



# TEXAS parks & wildlife

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What we've learned from wildlife road crossings

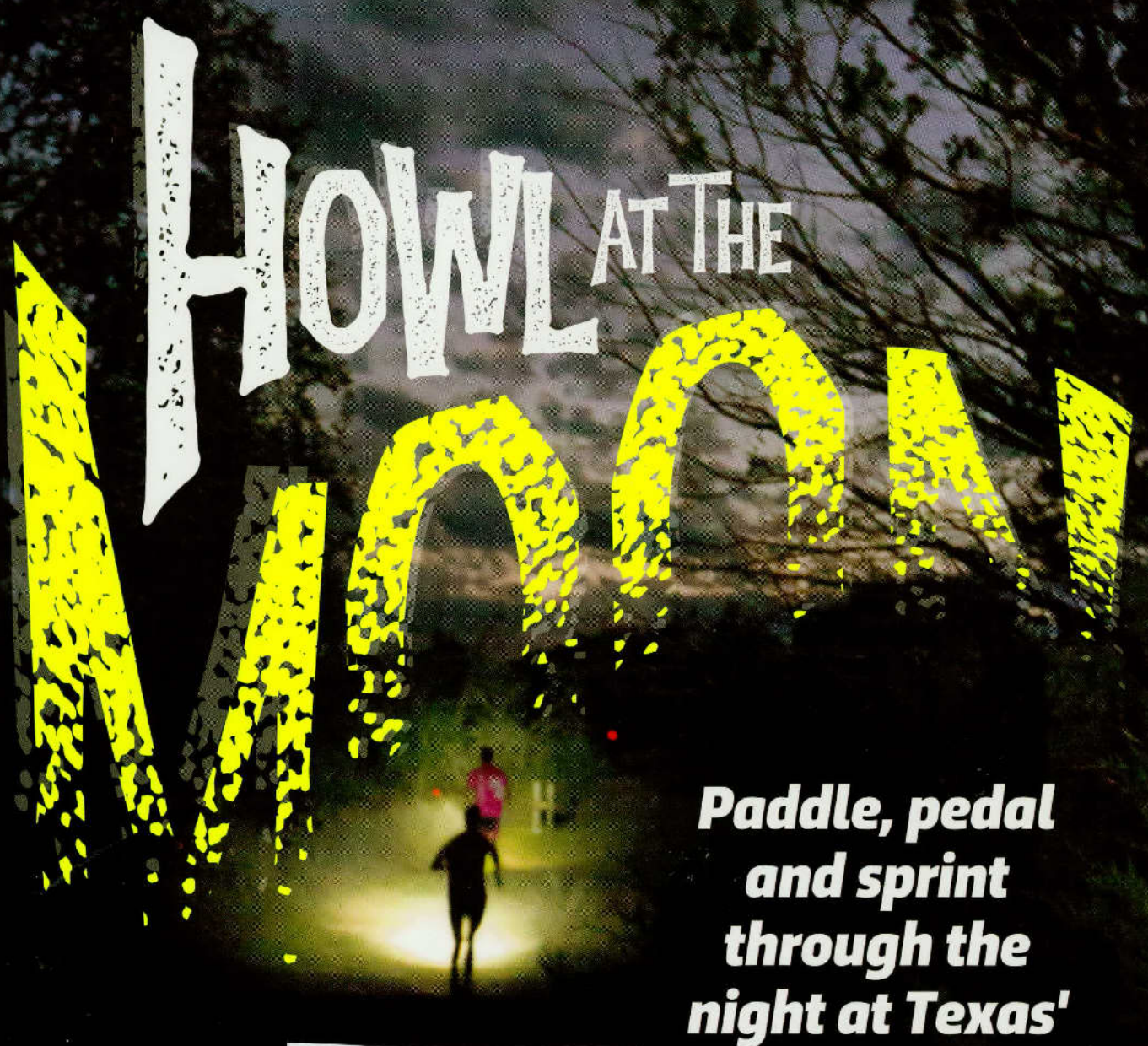
## GOOD BOY!

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## 28

### Halloween Howl

YEAR OF EPIC CHALLENGES

Contestants run, bike and paddle their way around Colorado Bend State Park ... in the dark.

by Pam LeBlanc

## 34

### Retrieving the Title

Top hunting dogs compete at the Master National Retriever Hunt Test.

by Henry Chappell

## 42

### How Did the Wildlife Cross the Road?

Biologists study road ecology to reduce harmful effects of highways on animals.

by Russell Roe



**ON THE COVER:** Racers navigate through the darkness at the Howl at the Moon adventure race. Photo by Sonja Sommerfeld / TPWD

**THIS PAGE:** Competitors head down the trail at Colorado Bend for their first challenge in the Howl at the Moon event. Photo by Earl Nottingham / TPWD

Texas Parks & Wildlife magazine (ISSN 0040-4586) is published monthly with combined issues in January/February and August/September by Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744. The inclusion of advertising is considered a service to subscribers and is not an endorsement of products or concurrence with advertising claims. Copyright © 2018 by Texas Parks and Wildlife Department. No part of the contents of this magazine may be reproduced by any means without the permission of Texas Parks & Wildlife magazine. **Subscription rate:** \$18/year; foreign subscription rate: \$27.95/year. **Postmaster:** If undeliverable, please send notices by form 3579 to Texas Parks & Wildlife magazine, P.O. Box 421103, Palm Coast, FL 32142-1103. Periodicals postage paid at Austin, Texas, with additional mailing offices. **Subscriber:** If the Postal Service alerts us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within one year.



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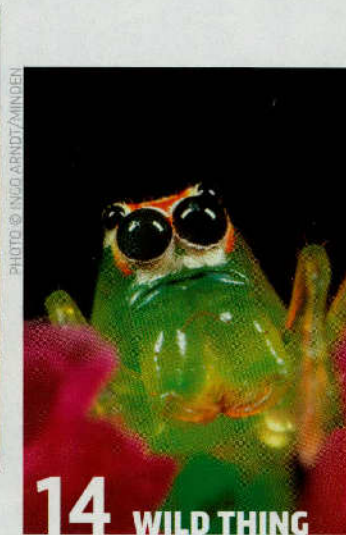
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**12 PARK PICK**

Friends group improves McKinney Falls State Park.



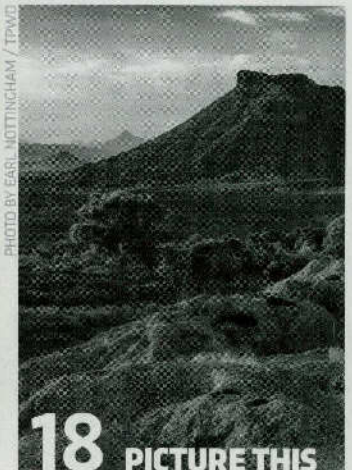
**14 WILD THING**

Magnolia green jumping spider is a shameless flirt.



**16 FLORA FACT**

Leoncita false foxglove grows as a pink candelabra.



**18 PICTURE THIS**

Developing your own photographic style.

WHAT'S INSIDE

**8 MAIL CALL**

**10 NEWS**

**58 WHERE IN TEXAS?**



**20 TRAVEL**

Bastrop County's scorched parks make a comeback.



**24 WANDERLIST**

The best parks to hike with your four-legged friend.



**48 LEGACY**

Texas' 'zombie' parasites are the stuff of nightmares.



**56 GET OUT!**

Letterboxing is treasure hunting fun for all ages.

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c/o TP&W magazine  
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Austin, Texas 78744  
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**SOME ANCIENT RESTLESSNESS** stirs within me as I feel the first chill of autumn in the air. I know I'm not alone in yearning for fall woods and fields again when I'm shoulder-to-shoulder with crowds at my local outdoors store, promising myself to stick to my list, but finding my cart full of the newest gizmos and gadgets I couldn't live without. When cooler weather calls, who are we to resist?

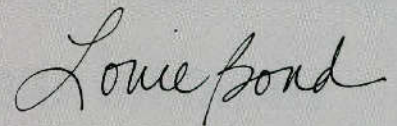
I'm quite certain that contributor Pam LeBlanc is as incapable of resisting the call of autumn as the sailors who heard the sirens' sweet song in mythology. In fact, I'll bet she howled at the moon (if not in pure ecstasy, at least to beg for some help with illumination) during the nighttime paddling/cycling/running event at Colorado Bend State Park she writes about this month. We couldn't be happier that her all-encompassing sense of adventure is included in our Year of Epic Texas Challenges.

When wildlife answers the hypnotic call of nature, their trail often leads them across busy roads. We see the effects of their mismatch with careening steel behemoths in the array of roadkill that lines our highways. Like us, you've probably cringed at the sight of a beautiful creature lost so needlessly.

Managing Editor Russell Roe takes us to the roadside this month for a unique perspective as biologists study animal mortality and look for creative ways to prevent it.

I showed Henry Chappell's feature on the hunting dog Olympics (aka the Master Nationals, held in East Texas last year) to my pair of golden retrievers, but it being printed on paper, they were less than interested. Had it smelled of woods and mud and feathers, they'd be a lot more excited. It's hard to imagine more than 800 retrievers in Doc McFarlane's Big Woods, but what a sight that must have been. New life goals for those of us who spoil our dogs instead of training them.

Hope you enjoy this fall sampler, but be sure to get out and enjoy it in person as well. Don't forget your best friend — dogs get excited by the changing seasons, too!



Louie Bond, Editor



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## HANGING AROUND IN HAMMOCKS

I have a question about the use of hammocks in Texas state parks. Every time I have been in a state park, I have been told by the park rangers that you are not allowed to hang hammocks from trees in a state park.

Every month your magazine has pictures of people with hammocks hung from trees (July's magazine has two pictures of hammocks strung from trees and a full-page ad featuring hammocks). Have the rules about hammocks been changed, or do you'll just not proof your pictures for prohibited activities not allowed in state parks?

**EDDIE KENT**  
 Houston

**Texas State Parks respond:** Hammocks are not prohibited in state parks, but it's recommended to check with park staff to make sure there are no site-specific rules. Hammocks may be used subject to the following conditions: no permanent anchors such as eyebolts may be used; trees must be at least 8 inches in diameter at the point of contact; straps must be at least 2 inches wide; no more than two straps may be attached to a single tree; trees may not be pruned or cut; park structures may not be used.

### GOOD TIMES AT AQUARENA

The Where in Texas? from the July 2018 issue surely stirred some wonderful memories for this Texan. The picture shows the old Aquarena Springs resort hotel, which was a popular gathering place for my family as I was growing up.

We would spend countless days during family reunions taking glass-bottom boat tours, taking in a show in the Submarine Theater and even seeing Ralph the Swimming Pig perform. The hotel was a grand old place.

Being the headwaters of the San

Marcos River, the lake was always teeming with wildlife such as nutria, turtles, bass, sunfish, ducks, herons and egrets. You had to watch out for the swans, though. They would attack like ferocious lions until you threw them duck food, available for a quarter along the rim of the lake.

I am happy that the research center has made the old grounds their home and has taken the proper steps to ensure that the San Marcos River and the springs continue to be a viable, vibrant home for generations to come.

**JARED HOLT**  
 Cedar Hill

## WHERE IN TEXAS?

August/  
 September's  
 Where in  
 Texas? may  
 have been  
 the toughest  
 one yet. The  
 West Texas  
 desert view  
 from inside a  
 cave comes



from Aztec Caves in El Paso's Franklin Mountains State Park. Several readers correctly guessed the Franklin Mountains, and a few nailed down the exact spot. The other most popular guess was Big Bend National Park. Franklin Mountains State Park is the largest urban park in the nation, and the hike to Aztec Caves is one of the park's most popular. Reader Paul Barner recognized the caves from his time stationed at Fort Bliss. "Hiking beats marching any day," he says. A similar photo serves as the cover shot for Laurence Parent's updated "Official Guide to Texas State Parks and Historic Sites." See this month's Where in Texas? on Page 58.

### CORRECTION

In July's At Issue, the amount of water on Earth was misstated. It should have said more than 300 million cubic miles of water.



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# Changes Coming for State Park Reservations



PHOTO BY EARL NOTTINGHAM / TPWD

**IN EARLY 2019**, Texas state park visitors will be able to use new online mobile-friendly features that will make it easier to plan a day or overnight trip to a state park, including the ability to buy day passes in advance and reserve specific campsites online before arriving at the park.

"We are excited about our upcoming transition to a new business system for Texas state parks," says Brent Leisure, director of state parks. "We've heard park users' request for site-specific reservations, and this new system will deliver just that. Once implemented, park visitors will know with certainty that their favorite place in the woods or on the lake shore awaits them. Large families or other groups will now be able to reserve sites near each other to enjoy their camping experience together. I'm confident Texans will love this new user-friendly reservation system."

