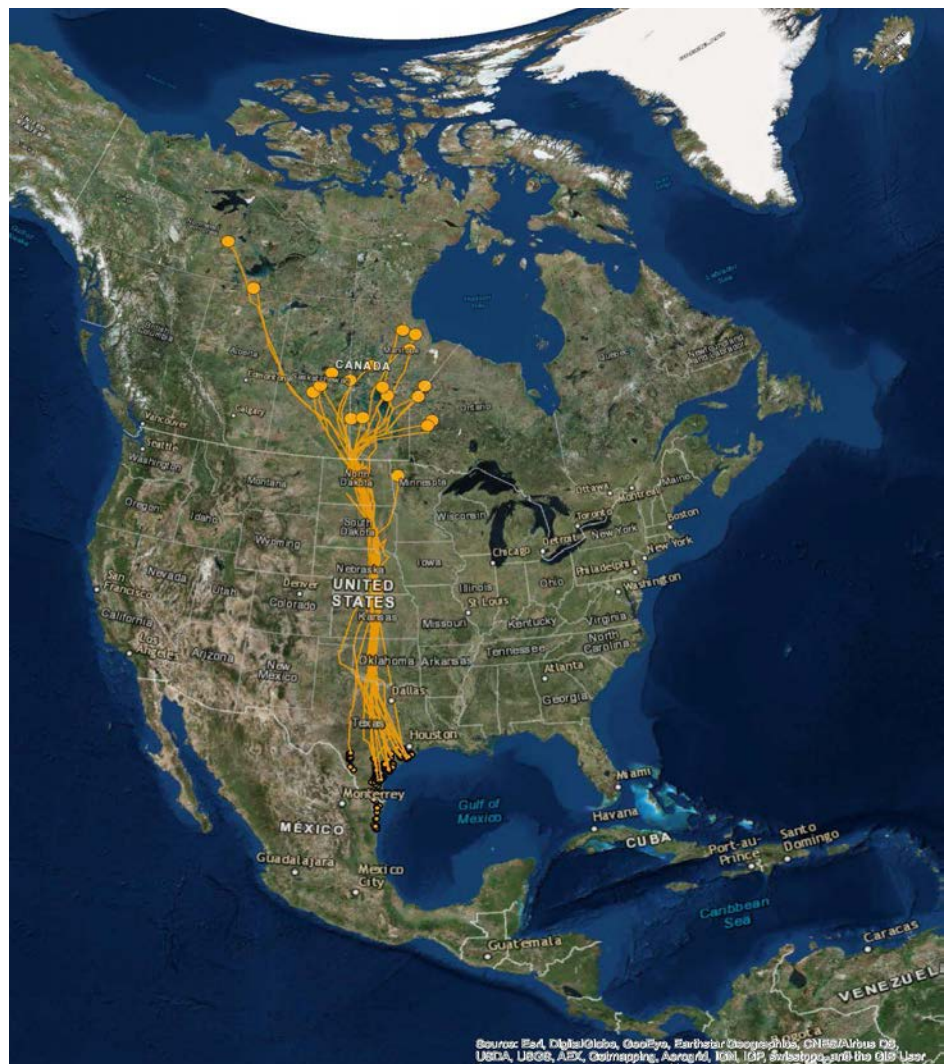


Figure of the sandhill crane migration routes from the cranes that were marked by Dr. Ballard and CKWRI graduate students this past winter.



Photo by Bart Ballard

mation has been essential for addressing key questions for the Reddish Egret Recovery Plan. Similarly, redhead ducks carrying these devices recently provided important information on how these birds respond to wind farms that have been built within their most important wintering area. This is information that can hopefully be used to sensibly site new wind farms in the region. More recently, we have deployed these units on adult sandhill cranes to better understand winter ecology and breeding site affiliation for cranes wintering along the Texas coast. Since the devices transmit to satellites, it doesn't matter where they are on the planet in order to acquire location information. We deployed these devices on adult sandhill cranes this past winter and they are now distributed from the west-central arctic to the coast of Hudson Bay.

