

# SOUTH TEXAS WILDLIFE



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Terra is being trained to detect the endangered Houston toad. © Rebecca Ross

uses a positive reinforcement technique in situations where dogs have a “high toy drive.” Terra just lives to play, and her favorite toys are tennis balls. Using play time as a reward, Terra has become adept at finding captive toads. We were there to see whether she could generalize to wild Houston toads.

So, why train Terra to find Houston toads? We are hoping her nose can help save this endangered species by tying together some loose ends in our knowledge of this interesting amphibian.

Historically, the pineywoods, like those of the lost pines, were maintained by periodic surface fires. Started by either Native Americans or lightning, these fires mostly crept along the forest floor removing pine litter. They exposed the soil to nourish pine seedlings created from freshly germinated seeds. These fires also controlled encroachment of hardwood trees, vines, and shrubs that would create a thick midstory

## TERRA: NEW BEST FRIEND OF ENDANGERED TOADS

by Sandra Rideout-Hanzak

It’s not often that you’re greeted by a new colleague with sloppy kisses (thankfully!). But, I had waited more than a year to meet Terra, and I was flattered to get a wet tongue to the face. On this drizzly April day, I was at Griffith League Scout Ranch in Bastrop putting

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Terra, a conservation dog in training, to the test. I was there with Terra’s trainer, Tiffanie Turner, and Rebecca Ross of Dogs for Conservation out of Brenham, Texas. Terra has been training to find Houston toads (*Bufo houstonensis*) using her nose.

It’s really not a novel idea. Conservation dogs have been used to find bear scat, bat carcasses, exotic snakes, and even whales. With funding from the *Arthur A. Seeligson, Jr. Texas Wild! Conservation Fund of Fort Worth Wildlife Conservation Fund*, Turner has been training Terra to freeze and stare at the spot where the target scent is emanating. Turner

### This Issue

Toad Dogs.....	1
By The Numbers.....	2
CKWRI News.....	2
Did You Know?.....	3
Parasites and Bobwhites.....	3
What Do They Eat?.....	4
Advisory Board.....	4

## By The Numbers

60 to 80 percentage of a bobwhite's diet consisting of seeds from grasses, forbs, and woody plants (Texas Bobwhites: A Guide to Their Foods and Habitat Management, Larson et al., University of Texas Press)

210 to 230 number in days of the gestation period for the western spotted skunk (The Mammals of Texas, W.B. Davis and D.J. Schmidly, TPWD)

and eventually convert pineywoods to hardwood forests.

Fires probably occurred as often as every 1 to 5 years depending on rainfall and drought. Houston toads burrow underground during dry periods, only coming out to their breeding ponds on rainy spring nights.

Regardless of origin, fires can only occur when the vegetation and litter are dry, and because soil provides excellent insulation from heat, we assume that when fires occur toads are safely underground. Then, when the rains return, toads come out to breed and feed on abundant insects in the grassy understory that periodic fire maintains. Collectively, these pieces of information lead us to assume that Houston toads are dependent upon periodic surface fire for their survival.

The problem is there are no data to confirm this because the toads are rarely found outside those evenings they spend chorusing at breeding ponds. What we don't know about Houston toads is what happens during the period between those rainy spring nights. We want to know...What kind of habitat do they require outside the breeding season?



© Rachel Rommel

A male Houston toad expands his vocal sac and emits a high trill that is apparently very attractive to female Houston toads during the mating season.



© Rebecca Ross

Terra is being trained to search for the endangered Houston toad so researchers can learn more about this elusive amphibian—information needed to develop better management strategies.

Where and how far do they go when they leave the ponds? Are they looking for a forest structure that is best maintained with fire? These are all questions that need to be determined to manage Houston toads.

Melissa Jones, a Ph.D. student at Texas State University, joined our team to lead us to some small enclosures where she has a few Houston toads that have been pit-tagged for identification. She has a device that beeps when it is placed near one of her tagged toads. Unfortunately, after thoroughly searching each enclosure neither Terra nor Melissa could find a toad.