Once the new system launches, visitors will be able to:

**Pick Your Site** — No more waiting until you arrive at the park to pick your campsite. Select a specific campsite or overnight facility online in advance. The campsite changes put Texas more in line with parks around the country. National parks and more than 90 percent of state park systems offer site-specific reservations. The new system will make check-in more efficient, allow groups of campers to book neighboring sites and let campers choose sites that work best for them.

**Buy a "Save The Day" Pass** — No more driving to a popular park only to find out the park is full. Pay your day entrance in advance online, ensuring access to a park, even the most popular ones. There are about 15 state parks that turn away visitors on a frequent basis, including popular parks

such as Enchanted Rock, Brazos Bend and Garner.

**Buy a State Parks Pass Online** — No more holding up the line while buying your annual pass. Buy or renew your pass online. You will still be sent a pass card in the mail.

To be notified when these new features go live, and to learn about future reservation system features, visit [www.texasstateparks.org/better](http://www.texasstateparks.org/better). ★

## RADIO

Passport to Texas is your guide to the great Texas outdoors. Any time you tune in, you'll remember why you love Texas. Go to [www.passporttotexas.org](http://www.passporttotexas.org) to find a station near you that airs the series.



## ON TV

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**SEPT. 30-OCT. 6:** Hunting dog competition; swift fox research; relaxing South Llano River.

**OCT. 7-13:** The trailer camera; training canine wardens; grasslands sunset; Estero Llano Grande.

**OCT. 14-20 (FIRST SHOW OF NEW SEASON):** San Antonio paddling; South Texas green jays; Fanthorp Inn; Colorado River beach.

**OCT. 21-27:** The tradition and economics of deer hunting in Goldthwaite.

**OCT. 28-NOV. 3:** Huntsville State Park; Laborcitas Creek Ranch; catching copperheads; Galveston Island.





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ISSUE  
No 51



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Friends group members Harry Carroll and Enola Bowers volunteer their time at McKinney Falls. Bowers has a pin on her hat signifying 2,000 hours of time spent volunteering at state parks.

Thanks to a passionate group of advocates, McKinney Falls is better than ever.

BY TOMMY CUDE



If you're a regular at McKinney Falls State Park, you may have met a few of our staff members. Our 15 staffers are here to welcome you and to make sure you have a quality experience. We keep things working in this 774-acre park that's been compared to a small city, with more than 300,000 visitors each year. Our park, located 13 miles from the state Capitol, opened in 1976.

We are experts at ranger-ing. We can fix things that break — sinks, water lines or picnic tables. We're expert at making visitors feel comfortable so they can enjoy the pleasures of the park. But if truth be told, we want to do even more. And for that, we know we need a little help from our friends.

We revived a Friends of McKinney Falls State Park group with great results. These intrepid individuals routinely lead programs that introduce visitors to everything from atlatl competitions to wildflower identification. Because of our friends, the park offers nature hikes, even at night. They sell ice and firewood to visitors, and all the profits go back to the park.

Recently, our friends group extended such a hearty welcome to the young adults from AmeriCorps and the National Civilian Community Corps (who have donated 2,400 hours of service to park projects) that McKinney Falls received a prestigious sponsor award.

Soon, our visitors center will reopen after flood (2013 and 2015) repairs. Operated by our friends group, the building will showcase the park's gorgeous falls. It will feature new exhibits on entrepreneur Thomas McKinney, Texas history and El Camino Real de los Tejas. The friends group is also raising funds to build a bird blind, improve fish habitat in Onion Creek and create a nature playscape.

All parks need partners and advocates, so please step up to volunteer at your favorite park. We hope that for many of you, it'll be McKinney Falls. After all, our friends get to do so much cool stuff.

Remember, you can never have too many friends. Find out more about our friends group at [www.mckinneyfalls.org](http://www.mckinneyfalls.org). ★







# GREEN JUM

*The magnolia green jumping spider is both a garden friend and shameless flirt.*

**COMMON NAME:**

*Magnolia green jumping spider*

**SCIENTIFIC NAME:**

*Lyssomanes viridis*

**HABITAT:**

*Leafy areas such as trees or bushes in the southeastern U.S. and Texas*

**DIET:**

*Aphids, mites, ants and other small jumping spiders*

**DID YOU KNOW?**

*Male magnolia green jumping spiders are smaller than the females and have long, pronounced jaws.*

**SPIDERS MAKE ME JUMP**, so whenever I see a jumping spider, get ready for a gymnastics match for all species involved. Yet when it comes to the magnolia green jumping spider, my fear quickly transforms into admiration for this uniquely transparent, neon-green arachnid. Just as quickly as I can recognize this distinctive species, it's gone.

The magnolia green jumping spider is rightfully named. It can jump multiple times its own body length, and it has a distinct green color. The crown on its head can be red, orange, yellow or white. Unlike other jumping spider species, the magnolia green isn't furry and has slender legs.

These spiders love humid, hot climates, so it's no wonder that they can be found in Texas (as well as Florida, Mississippi and Tennessee). Oak, maple, pine and, yes, magnolia trees are common daytime hunting grounds and

offer camouflage for this species.

Magnolia green jumping spiders have eight eyes, including two large eyes in front, with acute vision for an invertebrate. They can stalk prey efficiently without a web. The spider moves mainly by walking and running and may use a single silk strand to anchor to a jumping-off spot (think Spider-Man). When the spider sees its prey, it uses a signature jumping move to grapple and devour it.

Male spiders have courtship versatility, which means that they can skillfully flirt,



# PER

BY SARAH BLOODWORTH

and can customize their mating tactics to the maturity level and location of the female. For example, if the female is mature and away from her nest, the male will use visual displays such as flipping and elevating its legs. Other times, the male may use vibratory displays such as abdomen twitching to communicate courtship.

After mating, typically in May, the female will spin a sheet of silk on the underside of a leaf and attach her eggs to it. She guards her eggs until they hatch in August. Then the mother dies.

The spider's web nest is unique, and some entomologists don't even classify it as a "web." The structure is often layered and dense, unlike the classic, net-like spider web.

In Texas, you are likely to encounter the magnolia green jumping spider between March and June. The spiders are harmless to humans, and they provide important ecosystem services. ★

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# RARE BEAUTY

*Leoncita false foxglove grows as a pink candelabra in desert wetlands.*

BY JASON SINGHURST

**A FEW YEARS AGO**, I had the opportunity to explore the ciénega and flora of the Nature Conservancy's Diamond Y Preserve in Pecos County. I parked my truck on a limestone ridge. As I took in the vast expanse of bright yellow Pecos sunflowers and clasping yellowtops, I was delighted to have my first observation of a profusion of pink candelabra-like flower structures, *Leoncita false foxglove*.

This globally rare plant species is restricted to a few ciénegas (desert bogs and springs) in Texas, New Mexico and Mexico. *Leoncita false foxglove* is a member of the broomrape family (*Orobanchaceae*) and the genus *Agalinis*, a large group of 60 herbaceous plant species in warm-temperate climates of North and South America.

*Leoncita false foxglove* was first discovered at Leon Spring in West Texas in 1852 by John Milton Bigelow, who was employed as a surgeon and botanist for the United States and Mexican boundary survey. In Texas, *Leoncita false foxglove* was recently (1988) rediscovered.

*Leoncita false foxglove* is a hemiparasitic (obtains nourishment from a host) annual plant about 20 inches tall, with numerous ascending green or purplish branches and clusters of pink flowers with dark pink speckles on the floral tube. The plant flowers from August through September. The ephemeral flowers open in the morning and are withered or falling from the plant later the same day.

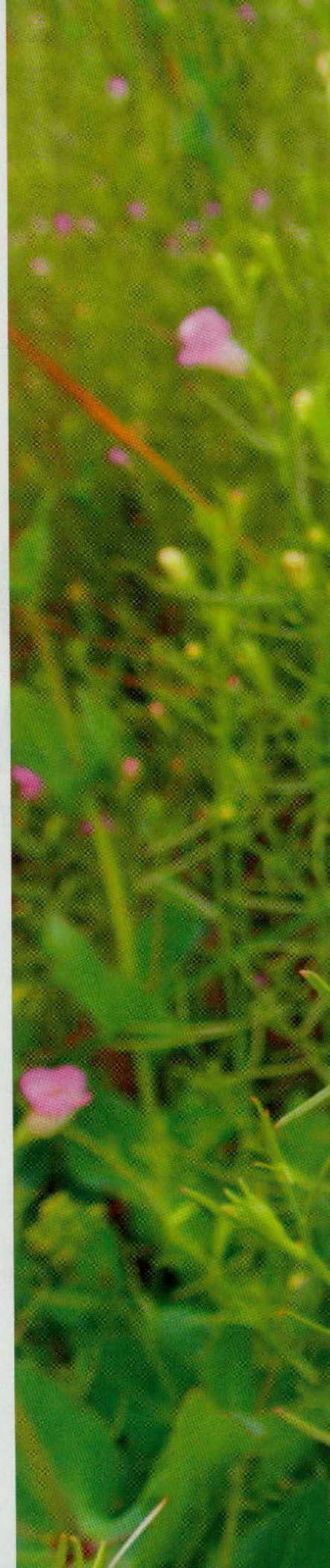
*Leoncita false foxglove* grows

around large spring features that are permanently saturated in the root zone by groundwater surfacing at spring seeps or spring runs. Both *Leoncita false foxglove* and Pecos sunflower are obligate wetland species with similar soil-water requirements and may grow side by side. At Diamond Y Preserve, *Leoncita false foxglove* also grows with clasping yellowtops, chairmaker's bulrush, Trans-Pecos sea lavender, limewater brookweed, saltgrass and Mexican rush.

In Texas, *Leoncita false foxglove* varies year to year from a few hundred to thousands of individuals at the preserve, one of the last remaining large spring cienegas in the Chihuahuan Desert of Texas.

The plant's blooms are heavily visited by multiple bee and butterfly species that contribute to pollination with mature capsules in October. Each capsule releases numerous small seeds.

From time to time the Texas chapter of the Nature Conservancy holds field trips to its West Texas preserves, where you can join in the opportunity to observe one of the rarest plants in North America. ★







**COMMON NAME:**

*Leoncita false foxglove*

**SCIENTIFIC NAME:**

*Agalinis calycina*

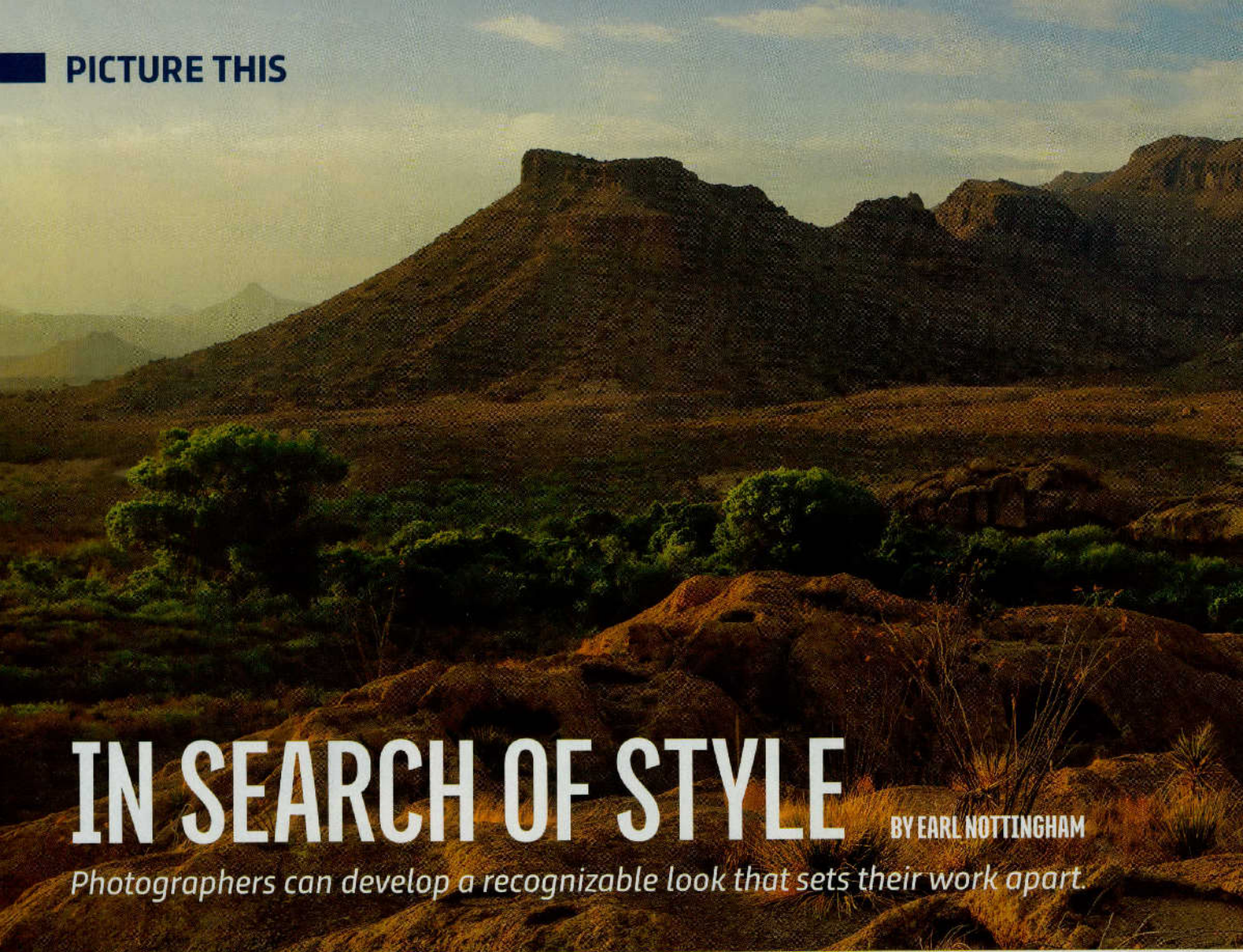
**SIZE:**

20 inches tall

**DID YOU KNOW?**

The *Leoncita false foxglove* is currently listed as a species of concern by the U.S. Fish and Wildlife Service.