A new technology, similar to that that uses satellites, uses the mobile phone network. We have been using this technology on greater white-fronted geese. An advantage to this technology is that the data acquisition is cheaper and we can acquire locations at a much higher rate than a typical satellite device. The disadvantage is that you have to be in network coverage range for the devices to download their location data. Most

devices have the ability to store large amounts of data when they are out of coverage. For instance, the greater white-fronted geese on which we deployed these devices breed in the arctic where there is obviously no coverage. Thus, we will not be acquiring any information on them during the 5 months they will be out of mobile network coverage, but the information will be stored on the unit and downloaded once they birds return back into the mobile network coverage area during autumn migration.

None of these devices are perfect and they all have their short-comings, but they are substantially improved over anything available a decade ago. As you can see, the species mentioned are all relatively large birds. This is a result of the technology requiring relatively large batteries which doesn't yet permit use on smaller species. Advances in technology are progressing quite fast, and smaller and smaller devices will allow them to be used on smaller species. Thus, the future will see significant gains in information about species of shorebirds, songbirds, and other smaller species. This is an exciting time to be conducting research on migratory birds because much information is to be gained from this relatively new technology.

Northern Bobwhite Research Four Stories

For this edition of *Caesar Kleberg Tracks*, I asked four of my graduate students who are conducting northern bobwhite research to provide short summaries of their projects. Each of these summaries can be considered a short story with implications for wildlife science and quail conservation. Good scientific writing, even though it is often technical, is good writing only if it tells a story. At least that is what my undergraduate advisor told me when I was struggling to write my first scientific papers for publication more than 35 years ago. Since then, the tables have been long turned around on me, and it has been my privilege to advise graduate students and convince them to make their research story central to their scientific writing. Here are four examples of good research stories.

—Leonard A. Brennan
Professor and C.C. Winn Endowed Chair,
Richard M. Kleberg, Jr. Center for Quail
Research



Bobwhite Population Densities in Relation to Experimental Grazing Regimes in South Texas

by Andrea Bruno, Ph.D. Student

Northern bobwhite populations in Texas are often managed on rangelands in conjunction with cattle operations. Grazing regimes can impact bobwhite habitat in different ways depending on a variety of factors; however, there is little research on incorporating the effects of different grazing regimes on bobwhite density on a large scale and over a long-term period. The East Foundation strives to conduct wildlife research that contributes to the general knowledge of wildlife-cattle co-existence and can be utilized by landowners and ranch managers. Within this framework, my dissertation research will focus on monitoring bobwhite density pre and post grazing treatment implementation on an 18,000-acre pasture and 3 off-treatment or reference sites (10,000 acres) within the San Antonio Viejo ranch in Jim Hogg County, Texas. Grazing treatments include (1) continuous, high stocking rate, (2) continuous, low stocking rate, (3) rotational, high stocking rate, and (4) rotational, low stocking rate. Prior to treatment implementation in January 2016, we collected pre-treatment bobwhite density on all study sites in 2014 and 2015. In 2014, bobwhite densities on the treatment areas were similar to the reference sites (one bobwhite per 5 acres). In 2015, bobwhite densities on the treatment areas increased to a bobwhite per 2 acres, but estimates remained the same (one bobwhite per 5 acres) on the reference areas. We will continue to monitor density in 2016 and 2017 and eventually incorporate measurements of precipitation, vegetation structure, and biomass utilization by cattle analyses. The results from this study will be used to make management decisions on Texas rangelands where cattle production and bobwhite conservation are integrated goals.

Cooperative support for this project is being provided by The East Foundation, South Texas Chapter of Quail Coalition, and the Richard M. Kleberg, Jr. Center for Quail Research.