Terra did earn a paycheck though—playtime with her favorite toy. As an exercise in Terra's ability, we hid her captive "practice" toad (inside a jar with a screened lid) under some leaves, and let her to search for it. Upon finding the toad, she got to chase her ball a few times, which she retrieved and returned to the toad's location, thereby displaying "loyalty" to her target. The day was not the successful outing we were hoping for, but it

was a step forward. We are certain Terra knows what she is searching for. She has proven that a dog can be trained to discern the smell of the Houston toad. The next step will be providing that opportunity in a meaningful way.

If Terra can find Houston toads, she may be able to help managers identify and conserve the proper dormant season habitat, more accurately estimate toad populations in known locations, or find toad populations in areas where they are not known to occur. In fact, we don't know all the ways that her skills may come in handy. Terra may just become the Houston toads' new BFF. ~

## CKWRI NEWS

### Advisory Board Member Honored

Our very own CKWRI board member **Mr. Stuart Stedman** was the recipient of the Rotary Club of Corpus Christi's *Harvey Weil Sportsman Conservationist of the Year Award*.

The award was presented at the Harvey Weil Awards Banquet, April 5th, held at the Rob and Bessie Wildlife Foundation Refuge. The award is given to recognize those individuals that have made significant contributions to conservation, are sportsmen, have worked worldwide on conservation related projects, and exemplify the qualities of Harvey Weil. Congratulations to Stuart for being recognized for this outstanding award!



Mr. Stuart Stedman was awarded the prestigious Harvey Weil Sportsman Conservationist of the Year Award.

### Friend of CKWRI Recognized

Also at the Harvey Weil Awards Banquet one of the ardent supporters of our quail research program, **Ronnie Howard**, was honored



with the *Harvey Weil Professional Conservationist of the Year Award*. Ronnie is a biologist who has managed bobwhites for over 25 years at the Sam Tomas Hunting Camp on the Encino Division of the King Ranch in Falfurrias and has been an active participant in CKWRI quail research. Ronnie, congratulations for your much deserved award.

### CKWRI Researchers Receive TPWD Grants

Several of our researchers have been awarded grants from *Texas Parks and Wildlife Department*. **Drs. David Hewitt, Randy DeYoung, and Timothy Fulbright** will be starting a 4-year project in the Texas Panhandle to investigate the effect of agriculture on mule deer. The study is also supported by the *Mule Deer Foundation*. **Drs. Randy DeYoung, David Hewitt, and Timothy Fulbright** received funds to evaluate aerial survey methods for pronghorns. This project will lead to better estimates of population size, which will allow wildlife biologists more flexibility in harvest and management decisions. **Mr. Forrest Smith and Dr. Bill Kuvlesky, Jr.** will be working on ways to convert coastal Bermuda grass to native prairie. This collaborative project is being led by **Dr. Jim Muir** of Texas A&M AgriLife and Tarleton State University, and will be replicated in the Coastal Prairies and Marshes, Post Oak Savannah, Cross Timbers, and Blackland Prairie ecosystems. **Drs. Eric Grahmann and Fidel Hernández** will be studying Montezuma quail in the Edwards Plateau to learn about this species' distribution, characterize its habitat, develop a habitat suitability model, and document vegetation response to habitat restoration. The goal is to provide information to landowners and agencies interested in the management of this species. ~

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## PARASITES AND SOUTH TEXAS BOBWHITES

by *Andrew Olsen and Alan Fedynich*

Parasites have been associated with wildlife for millennia. Some scientists have even suggested the most successful lifeform on the planet is the parasite!

We know that under certain circumstances, helminth parasites can affect individuals and populations. Population-level effects have been documented in European red grouse and sooty grouse. However, it is difficult to predict when parasites will impact individuals or regulate populations, and points to the need for in-depth studies.

Some helminth parasites have direct lifecycles. They need only one host species to complete their lifecycle and are often considered to be density dependent. That is, the more hosts that are concentrated, the more likely they will be infected with this type of parasite. As social gamebirds that spend their lives in pairs, broods, or coveys, bobwhites are theoretically more susceptible to direct lifecycle parasites than less social species.