# IN SEARCH OF STYLE

BY EARL NOTTINGHAM

*Photographers can develop a recognizable look that sets their work apart.*

I've often been told by others that my photographs have a certain "style," and that even without seeing my name alongside the images, it's evident that they're mine. This has always intrigued me since I never consciously set out to develop a style or particular look to my images or patterned my work after someone else's.

However, after spending some time perusing the images made by friends and colleagues on social media, in addition to revisiting the works of well-known photographers, it became apparent that each photographer does exhibit a distinct and recognizable style, whether amateur or professional, and regardless of the subject matter.

Style cannot be determined by a single photograph. It gestates over time as a body of unified photographic work grows, gradually revealing a visual consistency that allows us to recognize a photographer's work. For example, the style of Ansel Adams is quickly recognizable because of many of the common denominators he utilized, such as shooting grand landscapes with a large-format camera and black-and-white film, combined with his Zone System method of negative exposure, development and print processing.

Typical common denominators that can define style are:



**SUBJECT MATTER.** A photographer may be drawn to shooting one type of subject, such as landscape, wildlife or portraits, and may specialize in specific subjects, such as hummingbirds, waterfowl, macrophotography or still lifes.



**CAMERA EQUIPMENT AND TECHNIQUES.** The choice of camera equipment and techniques can help define the "look" of a body of work and hence its style. Equipment can range from a camera phone to a large-format film camera and anything in between. Lens choice can also help define a style, as many photographers gravitate to using one focal-length lens at a predetermined f-stop. Case in point: As I was once shooting a desert landscape with a 24mm wide-angle lens stopped down to f/16 for maximum depth of field, the person next to me was using a 200mm lens at f/2.8. They both provided great images that were as individual as the photographers.

Please send questions and comments to Earl at [earl.nottingham@tpwd.texas.gov](mailto:earl.nottingham@tpwd.texas.gov). For more tips on outdoor photography, visit the magazine's photography page at [www.tpwmagazine.com/photography](http://www.tpwmagazine.com/photography).





PHOTO BY EARL NOTTINGHAM / TPWD



**LIGHTING.** A photographer may prefer to shoot at a certain time of day or with a particular quality of lighting such as a clear or diffused sky, or use artificial light or modifiers such as strobes and reflectors. Additionally, the sensitivity of today's camera sensors opens up new opportunities for shooting in low light or nighttime situations. This allows many photographers to express themselves in ways previously unattainable, such as light-painting scenes at night against a starry sky.



**COMPOSITION.** Everyone sees a scene differently and composes it in the viewfinder accordingly. One photographer may capture the drama of a wide landscape while the other sees delicate beauty in a close-up detail. Composition can also be interpreted by where the subject (or focal point) is

placed in the frame — dead-center or off to the side following the rule of thirds. Many photographers prefer to break the rules by using very asymmetrical composition such as placing a horizon in the bottom seventh (or less) of the frame.



**ENHANCEMENTS.** A digital photo file (especially a raw file) offers an almost infinite variety of creative looks in post-processing, limited only by the photographer's imagination. They can range from minor color corrections to impressionistic, painterly looks.

Style, as evidenced by an individual's photography, is a graphic distillation and manifestation for others to see who we are and how we interpret the world. It comes naturally — sometimes with conscious effort and sometimes not. No two photographers have the same style, nor should they. *Vive la différence!* ★

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## BAPTIZED BY FIRE

*Bastrop County's scorched state parks are on the comeback trail.*

BY CAMILLE WHEELER



Bastrop County's Lost Pines ecosystem remains badly scarred from the worst wildfire in Texas' history. But seven years later, the forest is recovering, with young loblolly pines growing by the millions on a landscape littered with charred, dead trees.

### HOUSTON

2 hours

### DALLAS

3.25 hours

### EL PASO

9 hours

### SAN ANTONIO

1.5 hours

### BROWNSVILLE

5 hours

### LUBBOCK

6.25 hours

Beyond that fire's devastation, there's plenty to explore within the regenerating forest, around the bends of the mighty Colorado River and throughout this rural county's wealth of culture, outdoor recreational opportunities and early Texas history.

My journey began within the Lost Pines, the westernmost stand of loblolly pines in the U.S. that holds the county's crown jewels: Bastrop and Buescher state parks, which bear the imprint of the Civilian Conservation Corps and compose the Texas Parks and Wildlife Department's Lost Pines State Park Complex. CCC Company 1805 arrived in 1933 to develop the

Bastrop facility, and CCC Company 1811 arrived in 1934 to help develop Buescher.

Both parks are healing from natural disasters. The 2011 Bastrop County Complex Fire, the most destructive wildfire the state has ever seen, burned more than 34,000 acres of the Lost Pines and most of Bastrop State Park. The park sustained more damage in 2015 when Memorial Day weekend flooding blew out its lake's earthen dam.

And in fall 2015, the Hidden Pines Fire burned about half of Buescher State Park and reburned parts of Bastrop State Park.



"You can't not talk about what has happened," says Jamie Creacy, superintendent of the Lost Pines State Park Complex. "It's part of our story now. It becomes present."

Yet this story is not all doom and gloom. Here at Bastrop State Park, the Lost Pines' most contiguous component, a fascinating narrative is unfolding as an early successional forest takes root. It's the chance of a lifetime, Creacy says, to witness the changes of this ancient forest as loblolly pines, native grasses, yaupons and oaks grow together.

And with autumn's cooler temperatures just around the bend, now is the optimal time to visit these

throughout the parks, including Bastrop State Park's rustic native stone and pine cabins that seem to notch into hillsides.

Each park holds hidden treasures. At Bastrop State Park, I crossed a wooden footbridge and suddenly found myself in a thick, lush-green understory of bracken ferns, a plant with fossil records dating back 55 million years.

And every chance I got, I drove Park Road 1C that CCC workers built as a scenic, forested lane between the state parks. Each time I entered Buescher, passing beneath tree canopies connected over the road, I imagined I was driving through a shaded tunnel.

Colorado River Authority (LCRA) operates Lake Bastrop's North Shore and South Shore parks. The parks feature cabins, tent camping and RV sites, plus new amenities this fall: a nine-hole miniature golf course on the south shore and Airstream trailers for rent on the north shore, which features Hero Water Sports, Texas' first inflatable water park.

Anglers lured by the lake's high-quality bass fishing may rent one-person trolling boats, Ultraskiffs, on the south shore.

At the LCRA's McKinney Roughs Nature Park between Austin and Bastrop on Texas Highway 71, hikers, mountain bikers and horseback riders

CENTER PHOTO © ERICH SCHLECEL; OTHER PHOTOS BY EARL NOTTINGHAM / TPWD



## FEATURED ATTRACTIONS (LEFT - RIGHT):

- ★ The Creacy family with a loblolly pine sapling at Bastrop State Park.
- ★ Bridge over the Colorado River.
- ★ Flying through the air with Zip Lost Pines at McKinney Roughs.
- ★ Sausage is king in Elgin.

state parks that feature tent and RV camping and extensive hiking trail systems (Buescher's trails also allow mountain biking). Additionally, Buescher offers limited-use minicabins and a 30-acre lake with fishing and paddling opportunities, including canoe rentals. Bastrop State Park holds two white-tailed deer hunts in the winter, including one for youth.

Evidence of the CCC's work is found

A theme of easy access to water resonates throughout Bastrop County. In downtown Bastrop, two TPWD river paddling trails begin and end at Fisherman's Park: the El Camino Real Paddling Trail flows 6 miles downstream, and the Wilbarger Paddling Trail starts upstream at the FM 969 bridge northwest of Bastrop.

Near Fisherman's Park, next to the historic Old Iron Bridge that spans the Colorado River, the Bastrop River Company offers overnight camping trips for paddlers and day-trip shuttle service for kayak, canoe, paddleboard and tube rentals.

In Smithville, Colorado River access is simple: Turn off Texas Highway 95 onto American Legion Road and then turn right onto a dirt road that leads to a public boat ramp. Also within the city limits, the Vernon L. Richards Riverbend Park offers tent and RV camping.

Northeast of Bastrop, the Lower

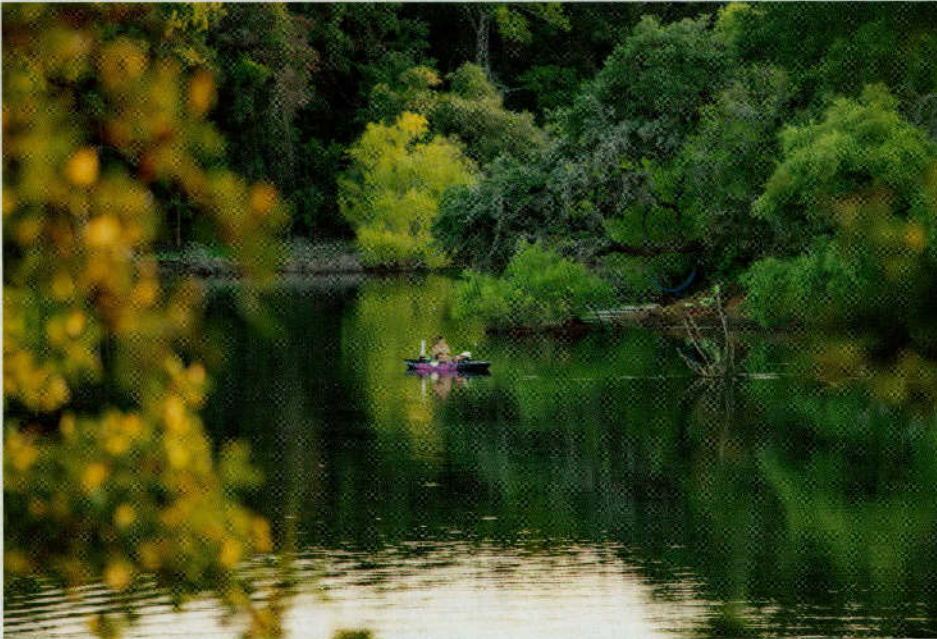
enjoy multiuse trails, some leading to the Colorado River. The park's most adventurous explorers soar over a forest of loblollies by booking tours with Zip Lost Pines.

There's much more to digest in Bastrop County, such as the jalapeño cream cheese burger I devoured at Maxine's Cafe, a Bastrop Main Street restaurant. My burger was so big, and so deliciously juicy and messy, that I ate it with a fork.

Texas history buffs enjoy touring the county's three major cities, starting with Bastrop, which Stephen F. Austin established in 1832 as the westernmost Anglo settlement in North America. In starting his colony, Austin chose the point where the Old San Antonio Road crossed the Colorado River, a stone's throw from the downtown Museum and Visitor Center of the Bastrop County Historical Society.

Elgin, like Bastrop, is a Main





*Stone cabins built in the 1930s seem to emerge from the hillside at Bastrop State Park (top). A tranquil lake (above) stands at the center of nearby Buescher State Park.*

Street community as part of the Texas Historical Commission's Main Street Program that focuses on the revitalization of cities' historic downtowns. As the Sausage Capital of Texas, Elgin is gearing up for the Oct. 27 Hogeve Festival that celebrates the community.

And in Smithville, once a thriving railroad community, tourists take in historic sights aboard the 25-passenger Ann Powell Express train. Of special note this fall is the Oct. 13 Texas Photo Festival on Main Street. The festival will include a

20th-anniversary showing of *Hope Floats*, the movie starring Sandra Bullock and Harry Connick Jr. that was primarily shot in Smithville, the state's first "Film Friendly Community" as designated by the Texas Film Commission.

As I traveled, I saw firsthand the resiliency of Bastrop County residents who don't shy away from talking about the major disasters — fires and floods — that have slammed their communities in recent years.