Bobwhite Use of Coastal Bermudagrass Restored to Native Vegetation

by Carter G. Crouch, Ph.D. Student

Conversion of native grassland to non-native grasses poses a threat to grassland birds, including northern bobwhites (*Colinus virginianus*). Coastal bermudagrass (*Cynodon dactylon*) is a commonly introduced grass planted widely for cattle grazing in the southeastern United States. The objectives of this study were to document and compare bobwhite abundance and habitat on coastal bermudagrass pasture, a native shrubland community, and a former coastal bermudagrass pasture restored to warm season bunchgrasses. In 2014, we trapped 105 bobwhites in the restored site, 27 in native shrubland, and 4 in the bermudagrass sites. These results coincide well with our habitat results; as the restored site had nearly 6.3 times more grass clumps suitable for nesting than one bermudagrass pastures and nearly 13 times more than the other pasture. In 2015, we trapped 77 bobwhites in the restored site, 24 in native shrubland, and 34 in the bermudagrass sites. The habitat was different in 2015, with the restored site providing a similar amount of suitable nesting clumps as one bermudagrass pastures and just over twice as many as the second bermudgrass pasture. Heavy grazing, drought and lack of fertilizer application has allowed the establishment of forbs and other grasses in these bermudagrass pastures. Furthermore, high levels of spring precipitation in 2015 and low levels of grazing on the Bermudagrass sites in the winter of 2014 and spring of 2015. This is the first study to quantify the effects of bermudagrass on bobwhite abundance. This study reinforces the hypothesis that bermudagrass pasture provides poor habitat for bobwhite, and demonstrates that bermudagrass pastures can be restored to bobwhite habitat through active management and through lack passive management of bermudagrass pastures.

Cooperative support for this project is being provided by San Christoval Ranch, South Texas Chapter of Quail Coalition, and the Richard M. Kleberg, Jr. Center for Quail Research.

Will Irrigating Rangeland Increase Annual Productivity of Bobwhites?

Ross Couvillon, Ph.D. Student

In South Texas, northern bobwhites (*Colinus virginianus*) undergo drastic population swings according to annual weather patterns. Populations increase in number, or “boom,” during wet years and decrease, or “bust,” during drought years. Studies have investigated bobwhite response to free standing water to drink, but not the use of water to irrigate habitat during dry conditions. We are studying bobwhite in habitat with irrigation sprinklers to determine if this management practice is effective at maintaining bobwhites during drought periods and perhaps increasing their annual productivity. The lush patches habitat created by irrigation could provide chicks and hens with cover and insects to eat. Hens are being tracked using radiotelemetry to determine their home range, nest success, and survival during the breeding season. Additionally, habitat characteristics and insect diversity are being sampled at sprinkler sites, at random points on the study site, and at points where broods are found. This study has coincided with some dry periods during the summer but not drought years. Bobwhites have been documented using using the irrigated areas. Broods often forage away from brush cover and have been found in a variety of different vegetation. In addition to bobwhite habitat use information gained from this study, we are also studying the Texas tortoise (*Gopherus berlandieri*) to determine how compatible the habitat needs of bobwhite and tortoises are. We often find quail and tortoises in the same areas, but find the largest number of tortoises where brush mottes are more dense than mottes usually used by quail.

Cooperative support for this project is being provided by the XXI Energy Hunting Lease, South Texas Chapter of Quail Coalition, and the Richard M. Kleberg, Jr. Center for Quail Research.

