

Our purpose is to document and publicize the values and conservation needs of horned lizards, to promote horned lizard conservation projects, and to assist with horned lizard management initiatives throughout their ranges.

The White Blouse

By Brenda Guyton

Brenda is a native Texan from Odessa, Texas. As a tomboy, she says that she “spent way too much time sitting on the hardscrabble ground watching the horned toads and beetle bugs.” Brenda Guyton spent her working years as a financial director. Now retired, she indulges in creative pursuits that include painting and writing. She lives in Dallas with her husband and her three Maine Coon cats. She won an honorable mention in a writing contest for her short story about an encounter with a horned lizard which she has graciously shared with us.

The White Blouse

I was flat on my stomach on the hardscrabble ground. Unmoving. My left leg was asleep, but I did not dare shift it.

Although I was trying to keep my white blouse from getting dusty, my main objective was to avoid scaring the creature who was glaring at me with unblinking black eyes.

West Texas in the 1950’s was a bland and boring place to grow up. As an eight-year-old girl, I spent as much time outside as possible. Endless sunny days allowed me to spend my free time digging in the vacant lot down the alley from my house. Of course, this was the desert, so the lot consisted of sand, rock-hard sand-colored dirt, and parched weeds struggling up through the . . . sand.

A quick glance would lead a casual observer to believe that no animals occupied that space. Nonetheless, it contained an assortment of fascinating creatures like sleek, green, magical lizards whose tails grew back when the tips were bitten off by the neighborhood tom cat. There were also roly-poly bugs who curled up into tiny wheels, stink bugs who emitted a disgusting odor when frightened, and various beetle varieties who served as crunchy treats for the green lizards.

Thanks to my hours of patient watching, I witnessed some of nature’s life/death dramas. One day I perched on a branch in the small tree in our backyard watching webworms wriggling in their circular webby home. Suddenly, a black and red wasp landed on the side of the web. The wasp poked his long proboscis into the nearest worm, and instantly sucked

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him dry, leaving only the shrunken wrinkled husk of the worm's skin behind. Then the wasp went to the next worm, and the next one – like a hungry cowboy at an all-you-can-eat buffet. How cool was that?

My favorite critters were the peculiarly disk-shaped horned lizards who were known locally as horny toads. These are tiny, flat, short-tailed dinosaurs about four inches long and outfitted with full armor. Short spikes protect their leathery backs, and they sport two half-inch horns on their heads. At mealtime they use their short, sticky tongues to gobble up red ants. Also, they all have brown freckles on their wide scaly stomachs. A schoolmate once said he thought those spots indicated how many ants the lizard had eaten. Like any good scientist, I took his claim under consideration, but ultimately my common sense rejected the idea.

One weekend morning, my parents decided to go out for lunch. This was unprecedented. My father was a diesel mechanic and my mother a stay-at-home mom, so money was tight. I couldn't remember when we had ever eaten out. For this occasion, I was outfitted in a brand-new white cotton blouse that my mother had washed and ironed.

She hated ironing. She had to wash and iron my dad's Khaki uniforms every week and complained bitterly each and every time. Everything had to be washed by hand in the kitchen sink, then run through a ringer in the garage before being hung on the backyard clothesline.

Clearly, this excursion and this blouse were important to her. The blouse had four frilly rows covering the pearly buttons that extended from collar to waist. The frills jutted straight forward and had been starched and ironed to an impressive level of stiffness. I could tell that the tender area under my chin was going to be rubbed raw by the top frill before the day was over.

After I was dressed, my parents needed to finish getting ready. Since they were going to be a few minutes (an eternity for an eight-year-old to have to wait), I asked (begged actually) to go to the vacant lot.

My mother put her hand on my shoulder and attempted to impress upon me what a big deal the new blouse was, how much it cost and how long it took her to carefully iron each of those frills.

I stood patiently and waited. She rolled her eyes, and said I had to be back in 10 minutes and to NOT GET DIRTY!!

Released, I ran down the alley hoping to see something interesting before going on the boring outing with my parents. After all, I had only 10 minutes of freedom. However, as usual when I got near the lot, I slowed down so as not to alarm the inhabitants.

I stood still for a moment to survey the area.

Then I saw him.

The Largest Horny Toad ever!

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The truly noble creature sported impressive horns and a prominent design of spots and stripes on his back.

I slowly lowered myself down until I was within reach of him. Since I had a great deal of experience in playing outdoors with the “stay clean” admonishment following me, I settled carefully and succeeded in keeping the blouse unharmed.