At the Bastrop County Museum and Visitor Center, burned loblolly pine wood from the 2011 complex fire was planed and sanded to create columns between exhibits, including one documenting that blaze. At the museum, Bastrop County Judge Paul Pape told me that county residents don't want to be called victims.

"You know what, deal our hand and we'll play it. It doesn't matter what the cards are, we'll make the best of it," he says about the local attitude. "And we have made the best of it, through thick and thin, through hell and high water."

The same can be said for the Lost Pines, where the early successional forest is transforming from graveyard to garden. It's a story of human connection, of thousands of volunteers coming together to plant 2 million loblolly pine seedlings throughout Bastrop State Park over the past six years.

It's a story of toughness in areas of the park where flames didn't reach tree crowns. Loblolly pine trees that died, and those that survived, both dropped pinecones onto the freshly scorched forest floor. With layers of pine needles and oak leaves burned away, mature seeds germinated on bare mineral soil, producing millions of natural regeneration loblollies.

The loblolly pines' tender-green growth is delightful to behold. But the park's young forest of loblollies is already too thick in some areas, Creacy observes, with trees competing for space and increasing the risk of a natural fire that can't be controlled.

"In a perfect world, we wouldn't have it look like it did before," Creacy



**MORE INFO:**

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says, explaining that fire suppression, done to protect nearby growing populations, altered the landscape.

Hence TPWD's continued strategy of using meticulously planned prescribed fires to manage the forest's growth. Prescribed burns mimic the historic cycle of wildfires that burned through the Lost Pines, moving through the forest's understory, preparing the ground for seed germination, and burning out so-called "ladder fuels" — such as yaupon — that carry flames into tree canopies. "These trees need fire to regrow," Creacy says, explaining that if fire were never allowed to safely burn through the Lost Pines, oak trees eventually would far outnumber loblolly pines.

My most memorable Bastrop State Park hike came last spring when I joined Creacy and Cullen Sartor, the park's site manager, in chasing smoke we saw from Park Road 1C. After futilely driving in search of the fire, we hoofed it through the woods, finally spotting the gray, ashy smoke from a tree that had been struck by lightning and ignited the tree next to it.

Without human intervention, it was possible that the smoldering trees could spark an out-of-control blaze. So Creacy and Sartor called for backup assistance. By nightfall, the TPWD

crew had safely felled the trees and extinguished the fire.

For Creacy, such work is part of nurturing this Lost Pines forest where she and her husband, Greg Creacy — the regional fire and natural resources coordinator for TPWD's Central Texas state parks — are raising their 3-year-old daughter, Emma. By 2020, the forest should see its first offspring of natural-regeneration loblollies that Emma will grow up with.

The Lost Pines' recovery involves long-term vision, the 38-year-old Creacy says, adding that she won't see the ecosystem's full succession in her lifetime. In our culture of instant gratification, Creacy notes it would be easy to walk away from the mission of protecting the forest for future generations, saying, "Wow, not what I'm here for."

"But," she continues, "that's exactly what I'm here for." ★



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**LAKE SOMERVILLE TRAILWAY**  
SOMERVILLE/LEDBETTER

A 13-mile trail connects Lake Somerville's two state park units for you and your adventurous pup. Dense stands of trees alternate with open grasslands, with occasional glimpses of the lake revealing themselves. Shelters along the trail provide shade and maps.

# HIKING WITH

Hiking is often more fun with friends, so why not bring your best and furriest friend along to share the fun? Prepare your dog by ensuring that the specific trail is a good fit for his/her age and physical fitness level. Always remember to bring a leash and plenty of water. Here are some dog-friendly places for you and Rover to explore together.

**BY SARAH BLOODWORTH**

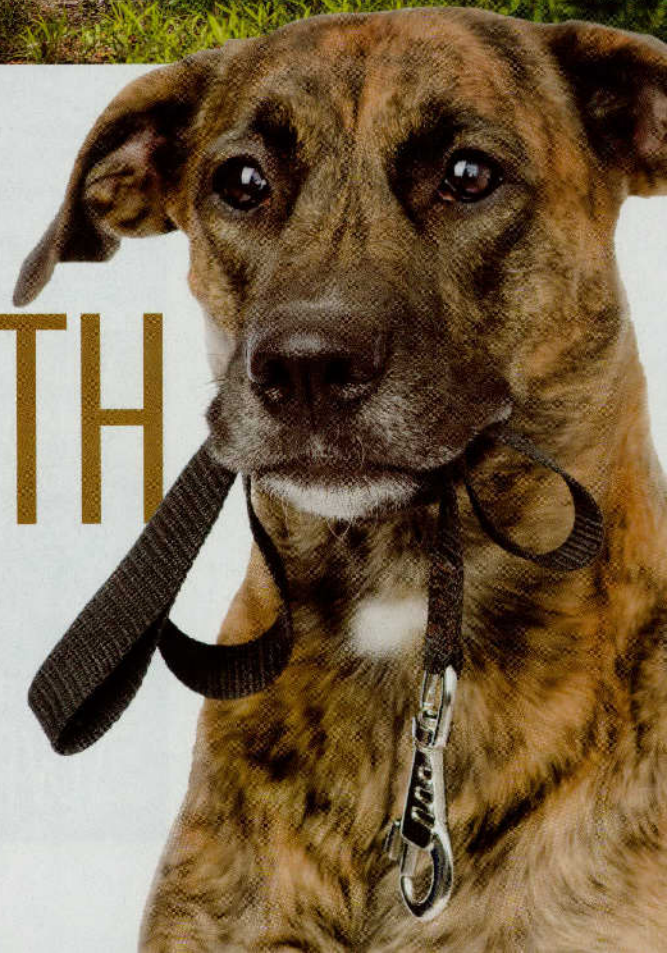






PHOTO BY SONJA SOMMERFELD / TPWD

**LONE STAR HIKING TRAIL**  
SAM HOUSTON NATIONAL FOREST

While this is the state's longest continuously marked and maintained footpath (128 miles), shorter sections are available. The terrain is fairly flat and completely forested, with several watery wonders.

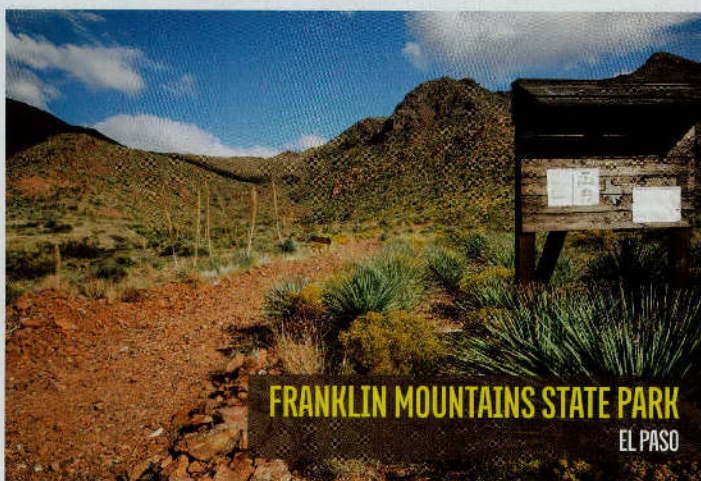


PHOTO BY CHASE FOUNTAIN / TPWD

**FRANKLIN MOUNTAINS STATE PARK**  
EL PASO

Nothing gets a tail wagging like offering your dog an entire mountain range to explore, especially in the largest urban wilderness park in the country. Your dog will love the rugged trails, with a variety of bird songs echoing throughout the area.



PHOTO BY SONJA SOMMERFELD / TPWD

**LAKE MEREDITH**  
FRITCH

This park offers great walking paths and fun in the water. The South Turkey Creek Trail winds along the lake through rolling hills and canyons and opens up onto several small beach areas for you and your pup to enjoy. You and your dog will appreciate watching the wild turkeys and deer roam the trails and canyons.



PHOTO BY EARL NOTTINGHAM / TPWD

**MCKINNEY ROUGHS NATURE PARK**  
CEDAR CREEK

The 1,100-acre nature park has more than 15 miles of trails and contains elements of four regions: Post Oak Savannah, Blackland Prairie, East Texas Pineywoods and Central Texas Plateau. With that much variety, there's plenty to see and sniff.



PHOTO BY TPWD

**RAY ROBERTS LAKE STATE PARK**  
PILOT POINT

If you are planning on taking your pooch on an overnight camping trip, this park is known for being among the best. There's plenty of shoreline here, and plenty of shade. The terrain is mostly gentle, and your dog's paws will appreciate the loose-dirt trails.





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CONTESTANTS RUN,  
BIKE AND PADDLE  
THEIR WAY AROUND  
COLORADO BEND  
STATE PARK ...

**IN THE DARK.**

**HALLOWEEN**


**TRAIL**

**BY PAM LeBLANC**  
Photos by Sonja Sommerfeld









When a dirt-smeared Ellen Gass and Gena McKinley slide into the finish of the Howl at the Moon adventure race well after midnight, a cowbell clangs. Gass flops to the ground, lets out a groan, then pops up to hug her teammate.

"We did it!" she hollers.

Someone passes around a plastic pumpkin full of candy, and the smattering of people who are still awake celebrate.

The pair spent more than six hours trail running, mountain biking and paddling their way through Colorado Bend State Park in Central Texas, punching a "passport" at designated checkpoints along the way. And if their experience was anything like mine, they also dodged a slow-moving armadillo or two, inhaled the earthy scent of a startled skunk and leaped over a snake that slithered across the trail in front of them.

Welcome to the wonderful world of nighttime adventure racing, in which competitors plunge into a wilderness illuminated only by the flickering beam of a headlamp, not knowing exactly where they're going or how they'll get there.

It's bliss, at its knee-scraped, lung-busting, burr-caked finest.

#### GETTING TO THE STARTING LINE

I enlist pal Ron Perry to join me for the Howl at the Moon, which seems like the perfect addition to my self-proclaimed Year of Adventure. We sign up for the "sport" version of the race, mentally preparing for two to four hours of romping through one of my favorite Texas parks after dark. More experienced racers sign up for the "adventure" version, billed as a four- to six-hour event.

Long races like this give you plenty of time to get to know your fellow competitors.

We meet Gass and McKinley, who both live in Austin, before the blast of a horn signals the start of the race. While some teams erect tents and arrange nutrition bars, band-aids and spare headlamps on tables, they point at a pair of slightly neglected bikes on the grass at their feet.

That's it. That's all they need.

Or maybe it's all they have. The women tell us they signed up for the race on a lark, about a week earlier.

"We want to try something new and push ourselves," Gass tells me.





"I feel like it might be addictive."

Gass and McKinley don't look like the rugged, muscle-bound competitors you might expect at an event like this, but they're ready to have fun. Gass hiked most of the Appalachian Trail a few years ago; McKinley joined her for a week.

Both have run marathons. A short adventure race is hardly cause for worry — or excessive preparation.

Except, maybe, for that pitch-dark part.

"It's such a different perspective when the world is your headlamp," Gass says.

At the other end of the spectrum, we meet Ryan Holloway, 35, and Casey Campbell, 37, both of Houston, adventure racing veterans. They signed up for the longer version of the Howl at the Moon, and say they like the not-knowing-what-you're-getting-into aspect of the sport.

"I'll run and bike all day — just don't tell me how far I have to go,"

Campbell says. "If you plot it wrong, you're on a wild goose chase."

"You're kind of at the mercy of the race director," says Holloway. "It's something different and it combines all the stuff I like — mountain biking, trail running and using your brain."

The secret to success, they tell us, is hydration, electrolytes and plenty of food while you're on the course. Patience, too. Best tip?

"Stay together, work together as a team — physically and mentally," Campbell advises.

We all stand at attention during the prerace briefing, as race organizers remind us to stay within 30 seconds of our partners and warn us to read our directions carefully.

"If you find yourself hanging from a cliff, something is amiss," race director Robyn Cantor warns, as vultures circle overhead.

The race begins with a 1-mile round-trip dash to the base of moss-carpeted Gorman Falls, where

we complete a quick Halloween-themed art project (weaving a paper owl!) before heading back to race headquarters to pick up our first list of checkpoints.

Ron and I locate the points on a map and quickly figure the best way to link them up. In adventure races like this one, it doesn't matter what order you hit the checkpoints, but that fateful decision can mean hours saved or lost during the race.

We hop on our mountain bikes and crunch up a gravel road as the sun fades. Our adventure begins.

#### FROM BIKING TO TRAIL RUNNING

In the next few hours, Ron's headlamp fails, we miss a checkpoint and wind up riding down (and back up) a steep hill to find it. I belly-crawl through a cave. And I find myself tip-toeing along a narrow path above a 15-foot drop-off, clinging with one hand to a metal line attached to a rock ledge and to my bike with the other.



I wonder if something is amiss, as the race director had earlier suggested, but it isn't. We finally see the lights of race headquarters flickering just ahead. Or maybe it's just lightning — a storm is brewing in the distance.