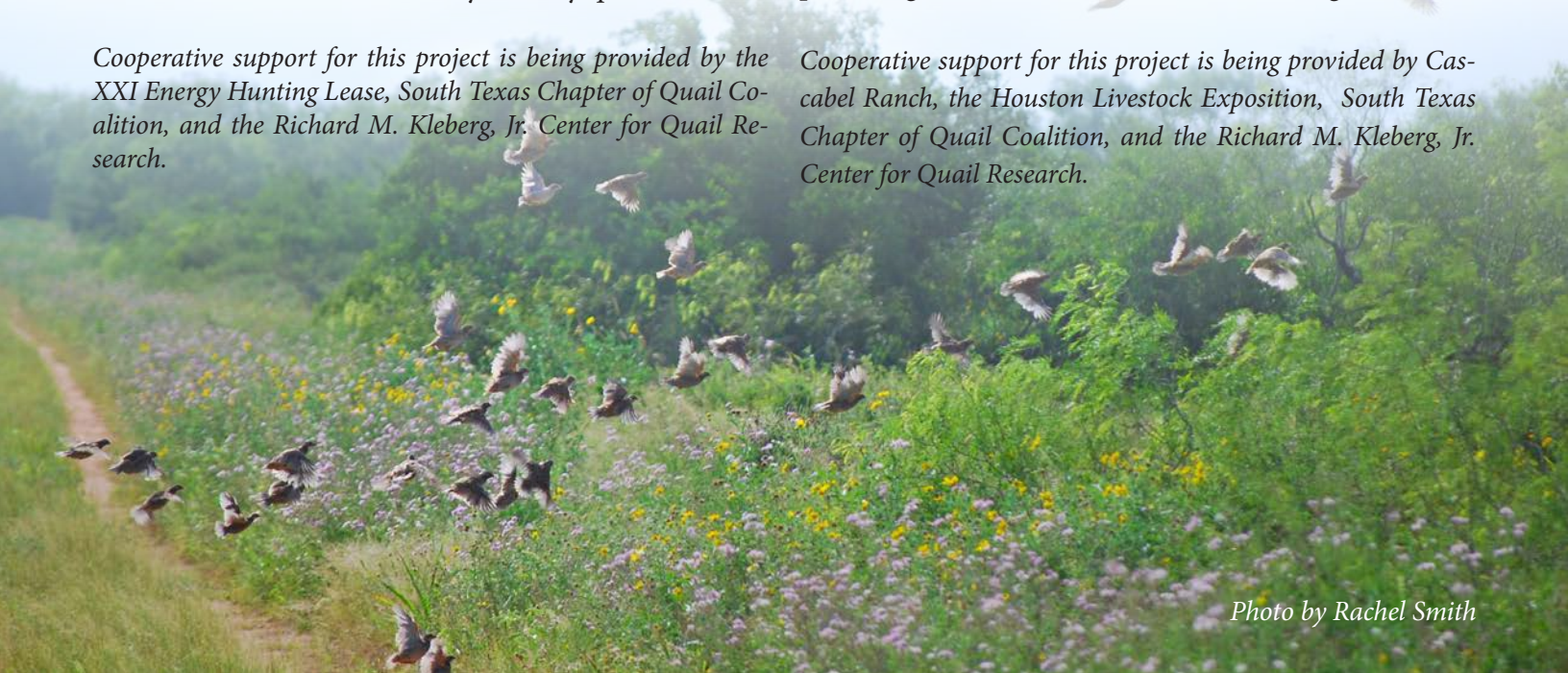
Measuring Bobwhite Response to Post-grazing Vegetation Recovery in South Texas

By Rachel Smith, M.S. Student

Northern bobwhites (*Colinus virginianus*) require habitat structure with substantial grass cover for nesting, predator avoidance, and thermal refuge. During the past 2 decades, many land managers have reduced or completely eliminated livestock across South Texas rangelands with the goal of improving bobwhite habitat. Our objective is to investigate how bobwhites respond to the vegetation changes following removal of cattle. Our study is being conducted on a private ranch in Jim Hogg County, Texas and involves 3 different areas of post-grazing habitat recovery: a 3,843 acre area rested from grazing for 15 years; a 2,800 acre area rested 3 years from high grazing (17 acre/AU); and a 3,098 acre area rested 3 years from moderate grazing (34 acre/AU). We hypothesize that bobwhite density, breeding season survival and nesting success will be highest on the recovered site and lowest on the heavily grazed site. During 2015 nesting success on the 15 years post-grazing area was 63% compared to 40% on the recently grazed area, though confidence intervals overlapped. Breeding season survival was 58% on the 15 years post-grazing site and 44% at the 3 years post-grazing site with overlapping confidence intervals. Additional surveys including the third, moderately grazed site will be conducted in 2016 and will focus on identifying factors causing these differences, therefore informing managers about bobwhite preferences in post-grazing landscapes and providing ideas for future restoration strategies.