Parasites that use more than one host species to complete their lifecycles are known as indirect lifecycle parasites. They typically require a mollusk or insect (intermediate host) in which the

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larval stage develops, and are then ingested by a final (definitive) host to develop into the reproducing adult stage. Because bobwhites are known to feed on insects, especially during the spring and summer when nutritional demands are high due to reproduction, they are theoretically susceptible to infection by indirect lifecycle parasites.

Unfortunately, we know very little about the parasites found in bobwhites from South Texas. In fact, the last study was conducted over 30 years ago and was limited to only 2 ranches—one in Refugio County and the other in Brooks County. Consequently, there has been a need for an up-to-date landscape scale survey of bobwhites in South Texas to determine which parasites are infecting bobwhites.

We initiated a survey using bobwhites collected from hunters during the 2012–2013 and 2013–2014 hunting seasons. Birds came from 32 ranches in 16 counties. This surveillance effort yielded over 200 bobwhites from which 8 species of helminth parasites were identified.

By far, the most prevalent and abundant species was the cecal worm. This nematode was found



© Timothy Fulbright

**The bobwhite has received a lot of research attention to determine why populations have declined across its geographic range.**

### Did You Know?

Eastern fox squirrels can mate twice per year, once during January–February and then in May–June. (The Mammals of Texas, W.B. Davis and D.J. Schmidly, TPWD)

The western slender glass lizard does not have legs. (A Field Guide to Texas Reptiles and Amphibians, R.D. Bartlett and P.P. Bartlett, Gulf Publishing Co.)

in 78% of the bobwhites; the average infection was 83 worms, but as many as 585 were counted in a single bobwhite. The ceca are 2 blind sacs that branch from the intestinal tract at the junction of the small and large intestine. These sacs are thought to serve in breaking down coarse plant material using microorganisms, after which the quail can absorb a portion of the nutrients released.

The eyeworm, which has attracted attention in the Rolling Plains as a potentially harmful parasite to bobwhites, was encountered in only 10% of the bobwhites and averaged 3 worms per infected bird (much lower than found in the Rolling Plains).

A proventricular roundworm was found in 9% of the bobwhites and averaged 5 worms. The proventriculus is a glandular stomach that begins breaking down food before it enters the gizzard.

The 5 other species (1 nematode, 2 cestodes, and 2 acanthocephalans) were represented by only a few

**Advisory Board**

The Advisory Board of the Caesar Kleberg Wildlife Research Institute provides leadership in all aspects of our work. We are indebted to them for their commitment to CKWRI and its mission.

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individuals, which suggest they were likely of no consequence to the bobwhite in South Texas.

What we have learned from our study is that all the parasites found



© Andrew Olsen

**The eyeworm has generated much interest regarding its ability to inflict injury to the eye and possibly affect foraging and predator avoidance though visual obstruction.**

use indirect lifecycles, demonstrating the effect of eating insects that serve as intermediate hosts. Why direct lifecycle helminths were not found remains unclear. Additionally, we found 2 species known to cause tissue damage to bobwhites (eyeworms and proventricular worms). Presently, it is unknown what impact the cecal worm has on bobwhites, but it is likely that 500+ worms in individual bobwhites cannot be inconsequential. It is important to note that the parasites found in our study also occur in bobwhites from other regions, so there are no new species found only in South Texas.

Although certain species of parasites can negatively affect bobwhite individuals, it is unknown what impact, if any, occurs at the population level. Field studies are needed to make this determination. ~

### What Do They Eat?

Mexican hook-nosed snakes prefer to eat spiders and centipedes.  
(Texas Snakes, J. Dixon and J. Werler, University of Texas Press)

The American coot is predominately a vegetarian, "feeding on pondweeds, sedges, algae, and grasses."  
(Management of Migratory Shore and Upland Game Birds in North America, G. Sanderson, University of Nebraska Press)

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