A few sprinkles of rain later, we return to our home base, tossing back energy bars and preparing for the second leg of our race, the trail running segment. We plunge into the woods on foot.

Here's the thing about trail running at night. You have to focus intently. I pick my way up the hillside behind Ron, setting a pace so slow zombies surely could catch us. At that thought — and thoughts do wander when you're running through rocky, cactus-studded terrain under the glow of a pearl-colored October moon — I speed up a little.

That's when I hear it, like a maraca, an instant before the beam of my headlamp catches a rope-like shape slithering across the trail. I hop around like someone's taking potshots at my feet. Ron stops to get a closer look.

Yep, a 3-foot rattler. But we have places to go, so we scamper on into the night.

Our route takes us past a marshy pond, over car-sized boulders, down rocky inclines and finally back to race headquarters, where we have one leg of this adventure still left to conquer: the paddle.

### INTO THE WATER

We look at our map and aim ourselves at the river, half a mile down the trail. There, we grab one of the kayaks stashed alongside the river, slide it down a sharp ridge and push it into the water.

Have you ever paddled at night? It's hard to see rocks hidden beneath the surface. I stand in the river in my sneakers, struggling to un wedge the boat from a rocky maze. When I finally free it, we slosh downstream until we glimpse a marker indicating the last checkpoint. We clamber down a draw and duck beneath a rocky overhang. There, we punch our passport one final time, head back to our kayak and paddle home.

At some point in an adventure race — and for us it happened on the river — you have to just pause and soak it all in: the starry sky, the warm night air, the spicy scent of native plants hanging in the air. We drop our paddles into our laps, stare up at the moon and admire the reflection on the water.

Ron and I agree that we just liked experiencing the outdoors in a whole new way, paying attention to the smells and the sparkles and the night prowlers. Plus, even though I'd visited this park a dozen times, I saw parts of it during the race that I'd never seen before.

"Everything we did seemed sharper," Ron reflects.

### TO THE FINISH LINE

We still have a race to finish, though, so we drag our boat to shore, run the last half-mile back up the hill to race headquarters, and high-five as the race director clangs the cowbell. It took us almost six hours, well over the estimated finish time (two to four hours), but our time lands us in second place. I'm actually glad it took us so long, too. That just gave us more time to enjoy the outdoors.

After we finish, we sit at race headquarters, chatting with other racers as they trickle in.

"I like that there's no set course, so you can't specifically train for (adventure races)," says Jonathan Davis, 40, one-half of the winning "sport" team. He would know. He's done many, including another at this very park. "It makes me feel like a kid, like a friend went and hid a bunch of stuff in the woods and we had to go find it."

Davis tells me about another adventure race he and his wife once did in the desert. That one ended with him breaking down in the 118-degree heat, vomiting and getting extracted from the race. Big fun. But even those race hiccups serve up interesting life lessons.

"You can't ever know what the limits are until you get there," Davis says. Besides, you get to know people in ways you wouldn't otherwise when you race through





the night with them. "Your real personality shines through under duress."

Something unexpected always happens, too, and for Davis' team tonight, it happens on the river, when a 16-inch carp jumps into their boat. That's the kind of fun adventure racers appreciate.

The race organizer, Austin-based Too Cool Adventure Racing, has staged gritty, no-frills races at parks and camps around Central Texas since 2005.

While bigger, mass-produced events like the Tough Mudder and Spartan Race lure thousands of participants who run a marked course of manmade obstacles, Too Cool races draw between 50 and 200 hardy folks who'd rather run through the woods on their own or with a partner. They never follow a marked course, and competitors can't bring a GPS device to navigate. Map-reading skills are critical.

The company stages half a dozen or so races a year, including this nighttime version. Most include short and long options. In all, we biked 10 or 12 miles, ran 5 or 6 and paddled about 2 miles during the "sport" version of Howl at the Moon.

Sometime after 1 a.m., the awards ceremony takes place.

Gass and McKinley finish fourth in the sport category. They collect their award — not a glistening medal or a gold-plated cup, not even a trophy. For this sweet victory, the top finishers collect nothing but small metal cups filled with candy.

"This is not a sport for narcissists," Davis tells me. "It really is what we love, as opposed to an Ironman triathlon, where people do it for the cheers."

The real prize, though?

Experiencing a park, under cloak of darkness, in a whole new way.

*From top: Competitors crawl through a cave during part of the race; racers check a park map to plan their route to the next checkpoint; orienteering-style flags designate the checkpoints; running in the dark presents unique challenges.*

*Opposite: Kayakers navigate the Colorado River in the paddling leg of the race.*



*Pam LeBlanc is a staff writer at the Austin American-Statesman, where she writes about fitness and adventure travel. To learn more about Too Cool Adventure Racing's lineup of races, go to [www.toocoolracing.com](http://www.toocoolracing.com).*





# Retrieving the Title

Top hunting dogs compete at the  
Master National Retriever Hunt Test.

**BY HENRY CHAPPELL**

Photos by Earl Nottingham



**D**orothy Ruehman's black Labrador retriever, Ruby, had just completed a series of retrieves that most duck hunters would brag about the rest of their lives. Remaining steady despite birds flying overhead, she sat smartly at Dorothy's whistle, then took hand signals to a downed duck on a long retrieve. She finished with a "blind retrieve" across 30 yards of water and 20 yards of brushy cover on the far bank.



*Dorothy Ruehman with Dixie and Ruby.*

But this was not an average duck hunt, and Ruby isn't an average retriever. Likewise, her "mom," Dorothy, doesn't have average expectations. Ruby ran her series before a large gallery and demanding judges at the 2017 Master National Retriever Hunt Test in Texas, arguably the most difficult retriever test available, at what many veteran handlers considered the toughest venue they'd seen.

After the series, Dorothy expressed both optimism and concern. Ruby, a two-time Master National finisher, was still in the running, but she'd cut into her margin simply by requiring her handler's assistance to a "mark" — a bird she'd seen fall. Had she required handling more than twice on marks, the judges would have ordered her "picked up."

Now, five more series at widely varying test sites loomed. These would include simultaneous downed birds and one or more blind retrieves, in which the dog doesn't see where the bird landed. Ruby could accept assistance on only one more marked bird.

The stakes were especially high for Ruby. Having successfully completed two prior Master National Hunt Tests, she would be inducted into the Master National Hall of Fame if she succeeded this time around. >>>



## TRIALS AND TESTS

In the highest realms of dogdom, field trials and hunt tests allow the most talented dogs to shine. As the name suggests, field trials are competitive — dog and handler against dog and handler on courses designed to eliminate competitors and determine the leading edge of retriever performance. Good field trial retrievers routinely handle tasks far beyond anything expected of even exceptional shooting dogs. Top competitors are rarely used in hunting because the on-the-spot adjustments common during hunts might encourage independence and imprecision that, while useful in the field, would be considered sloppy by field trial judges.

Yet, by determining the possible and continually pushing boundaries, field trialers do hunters a great service through training innovation and breed improvement. Find a talented young shooting dog and you'll almost certainly find a field trial champion somewhere in the bloodline.

Hunt tests, as opposed to field trials, measure dogs against a standard. Well-designed retriever tests simulate actual hunting conditions. At the highest levels, the tests require performance at the very extremes of what might be expected of an outstanding hunting dog. Unlike field trial handlers, who wear white jackets to be visible to dogs at great distances, hunt test handlers wear drab or camo clothing appropriate to actual hunting.

The American Kennel Club (AKC) sanctions tests at the Junior Hunter, Senior Hunter and Master Hunter levels. A dog

that earns a Junior Hunter title is a well-started youngster with potential to go to the next level. A Senior Hunter is a fine shooting dog that any hunter would be proud of. A Master Hunter is a superb dog that could grace the boat or blind of the most demanding professional hunting guide.


The Master National sits at the top, a test for dogs that have successfully run at least six Master Hunt tests in a given year.

The 2017 Master National featured 820 retrievers at The Big Woods on the Trinity, 7,500 acres of hardwood bottomland, grassland, ponds and sloughs around Catfish Creek, a tributary of the Trinity River, in East Texas. Owner Robert "Doc" McFarlane named the property in honor of The Big Woods of William Faulkner's short stories and novellas. Labrador and golden retrievers predominated, but a few Chesapeake Bay retrievers, Boykin spaniels, Nova Scotia duck tolling retrievers and one standard poodle made the cut as well. The East Texas Black Gumbo Retriever Club hosted the event.

As can be expected in East Texas in October, afternoon temperatures rose into the low 90s, far from ideal scenting conditions but consistent with the heat of dove season and early teal season. At the orientation, hunt officials reassured visitors concerned about venomous snakes and alligators.

## DOROTHY'S DOGS

Although Dorothy Ruehman grew up hunting doves and quail on family ranches in South Texas, her first well-trained gun dog, a chocolate Lab named Otis, came along



*A Master Hunter retriever is expected to deliver each bird to the hunter's hand during competition, whether it is a duck or pheasant, or alive or dead.*



*Retrievers must remain quiet and steady on the line until it's time to retrieve.*







with her husband, Michael, in 1988. Problem was, Otis brought her ducks and geese to Michael, not her.

"I went home, looked in the paper and found a chocolate female in El Campo," Dorothy says. "Ellelee was the first dog I trained, and I didn't know a thing about electronic collars."

But, at only 6, Ellelee died of cancer. Dorothy bought her first serious competition dog, Jessie, from a kennel in Oregon in 1998. Jessie garnered 58 Master passes. Her willful younger sister, Hula, who joined the family a year later, managed six Master passes.

"I earned every one of those," Dorothy says. "Two sisters, same mama and daddy, but different as night and day."

In 2005, an owner in Katy asked Dorothy to take on Kate, his young Lab. Although the pup had shown potential, her professional trainer didn't like her, and Kate returned the sentiment. Dorothy took Kate into her home in Richmond and got to work. Treated as a member of the family, Kate qualified for the 2005 Master National. At that point, the pro decided he liked her and took her back. The appreciative owner gave Dorothy a female out of Kate's 2006 litter. That pup, Coal, went on to successfully finish five consecutive Master Nationals.

Come time for another pup, Dorothy went back to Kate. Coal's younger sister, Ruby, the smallest of only three puppies, wasn't breathing when she was born and had to be resuscitated. She went on to outgrow her two bruiser brothers. Now, at the age of 7, at her fifth Master National, she snored in the back of the SUV while Dorothy described the challenges ahead.

You might think that someone who'd qualified retrievers in dozens of Master tests and several Master Nationals would train her dogs for hours every day.

"I train about once a week," Dorothy says. "That's all I have time for."

Although these formal training sessions take place in the field, sometimes with a professional trainer on hand, Dorothy schools her dogs constantly at her home in Richmond.

"I'm very regimented. I do a lot of training in my house," she says. "My dogs go in and out the door when I tell them, to the bathroom when I tell them. They sit and wait for me to fill their bowls before they eat. I'm a neat freak with a small house, so this daily drilling fits my nature and situation."

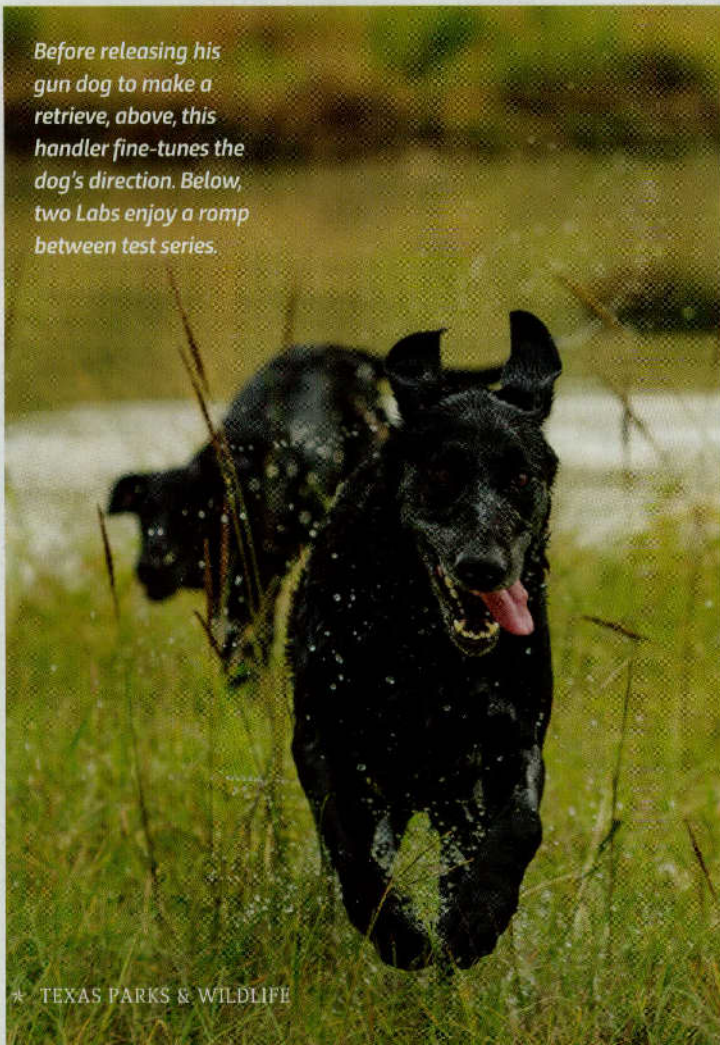
This discipline doesn't make machines of the dogs. Ruby also serves as a therapy dog in a local ICU and psychological ward and assists Dorothy in Christian motivational demonstrations.