Cooperative support for this project is being provided by Cas-cabel Ranch, the Houston Livestock Exposition, South Texas Chapter of Quail Coalition, and the Richard M. Kleberg, Jr. Center for Quail Research.

Photo by Rachel Smith



Conservation in the Classroom: Bringing the Outside In

By: Janel Ortiz, CKWRI Ph.D. Student and Dr. April Conkey, Wildlife Education Specialist



Natural history and wildlife are often topics put aside by teachers in the classroom due to the lack of time, resources, and priority preparation for state testing. Few teachers have the background to integrate wildlife into their classroom. The Caesar Kleberg Wildlife Research Institute aims to alleviate the issue and provide the community with wildlife education to enhance the knowledge of birdlife in South Texas while reducing the disconnect of people and the outdoors. The Education and Outreach program started with the

development of a curriculum focused on bird conservation and integrating Institute research and techniques into activities for kindergarten through 12th grade students. The Bird Conservation Curriculum program began with educator training workshops in summer 2015 and winter 2016 where five lessons were covered: bird identification, mist-netting, citizen science, internal parasites of quail, and habitat fragmentation. These free lesson plans, all aligned with Texas state standards for science, are providing local teachers with additional tools to incorporate wildlife techniques and research into the classroom and for students to be introduced to the STEM (Science, Technology, Engineering, and Mathematics) career of wildlife biology.

Hands-on, Active Learning

Traditionally, teaching by textbook and lecture were methods many educators used in the classroom. More recently, the push for active learning through hands-on activities has been preferred as a primary method for retention and understanding by students. Active learning incorporates multiple learning styles to enhance the learning experience of all students. Integrating learning opportunities in which students are able to hear, see, and touch results in a more effective learning environment. Considering these ideas, five lesson plans were developed to involve students in active learning about birds and conservation. Basics of Birding allows students to begin to identify common South Texas birds by the use of field marks. Field marks are external markings or characteristics that are unique to each bird species. Once students become familiar with the common species of their area, the classroom is moved outdoors to conduct a bird count. The data collected by the students is then contributed to CKWRI scientists and the community through the lesson Citizen Science for South Texas Birds. During this lesson, students practice their computer skills through data management and entry and navigation of CKWRI's South Texas Wintering Birds website (www.stwb.org). Students are able to ex-



plore species trends over the years, local species presence, and bird ranges through maps and graphs! Exposing students to the field of wildlife biology is an important mission for the curriculum. Students have the opportunity to simulate a primary method of bird population monitoring by setting up a mist-net and learning how to properly handle and process birds in the lesson *Be a Bird Biologist*. Students learn the proper holding methods used to handle birds, to prevent stress, and allow banding and processing of a bird for individual record keeping. Students also play the role of scientists while simulating ongoing research projects through the lessons *Early Bird Catches the WORM??* and *Buildings, Rivers, & Roads*. Students learn how to age quail by the coloration and feathers of wings, identify internal parasites of quail by using a microscope, and identify natural and man-made barriers to the movement of quail through the use of maps.

Together, these five lessons create the Bird Conservation Curriculum that is kit-based and free to all educators interested. Kit-based curriculum allows for educators to receive the materials needed to conduct each lesson at no expense! All materials including lesson plans and supplemental material are available for free download at ckwri.tamuk.edu under the Education and Outreach Program.

Reaching the Community

Nineteen educators from all over Texas have participated in the 2-day workshop. Third through twelfth grade teachers from various schools including Sarita Elementary, Gillett Intermediate (Kingsville), Tuloso-Midway (Corpus Christi), Nanny Elementary (Riviera), Academy High School (Kingsville), and Flour Bluff Elementary attended the workshop. Educators from King Ranch, Laguna Atascosa National Wildlife Refuge, Oso Bay Wetlands Preserve and Learning Center, East Foundation, and Coastal Bend Audubon Society also joined us. The wide range of educator participation has allowed the curriculum to potentially reach over 5,000 students! The research evaluation of the curriculum is focused on 6th grade classrooms. Following educator training, the curriculum was implemented in 6th grade science classrooms to look at teacher and student's interest and knowledge of wildlife as they progress through the cur-

What Students Say:

Question: What is your favorite bird activity and why?