#### THE PATERSON PUPS

As the week progressed, fewer and fewer trailers and pickups pulled into The Big Woods each morning just before daylight. Excellent dogs headed home, failed because of mistakes, by handler as well as dog. Some will run again at the 2018 Master National and other tests. Others, because of age or decisions by owners and trainers, will retire from testing and finish their careers as companions and fine hunting dogs.

On Sunday afternoon, I found Dede Paterson waiting at

*Before releasing his gun dog to make a retrieve, above, this handler fine-tunes the dog's direction. Below, two Labs enjoy a romp between test series.*





a land-only test at a site called Middle Church, a mix of open grassland, mottes and woodland that would severely test the dogs' ability to see where the birds land. Jones, her 4½-year-old Lab, had already run a perfect land-water series. Jones' 2½-year-old pup Tryst had also qualified for the Master National.

In 2008, a rescued English setter led Dede into serious retriever training. After she and her husband, Wayne, put a little weight on "Sam," they decided he needed a companion. Since Wayne loved to hunt ducks and doves, a Lab seemed like a perfect choice.

"That Lab pup, Annie, ate my deck, part of my air conditioning unit, everything," Dede recalls. "I wanted to kill her."

At a neighbor's suggestion, the Patersons joined a local retriever club in hopes of running some edge off the pup. The exercise helped. They soon added a pup from a local professional trainer and took him all the way to the 2012 Master National in Greensboro, Alabama.

The couple met at Texas A&M. On their first date, Wayne took Dede duck hunting.

"I should have known what was coming," she says. "We married young and grew up together. Now our kids are grown, and the dogs have just taken over."

The Patersons train four or five days a week. The sessions range from 15 minutes of backyard drilling to ambitious scenario training with their local training group.

"The biggest challenge is keeping the dog running at a

high level," Dede says. "You get him here and think you've arrived, but, like any athlete, he has to continuously train to stay sharp — and keep you sharp."

Dede and Jones would need to be at their best because the conditions at The Big Woods made the tests harder.

"The combination of water and woods here makes for very realistic tests," Dede says.

For the Patersons, this event included as much poignancy as excitement. Annie died just before it was time to head from their home in Goliad to The Big Woods.

"She was Wayne's 'everything' dog," Dede says. "She helped us raise all the puppies that came after her."

## REPORTS FROM THE FIELD

After a weekend of rooting for dogs and handlers, watching the best retriever work I had ever seen, I headed home for the work-week, eager to return Friday for the final day of testing. Results from Dorothy and Dede came in by text message throughout the week. As I looked over those messages, I could hear the women's voices and feel their excitement.

Dede: "Jones did great yesterday in the second series. Moving on to the third ... I am an adrenaline junkie!"

Dorothy: "We had a scare in our third series when Ruby overheated because her live flyer pheasant moved off its fall location. I boxed nearly the whole field with whistles and casts and she finally chased it down. We had to let her cool down before running her blinds!"

Dede: "Jones did great in the third and fourth series!"

*Some of the top golden retrievers in the nation compete at the Master National.*





Dede Paterson takes a moment to train a potential new addition to her pack in between competition series.



Dorothy: "Ruby just finished her fourth series clean. She had a beautiful blind retrieve!"

Dorothy: "Ruby ran a strong fifth series — stepped on all three pheasant marks, lined one blind and two-whistled the long blind!"

Dorothy: "Ruby finished her sixth series and will be inducted into the Hall of Fame!"

Dede: "Jones just smacked the sixth series! Wahoo!!! His puppy passed as well!"

### BACK TO THE KENNELS

Only 39 percent of the entrants passed the 2017 Master National at The Big Woods.

Late Friday afternoon, along the main drive, the rich October light made for perfect photos of retrievers and handlers posed beside autumn arrangements of straw bales and pumpkins and 2017 Master National signs. The handlers would gather that night for the closing banquet. Dogs would be honored; a few would be inducted into the Hall of Fame. Dorothy would receive the Women's Challenge Trophy for successfully handling Ruby through three Master Nationals.

The much-thinned crowd, the cooling temperatures and the first hints of fall color reminded me that the best part of hunting season lay ahead. Next morning, most of these dogs would be heading home to their real jobs.

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Henry Chappell is a journalist, essayist and novelist from Parker. His latest novel is "Silent We Stood."



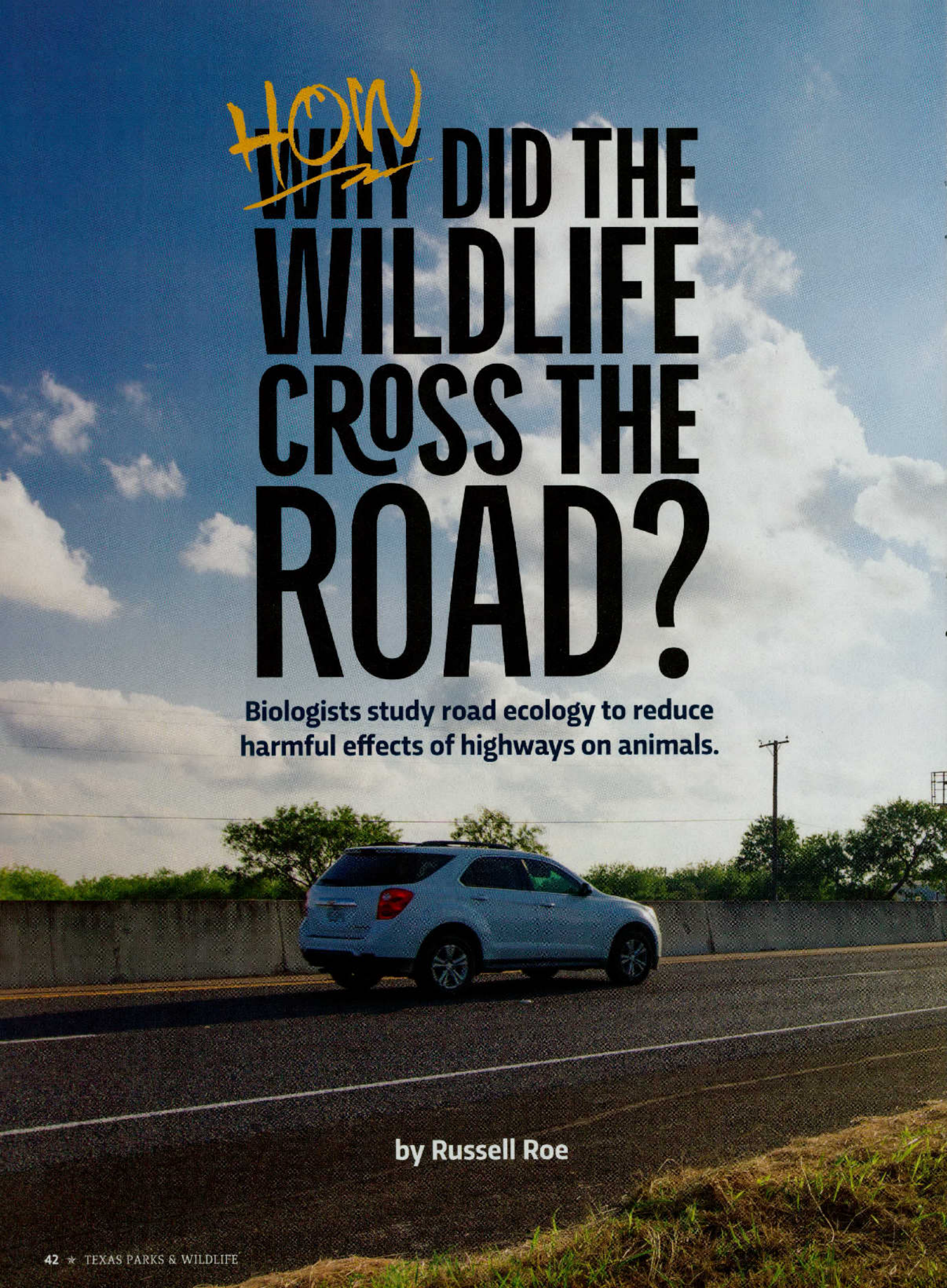
Big Woods owner Robert "Doc" McFarlane poses with Ten, a standard poodle, at the 2017 Master National.





*Gentle eyes, burning  
desire: a chocolate Lab  
at the event.*





# HOW WHY DID THE WILDLIFE CROSS THE ROAD?

Biologists study road ecology to reduce harmful effects of highways on animals.

by Russell Roe





**WILDLIFE  
CROSSING**



When Paul Hanson set up his first game camera in the Franklin Mountains of El Paso, he wasn't sure what he'd get. He was thrilled when a mountain lion — rarely seen because of the animal's secretive nature — showed up.

Eight months later, a heartbroken Hanson learned that the mountain lion was found fatally injured by the side of Transmountain Road, the victim of a collision with a car.

"I was devastated. We knew it was the same one because it had a really distinguished nick in its ear," says Hanson, who works for TPWD's Wyler Aerial Tramway.

At the same time, on the other side of the Franklins, the Texas Department of Transportation was busy building a wildlife and pedestrian underpass on Transmountain to enable the safe passage of animals and people in the mountains.

Like many roads across the state, Transmountain Road has created seen and unseen effects on wildlife and the surrounding environment.

Roads can act as barriers to animal movement, create fragmented habitat, limit access to resources and divide

wildlife populations into more vulnerable subpopulations. They can, of course, also cause roadkill. The emerging field of road ecology aims to address these problems.

Several U.S. states have begun implementing solutions, such as building overpasses for migrating pronghorns in Wyoming and underpasses for panthers in Florida, to protect vulnerable wildlife populations.

Now, Texas is looking for its own solutions, with projects underway across the state to help brown pelicans, ocelots, bats, pronghorns, fish and a host of other species affected by roads.

"This type of thought process is weaving its way into our planning," says Laura Zebehazy, TPWD program leader for wildlife habitat assessment who has worked with TxDOT on projects involving wildlife and roads. "I don't think we'll solve all our

problems. But we shouldn't continue to build roads without considering our plants, wildlife and natural resources."

### LESSONS IN ROADKILL

The most visible effect of roads on wildlife comes from the toll of animals hit by cars. Vehicle-wildlife collisions kill millions of animals each year. That's a lot of dead armadillos. The cost associated with vehicle-animal collisions is estimated to be \$8.3 billion a year in the U.S.

Chris Schalk, a professor at Stephen F. Austin State University in Nacogdoches, finds roadkill pretty interesting.

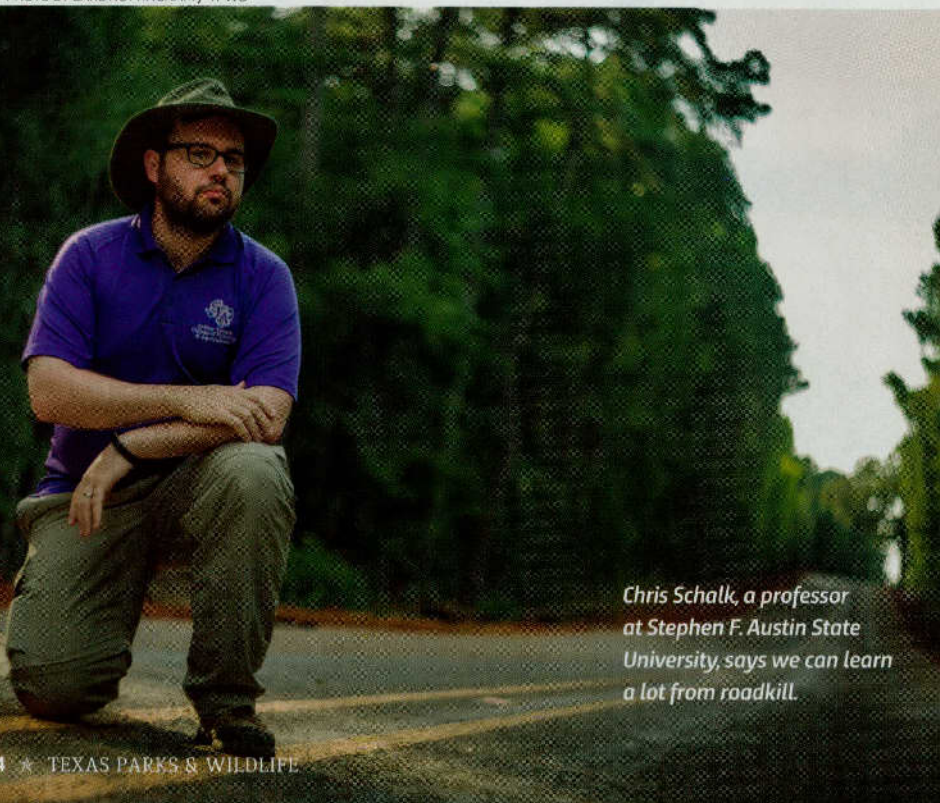
For one thing, roadkill can tell you a lot about wildlife movements — animal "hot spots" and "hot moments" and seasonal patterns. It's data, scientific data. A little bloody, maybe, but data nevertheless.

To find out more about Texas roadkill, Schalk started the Roadkills of Texas Project on iNaturalist earlier this year, in which citizen scientists can report roadkill sightings across the state.

"When you start to aggregate the individual observations, and you do it statewide, you can start to tease apart patterns of what factors are correlated with Species A being hit or Species B being hit," he says. "Are there certain habitat features associated with road crossings, or is it during certain times of year such as breeding season? With that, you can start to develop mitigation strategies."

Understanding animal behavior is key. Salamanders move en masse every spring from forests to wetlands to lay eggs and sometimes cross a road to get there, creating a temporary wildlife-road interaction — what Schalk calls a "hot moment" — that needs addressing. Some wild cats

PHOTO BY EARL NOTTINGHAM / TPWD



*Chris Schalk, a professor at Stephen F. Austin State University, says we can learn a lot from roadkill.*





Laguna Atascosa National Wildlife Refuge is improving road crossings for ocelots.

PHOTO © KATHY ADAMS CLARK/KAC PRODUCTIONS

might prefer to travel under a road in an underpass, seeking the safety of cover, while moose and elk might prefer to go over a road on an overpass, keeping an eye out for predators.

#### **NOT AN AWFUL LOT OF OCELOTS**

In a deadly 10-month stretch in 2015-2016, seven ocelots were killed by cars in South Texas. For a population estimated to number only 80 to 100 individuals in Texas, the deaths were a cruel blow.

Federal biologists decided something more needed to be done to protect the endangered creatures, whose main threats are road mortality and loss of thornscrub habitat.

In Texas' first major effort to install wildlife crossings, TxDOT agreed to build 15 wildlife underpasses around Laguna Atascosa National Wildlife Refuge, home of the ocelot.

The crossings on Texas Highway 100 were completed in 2017; construction is continuing on several of the others around the refuge. The

crossings look like basic concrete culverts under the road. They may prove to be lifesavers.

Wildlife crossings have proved to be successful in other areas. Vegetated wildlife overpasses in Montana have reduced vehicle-wildlife collisions in those areas by 80 percent. Florida panther road deaths dropped 90 percent after special underpasses were installed to facilitate their movement.

Robin Gelston, TxDOT biologist for its South Texas district, says it may take a few years for ocelots to start using the crossings. But other animals are starting to use them, such as bobcats, coyotes, raccoons, tortoises and snakes.

"We've been monitoring them and seeing the benefit," she says. "When you see a coyote or bobcat go through the crossing, and you see them with kittens, you go, wow, these are useful and beneficial."

TxDOT also installed fencing, a key component of effective wildlife crossings, along Highway 100 to

funnel animals toward the crossings.

"This is pretty new," Zebehazi says. "These crossings are going to be the test to see, are we actually designing something that's going to help ocelots and all the other South Texas wildlife."

John Young, TxDOT biologist and former TPWD mammalogist who has worked on ocelot issues for years, says money is often a limiting factor.

"We would like to see wildlife crossings built every few miles when possible," he says. "But it's not always feasible. We have to be responsible with taxpayer dollars. We are working to show that these should be done for more than just endangered species."

#### **PELICANS ON THE ROAD**

South Texas attracts winter-weary Americans with its abundant sunshine and warm temperatures. But it does get cold there, with winter fronts bringing sudden drops in temperature and bitter winds. That's when trouble starts for a certain group of brown pelicans.

After the pelicans feed in the Gulf



of Mexico, they come home to roost in the evening on islands in the Bahia Grande, a large wetland east of Brownsville. When there's a strong north wind and the pelicans are flying in, they hit a zone of turbulence over Texas Highway 48 and fall onto the roadway. Drivers have little time to react. Dozens of pelicans died last year after being struck by cars.

"You really don't understand until you're there and you witness a flight of 15 or 20 birds — pelicans flying over — and half of them drop right out of the sky," says Willy Cupit, TPWD coastal ecologist in Brownsville. "You're terrified for the birds. They just kind of crumple up and drop."

TxDOT has conducted wind tunnel studies to see why the roadway causes the troubling turbulence and to determine what it can do to change the road design.

In the meantime, a group of citizens has stepped in to protect the pelicans. They mobilize during winter storms to scoop fallen pelicans from the roadway.

"Hopefully, TxDOT will figure out some kind of solution to minimize the problem," Cupit says. "It's unrealistic to expect that no birds will get hit on the highway. Highways are tough on wildlife. What we can do is construct them in ways that don't have such a dramatic impact."

### GAME AND FISH

Roads affect aquatic creatures, too. When an energy company built a bridge across the Double Mountain Fork of the Brazos River, the bridge's culverts limited the movement of fish up and down the river. That stretch of river contains the last remaining populations of the sharpnose shiner and smalleye shiner, two species of migratory prairie minnows listed as federally endangered.

"The fish can't go upstream anymore," says Kevin Mayes of TPWD's Inland Fisheries. "When you create a barrier, predators get up there too. You have a situation of minnows mixing with gar, and you know who's

going to win that."

The minnows, with a unique reproductive life cycle, depend on a free-flowing river to migrate and spawn. TPWD worked with the U.S. Fish and Wildlife Service and others to remove the bridge in 2016 and restore habitat connectivity for the fish.

What TPWD can achieve for minnows, Shawn Gray hopes to achieve for pronghorns.

Gray, the TPWD pronghorn program leader, says roads act as barriers for pronghorns in West Texas. As a result, the animals are unable to move to different areas for mating and better grazing.

"A busy highway is definitely a barrier for them," Gray says. "Pronghorns and highways just aren't compatible. We have lots of data, GPS locations, showing animals going up against the highway but never crossing it."

After a historic decline of pronghorns on the Marfa Plateau from 2008 to 2011, TPWD started transferring animals from the Panhandle to bolster the population.

Gray thinks better habitat connectivity would go a long way toward solving the pronghorn problem. Texas doesn't have the large herds of migrating pronghorns that prompted other Western states to install wildlife overpasses, but the animals still need to move.

Gray says moving existing fencing and installing pronghorn-friendly fencing will help, and he dreams of getting a pronghorn overpass built. He plans to start talking with TxDOT and ranchers to help Texas pronghorns safely cross the road.

### BATS AND BRIDGES

Most of the effects of roads on wildlife turn out to be negative. But there's one group of animals that has found a way to make roads and bridges work to its advantage: bats.

Bats discovered that concrete bridges with narrow crevices make perfect bat houses. In the early 1980s, bats started to move in to the Congress Avenue



bridge in Austin after modifications were made to the bridge. After an initial panic, Austin residents learned to appreciate them, and now the bats, with their spectacular emergences against a skyline backdrop, are a top tourist attraction.

"When all of a sudden you have a million bats in downtown Austin, that caught everybody's attention," says Mylea Bayless, senior director for networks and partnerships at Bat Conservation International. "Now we see bats using bridges all over Texas."

After the Congress Avenue bats moved in, Bat Conservation International teamed up with TxDOT to conduct a statewide bats-in-





*Bats emerge from the Waugh Bridge in Houston. TxDOT has been a national leader in studying how bats use bridges for habitat.*

PHOTO BY SONJA SOMMERFELD / TPWD

bridges survey. They wanted to determine what bat species were using bridges, what bridge features made good roosts and how bats could be attracted to use new bridges or retrofitted bridges.

The survey results became a blueprint for departments of transportation across the nation for the use of bridges as bat habitat.

In Texas, at least 125 bridges are being used by 12 species of bats.

These days, TxDOT designs bridges with bats in mind if the circumstances are deemed appropriate. TxDOT also has been retrofitting bridges with bat habitats such as bat boxes and partitioned "bat abodes."

### **A NEW DAY**

Today's problem with wildlife and roads grows from the legacy of a road system largely built before the rise of modern ecology. But there's hope that things are changing.

"We recognize this as an important issue," says Stirling Robertson, a biologist at TxDOT. "It's become much more of a focal point."

TxDOT has already made improvements in right-of-way management to support wildlife. It plants only native species along roadways and has made a major push to incorporate plants that support pollinators such as butterflies and bees.

Dennis Markwardt, TxDOT

director of vegetation management, says, "If you have that diversity in plant life, you'll have it in the wildlife as well."

TPWD's Zebchazy is optimistic.

"There are very few areas in the U.S. not impacted in some ways by roads," she says. "I think there are ways to turn the tide, minimize impacts. We are learning from our mistakes. We have all these biologists, scientists and engineers trying to think like animals, trying to figure out how we get them across the road."

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*Russell Roe is the managing editor of Texas Parks & Wildlife magazine.*



## LEGACY

'Zombie' parasites are the stuff of Halloween nightmares.



# INVASION OF THE BODY SNATCHERS

By Nathan Adams

**IT'S A GOOD TIME TO BE A ZOMBIE FAN.** On TV, you can catch AMC's *The Walking Dead*. At the multiplex, movie-goers saw Matt Smith and Natalie Dormer search for a zombie cure in *Patient Zero*. Singer/songwriter Stephanie Mabey racked up more than 6 million views for *The Zombie Song* on YouTube. No matter the media — television, movies, comic books, novels or video games — zombies are everywhere. Including, as it turns out, in our own backyard.

Texas is home to three known "zombie" parasites, creatures that attack and infect their animal hosts. But these zombies don't want to *eat* brains — at least not at first. They want to *control* them.

"It's fascinating how these parasites have figured out how to bypass the immune system and interface directly with the host brain," says Kelly Weinersmith, a parasitologist and adjunct assistant professor at Rice University in Houston. "They are somehow able to get the host to do things that are bad for the host, but good for the parasite."



## TALES FROM THE CRYPT

Weinersmith, together with her colleague Scott Egan, is credited with discovering one of these zombie parasites. Egan studies gall wasps, tiny insects (smaller than 5 mm, about the size of a pencil eraser) that lay their eggs in oak trees. Once these eggs hatch, the larvae alter the tree's natural behavior, creating small chambers full of nutritious tissue below the surface of the bark. There, protected from predators, the young wasps eat these tissues as they mature to adulthood. Over time, they chew their way through to the surface and then fly away.

At least, some of them do. While studying a tiny, orange-colored species known as the crypt gall wasp, Egan discovered that some wasps weren't fully exiting the tree. Their heads were stuck, wedged into an escape hole much smaller than normal.

Such behavior is atypical for gall wasps, so Egan reached out to Weinersmith.

"Scott asked me, 'Could a parasitoid be doing this?' In the animal kingdom, there's a strong correlation between abnormal behavior and the presence of a parasitoid."

The two carefully cut open branches housing trapped gall wasps. Inside the crypt of each stuck wasp they found a second wasp, half the size and iridescent blue. This smaller wasp had attached itself to the gall wasp and appeared to be eating it from the inside. Further research showed that these smaller wasps were somehow able to manipulate their hosts into making a hole too small for the larger gall wasp to exit. Over time, the smaller wasp ate its way through the head of the gall wasp ("They're really messy eaters," Weinersmith notes) and flew out into the wild.

Egan and Weinersmith gave this previously undiscovered species the deliciously macabre name of crypt-keeper wasp. The wasp's formal name, *Euderus set*, pays homage to Set, the ancient Egyptian god of chaos and evil who, according to legend, could control other evil beings.