- “Internal parasites...cool to see something so small, big through microscopes.”
- “Identifying birds... fun and you learn more about birds.”
- “Mist-netting... how to catch a bird the right way.”
- “Identifying birds and counting them... I like them flying.”

riculum. To date, two classrooms have participated in the research program (Sarita Elementary and Nanny Elementary (Riviera)) reaching a total of 31 students with the hope of continuing to reach additional students in the upcoming school year. Thus far, the program has been well received by 6th grade students and their teachers. They enjoy spending extra time outdoors, working alongside a scientist, and learning more about birds. This program has also triggered an increase in awareness of the outdoors among the students. Students would return to class and report bird sightings and questions of birds found in their home yards or along roads. This heightened mindfulness of the surrounding environment is a goal of this curriculum and so far it seems to be working!

Get Involved!

Workshops are open to any grade level teacher or environmental educator interested in learning more about the Bird Conservation Curriculum. If you are interested please contact Janel Ortiz, at TAMUK-BirdsGK12@gmail.com to get started! It is important that all program participants go through the training workshop to ensure they are prepared to conduct the activities in class. To provide further assistance to the teachers in the classroom, we offer help as a visiting scientist when they implement the lessons. Being in the classroom allows us to improve communication with the public, provide community service, and put a face to the field of wildlife conservation.

Support for this project has been provided by the Elizabeth Huth Coates Charitable Foundation, South Texas Charity Weekend and CKWRI.

What Workshop Attendees Say:

“I greatly enjoyed this presentation-it was far better than any teacher workshops I have attended.”

“A good and informative training.”

“A wonderful workshop, very well done! Curriculum, content, and format very useful.”

“Excellent and a pleasure to be able to attend”

“... Very interesting & informative. Thank you very much for inviting us & spending your weekend educating adults.”

Contact Us:

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Bird Conservation Curriculum Program
Coordinator

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Interested in becoming a citizen scientist?

Citizen science is the involvement of the community in a scientific project. Projects involving the study of birds help track changes in species richness and abundance over time and across a variety of landscapes. It has the potential to discover changes across a variety of species and allow scientists to pinpoint species of interest and perhaps broaden or focus their research to include these species. The Cornell Lab of Ornithology's collaboration with the Caesar Kleberg Wildlife Research Institute to develop “South Texas Wintering Birds” began as an opportunity to gain more information regarding the bird species that winter and migrate through South Texas. Because the state of Texas receives a large number of Nearctic-Neotropical migrants, there is a diverse and unique group of birds that pass through the state. Unfortunately, we are limited on gaining information because of the large number of private lands located in South Texas. This citizen science opportunity allows private landowners and ranchers to get involved by counting birds on their property and contributing to the science going on at CKWRI while maintaining the privacy of the sighting location and reporting data by county.

If you are interested in becoming a citizen scientist and helping learn more about South Texas birdlife please visit: www.stwb.org. Register and get started!



Who Was Caesar Kleberg?

Caesar Kleberg was truly a pioneer conservationist. While earlier conservation figures such as Teddy Roosevelt and John Muir found fame on the national stage, Mr. Caesar's vision first took root in South Texas. It was on the King Ranch, at his beloved Norias, where Mr. Caesar, as he was fondly called, laid the foundation for a wildlife conservation program which would become his lasting legacy.

Caesar Kleberg was born in 1873 in Cuero, Texas. Upon graduation from the Cuero schools, he attended St. Edwards University in Austin. It was from here that he wrote several letters confirming that his love was not that of an "indoor nature." Caesar left Austin for Washington, D.C., where he worked as his father's congressional secretary. His father, Rudolph Kleberg, served as a Democrat in Congress from 1897 to 1903. Not suited to this indoor work, Caesar moved to the King Ranch in 1900 to begin work for Henrietta King and to assist his uncle, Robert J. Kleberg in ranch operations. He would later move to the Norias Division of the King Ranch, where he made a significant impact during his 30-year tenure as foreman.