PHOTO © SEAN LIU

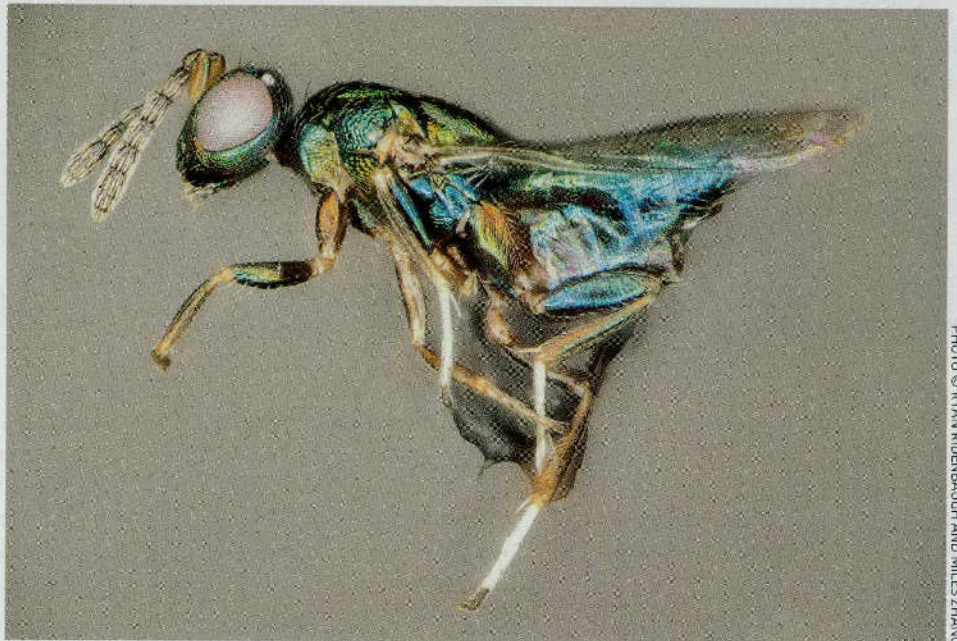


PHOTO © RYAN RIDENBAUGH AND MILES ZHANG

"We later learned that Set locked his brother Osiris in a crypt, then came back and chopped him into pieces," Weinersmith says. "There were a lot of cool connections."

When scientists observed abnormal behavior in the crypt gall wasp (top photo), they suspected the presence of a parasitoid and found one: the diabolical crypt-keeper wasp (above).

## FISH GOTTA SWIM, BIRDS GOTTA FLY

In the Gulf of Mexico, another mind-controlling parasite moves at a snail's pace toward its future host — literally. *Euhaplorchis* sp. A, a type of fluke worm, begins its life attached to the plicate horn shell sea snail. There's just one problem — to reproduce, *Euhaplorchis* needs to be inside a bird, and birds aren't swimming under the Gulf. There are, however, a lot of longnose killifish.

The longnose killifish is a small minnow, about the size of your finger (they can grow as large as 12 cm). Scientists aren't sure how *Euhaplorchis*

make the transfer from snail to fish. Some theorize the eggs are washed from the snail into the ocean, then inhaled through the gills of the killifish; others think the larvae burrow into the fish some other way. But once inside, their mind-altering takeover begins.

In 2012, Brian Fredensborg and undergraduate student Ashley Longoria of the University of Texas-Pan American published a paper in the *Journal of Parasitology*, documenting their research into *Euhaplorchis*. They found that killifish infected by





Phorid flies seek out fire ants and inject their eggs into them. The presence of a phorid fly can cause fire ants to behave in atypical ways, such as retreating or piling on top of one another.

PHOTO © ABBOTT NATURE PHOTOGRAPHY

*Euhaplorchis* swim closer to the surface of the water than uninfected killifish do — and the greater the infection, the closer to the surface they swim. There, the infected killifish is more likely to be spotted (and eaten) by predatory birds. Thus, the parasite passes from the fish to the bird, where *Euhaplorchis* can reproduce and lay eggs. Those eggs get pooped out, picked up by passing sea snails — and the cycle begins again.

### THE PHORID IS HORRID (IF YOU'RE A FIRE ANT)

Researchers at the University of Texas at Austin's Brackenridge Field Laboratory have been studying a type of mind-controlling parasite called the phorid fly. Female phorid flies seek out colonies of the invasive red imported fire ant, targeting individual ants. Once the target ant is chosen, the phorid swoops down, injects her egg into the ant's body, then zips away. The entire process takes a fraction of a second.

Over the next 10 days, the egg hatches and the phorid larva moves into the ant's brain, where it

manipulates the ant to leave the nest and seek out a moist place to die. The ant's head then falls off, and the phorid larva pupates in the safety of the hard shell that once housed the ant's brain. About a month later, the adult fly emerges.

Another thing phorid flies do to fire ants may be more significant. Phorid flies don't need to infect the fire ants to influence their behavior — they just need to fly around them. As phorids circle ants looking for victims, some ants will hide, retreating into their nest. Others posture in odd ways, such as piling on top of one another. The presence of phorid flies disrupts the ants' ability to protect the nest or provision it with food, allowing other, native ant species to take advantage of the disruption and reclaim lost territory. Research is ongoing as to how these parasitic predators may help reduce the impact of invasive fire ants.

### RETHINKING ZOMBIES

"Parasites are so creepy," Weinersmith acknowledges. "And if you'd have told me at 14 that as

an adult I would be studying them professionally, I would have said you were crazy. But consider what parasites have learned over millions of years studying their hosts, and what can we learn from them. As we understand how parasites affect the behavior of their hosts, we are learning more about how our own systems work, how behavior happens and how diseases work in general."

This field of study holds great research potential, Weinersmith says, because there's so much we don't know, and so much to discover.

"Sometimes we have a tendency to *pooh-pooh* people getting excited about the natural world," she continues. "Stuff like this is fascinating — it gets people to notice the world around them."

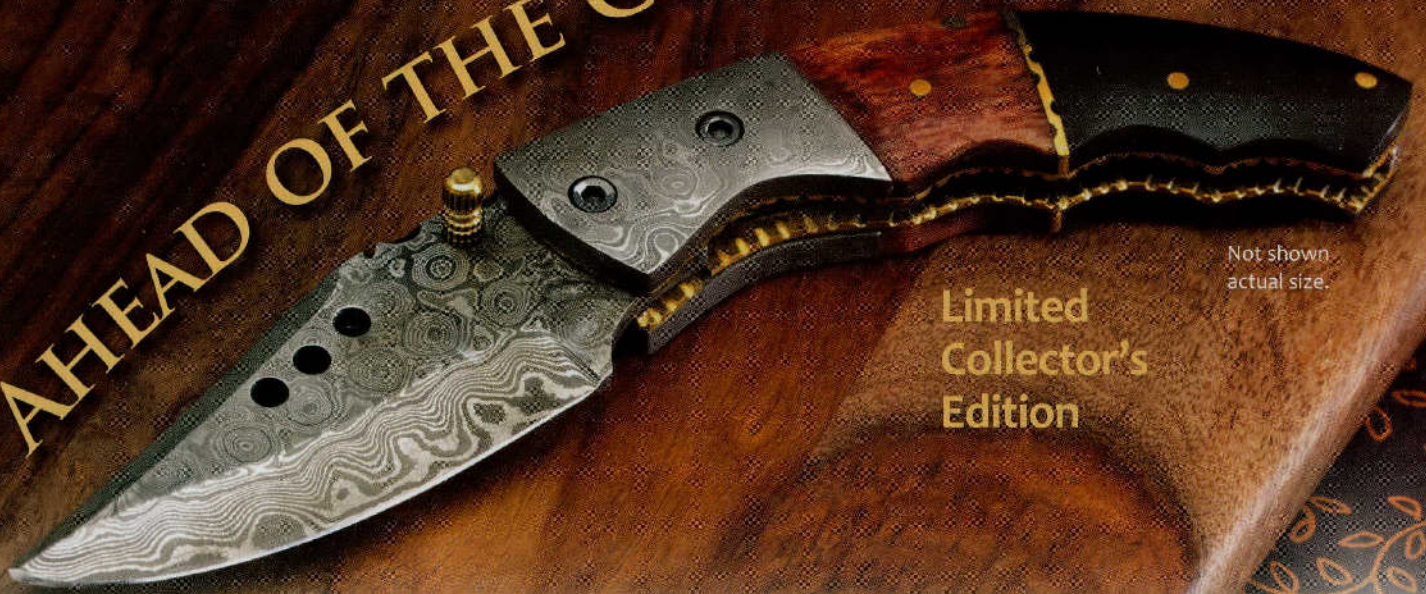
So, the next time you step over a fire ant mound, walk past an oak tree or visit the Gulf of Mexico, take a moment to stop and notice the world around you. Because here, there be zombies!

---

*Nathan Adams has listened to "The Zombie Song" more than 665 times. He is also the art director for Texas Parks & Wildlife magazine.*



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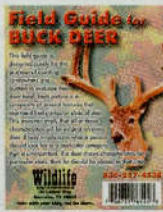
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**Tells today's time with yesterday's style.** The *Metropolitan* is exactly the kind of elegant, must-have accessory that belongs in every gentleman's collection next to his British cufflinks and Italian neckties. Inspired by a rare 1929 Swiss classic found at auction, the *Metropolitan Watch* revives a distinctive and debonair retro design for 21st-century men of exceptional taste.

The *Stauer Metropolitan* retains all the hallmarks of a well-bred wristwatch including a gold-finished case, antique ivory guilloché

face, blued Breguet-style hands, an easy-to-read date window at the 3 o'clock position, and a crown of sapphire blue. It secures with a crocodile-patterned, genuine black leather strap and is water resistant to 3 ATM.

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# Letterboxing



ILLUSTRATION © JESSICA BLANK

**WHO DOESN'T LOVE A TREASURE HUNT?** The idea of finding a map, following clues and unearthing a hidden cache of loot stirs the imagination. And while your odds of finding buried pirate gold may be slim, there are hundreds of treasure boxes hidden throughout Texas. If you want to find them, you'll need to take up letterboxing.

Part orienteering, part treasure hunt, letterboxing takes participants (called "letterboxers" or "boxers") on a search for weatherproof containers hidden in publicly accessible places such as parks or historic sites. It's similar to geocaching, but rather than following GPS coordinates, boxers follow clues. These can be anything from simple instructions ("From the juniper tree, face south and look for two yucca plants.") to elaborate poems, stories or secret codes. Find the box and your prize will be an image transferred from a rubber stamp — often a unique, hand-carved work of art.

Stamp your discoveries in a personal journal called a logbook. Be sure to record the date, the name of the letterbox and where it was discovered.

Then, use your own rubber stamp to leave your mark in the letterbox's logbook, along with your name and the date. Some letterboxers use a "trail name," an alias that means something special to them. Be sure to check out the stamps and trail names of other participants — you're part of a community of treasure hunters now! Put everything back in the box and rebury the treasure for others to find.

Letterboxing can be done solo or with a group. Websites such as [letterboxing.org](http://letterboxing.org) and [atlasquest.com](http://atlasquest.com) host clues to thousands of letterboxes hidden around the world. Odds are, there's one hidden near you. Now get out there and find it.

*By Nathan Adams*

**CELEBRATE THE 20TH ANNIVERSARY OF NORTH AMERICAN LETTERBOXING** at the Live and Breathe gathering on Oct. 26–28 at McKinney Roughs Nature Park east of Austin. Visit [liveandbreathexx.com](http://liveandbreathexx.com) to register or to get more information.

## GEAR UP

**RUBBER STAMP:** For marking letterbox logbooks.

**INK PAD:** Because not every letterbox has one.

**LOGBOOK:** An acid-free, medium- to heavy-weight sketchbook with a smooth finish works best.

**PENCIL OR PEN:** Use it to sign/date the letterbox logbook and add info in your personal logbook.

**COMPASS:** Many letterbox clues don't require a compass; some do.

**WATER/SNACKS:** Treasure hunting is thirsty work!

## QUICK TIPS

**BE STEALTHY.** Be discreet if other people are nearby so as not to reveal the box's hiding place. Secrecy is part of the fun of letterboxing.

**RESPECT THE ENVIRONMENT.** Leave the area just as good as — or better than — you found it. Follow park rules.

**READ THE CLUES WELL.** Make sure you have a good idea where you're going and what you're looking for before you set out.

**LEAVE NO TRACE.** After stamping both logbooks, rehide the box well. Check the box from different angles to make sure no plastic is showing.





## Be the one they remember.

They may not remember everything you ever did for them, but they will *always* remember who took them hunting.



Find helpful resources like youth/adult hunts, hunter education and mentored hunting workshops at

[tpwd.texas.gov/youth-hunting](https://tpwd.texas.gov/youth-hunting)



## WHERE IN TEXAS?

This grand and graceful 65-foot waterfall cascades down a travertine cliff face lined with maidenhair ferns and lush vegetation. It's one of the most popular features of a Central Texas state park. A spring-fed stream creates the waterfall before joining a major Texas river nearby.

If you recognize this Hill Country gem, send us a note at *Texas Parks & Wildlife* magazine, 4200 Smith School Road, Austin, TX 78744 (write "Where in Texas?" on the envelope); email us at [magazine@tpwd.texas.gov](mailto:magazine@tpwd.texas.gov); let us know on Facebook; or post a comment to [tpwmagazine.com](http://tpwmagazine.com). We'll reveal the answer in a future issue.

Photo by Jeff Durst  
**TOOLS:** Fujifilm X-H1 camera, Laowa 9mm f2.8 lens, f/11 at 1/20 second, ISO 200



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