In 1929, Caesar Kleberg was appointed to the State Game, Fish and Oyster Commission (now the Texas Parks and Wildlife Department). He served on the Commission for 8 years. His lobbying succeeded in protecting hen turkeys for a decade, which aided in the recovery efforts of the wild turkey. Caesar convinced Bob Kleberg, Jr. to hire Val Lehmann in the mid-1940's as one of the first wildlife biologists to work for a private ranch in Texas.

Caesar Kleberg passed away in 1946. In his will he created the Caesar Kleberg Foundation for Wildlife Conservation. Initially, the Foundation funded wildlife projects across the globe. In the late 1970's and early 1980's, the Trustees began to redirect the funds and focus on South Texas, the place where Mr. Caesar's work had first begun. On January 8th, 1981, the Caesar Kleberg Wildlife Research Institute was created with a gift from the Caesar Kleberg Foundation for Wildlife Conservation. The gift went to the College of Agriculture at Texas A&I University (now the Dick



The statue of Caesar Kleberg and his hunting dog by artist Roberto Garcia, Jr. stands at the Caesar Kleberg Wildlife Center in Kingsville, Texas.

& Mary Lewis Kleberg College of Agriculture, Natural Resources, and Human Sciences at Texas A&M University-Kingsville). The Caesar Kleberg Foundation to this day generously supports the Institute, along with a growing number of benefactors from across the state and nation who share Mr. Caesar's love for the wildlife and habitats of South Texas.

His name appears on university websites around the world because the Institute advertises for graduate students or research scientists. In addition, his name now appears in hundreds of scientific journals and articles and more than two dozen wildlife books produced by Institute faculty, reporting discoveries about wildlife and their habitats.

Fortunately for all concerned – Mr. Caesar's legacy continues at the Caesar Kleberg Wildlife Research Institute.

Don't Miss These Upcoming Events



Texas Wildlife Association 31st Annual Meeting
July 14-17, 2016
J.W. Marriott Resort and Spa San Antonio, Texas
For more information or to register visit:
<http://www.texas-wildlife.org/program-areas/wildlife-2016>



15th South Texas Wildlife Conference
August 10-11, 2016
Cotulla Convention Center Cotulla, Texas
Hosted by: Caesar Kleberg Wildlife Research Institute, Texas
Parks and Wildlife Department & Texas Wildlife Association
For more information or to register visit:
<http://www.texas-wildlife.org/resources/events/south-texas-wild-life-conference>

Due Out in 2016



Caesar Kleberg and the King Ranch: A Vision for Wildlife Conservation
in Texas
by Duane M. Leach, Ph.D.

In this tribute to a pioneer conservationist, Duane M. Leach celebrates the life of an exceptional ranch manager on a legendary Texas ranch, a visionary for wildlife and modern ranch management, and an extraordinarily dedicated and generous man.

Caesar Kleberg went to work on the King Ranch in 1900. For almost thirty years he oversaw the operations of the sprawling Norias division, a vast acreage in South Texas where he came to appreciate the importance of rangeland not only for cattle but also for wildlife.

Creating a wildlife management and conservation initiative far ahead of its time, Kleberg established strict hunting rules and a program of enlightened habitat restoration. Because of his efforts and foresight, by his death in 1946 there were more white-tailed deer, wild turkey, bobwhite quail, javelinas, and mourning dove on the King Ranch than in the rest of the state.

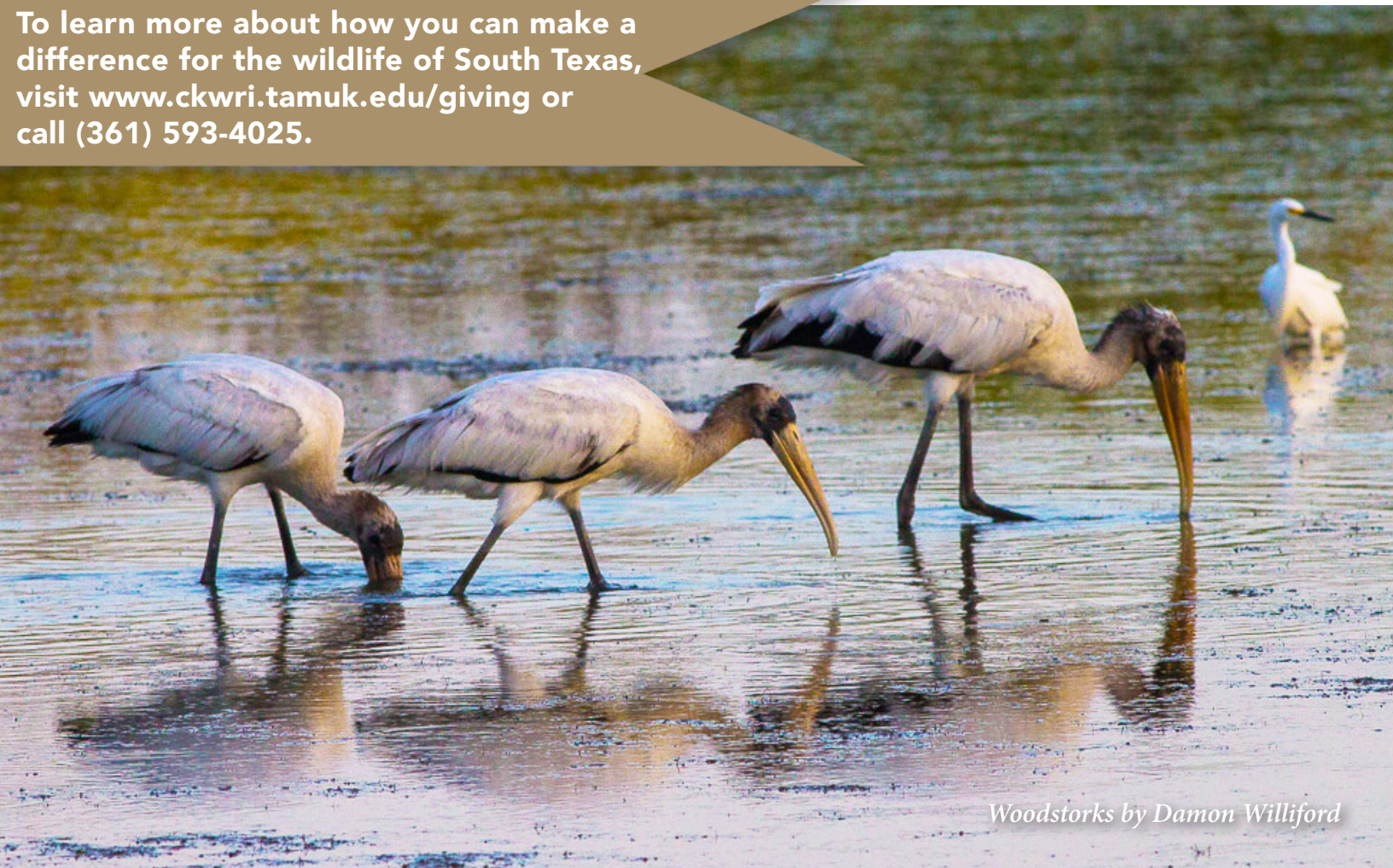
Kleberg's legacy lives on at the Caesar Kleberg Wildlife Research Institute in Kingsville, where a research program he helped found has gained recognition far beyond the pastures of Norias.

Caesar Kleberg Wildlife Research Institute
700 University Blvd.
MSC 218
Kingsville, Texas 78363

DONATE TODAY

The Texas landscape is changing. The need for wildlife and habitat research and the expansion and development of new and innovative management techniques in South Texas has never been greater. By investing in the Caesar Kleberg Wildlife Research Institute today, you will ensure the future of wildlife and their habitat in South Texas for tomorrow. Your generous contributions help us continue to make an impact like no other for our important and unique region.

To learn more about how you can make a difference for the wildlife of South Texas, visit www.ckwri.tamuk.edu/giving or call (361) 593-4025.



Woodstorks by Damon Williford