Confronting me, he rose up on his slender legs, puffed out his body to appear more menacing, and glared at me - as threatening and fearless as any ancient predatory carnivorous dinosaur.

And . . . I caught him!!!

Trying not to alarm my prize, I held him gently between my hands and spoke softly to him. But I was so excited! This achievement could not be overstated. I had captured the Grand-Daddy of all Horny Toads!!

He was magnificent. More than that – he was regal in his disdain for me. He was totally unafraid and continued to stare at me with those steely black eyes – clearly commanding me to release him. I promised him I would, but first I had to show off my prize. I started running.

When I got home, I stopped just outside the screen door.

This requires an aside:

I was no longer allowed to take any living thing into the house after the unfortunate spider incident. One evening I captured a beautiful black fuzzy spider with white spots. I put him in a glass jar with some twigs and leaves, and covered it with wax paper held by a rubber band. I poked small holes in the wax paper so he could breathe. My plan was to set the jar on my bedside nightstand and observe his movements until I fell asleep, then release him in the morning. (Every creature I ever held or captured was ultimately released unharmed.)

Only this time the he spider turned out to be a she. When I woke up, there were zillions of impossibly teensy black and white spiders crawling on the nightstand, on my bed, on the floor, up the curtains and pretty much everywhere. I was amazed and delighted to discover that spiders could be so tiny. I eventually managed to catch all of them, but my mother was beyond horrified, and that incident resulted in the banishment of all critters from inside the house forevermore.

Back to our story:

I yelled through the screen door to get my parents to come see my Largest Horny Toad prize. My mother came to the door, but as usual didn't open it. She seemed satisfied I had avoided getting any dirt on my blouse, so was willing to take a moment to acknowledge whatever undesirable thing I'd brought home this time.

I struck a pose and held up the magnificent creature. I was as proud as any zoologist would be sharing the news of an astounding new discovery.

At that moment, my large and angry lizard let me know just how agitated he was by triggering his extraordinary defense mechanism – he squirted a long stream of bright red blood

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from his eyes that hit all the ruffles on my white blouse from neck to waistline.

I was so thrilled I laughed out loud. I was a first-hand witness to this rare and ancient pre-historic action that I had read so much about!

My mother screamed.

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Horned Lizard Conservation Conference

The 2021 HLCS Conference is scheduled for September 25, 2021. It will be held at the Phoenix Zoo in Phoenix, Arizona.

Check the HLCS website hornedlizards.org, social media, emails, and the August 2021 newsletter for more information.

Please contact Mason Lee at masonmlee3@gmail.com for any questions and abstract submissions. In the meantime, we are accepting donated horned lizard items for our silent auction to help raise funds for horned lizard conservation grants!



HLCS Online Store

Did you know that HLCS has an online store? It has lots of horned lizard goodies for sale. There are six styles of t-shirts that are all fabulous. There are also note cards, and three different books for sale. You can also find all kinds of horned lizard jewelry, such as earrings, necklaces, pins, bolo ties, and others.

We also sell engraved metal straws and a straw set pouch to help save on plastic straws in the environment. Bake horned lizard cookies with the horned lizard shaped cookie cutter. There are also foam horned lizard models to play with and foam book marks. You can also buy horned lizard key chains and magnets. And of course, you can purchase a pack of 25 horned lizard masks, like the one shown, or an individual mask for three species. You can also donate at the store!



Grants, grants, and more grants

This year HLCS had more submissions than ever before! We had a record-setting 12 submissions and awarded 9 grants. The year before we had 4 submissions and awards which shows that we are getting the word out about our organization. We wish we could have awarded more but we had to stretch our budget quite a bit to cover the 9 awards! Thank you to all of you who contributed to our grant fundraiser in late January to early February. Your donations made a huge difference and will contribute to helping further horned lizard conservation research. We look forward to hearing about the research from these awardees!

Danielle Miles - In Nevada, the Pygmy Short-horned Lizard (*Phrynosoma douglasii*) is considered a sensitive species, but their current distribution and threats are not known. Researchers will look for horned lizards at multiple monitoring locations to create a database of species occurrence records. This study will inform the current status of populations in Nevada and increase understanding of the long-term conservation needs of the species in the warmest part of its range.

Jesse Short - Rapid residential and agricultural development of sagebrush steppe habitat in Central Oregon has negatively affected local populations of the Pygmy Short-horned Lizard (*Phrynosoma douglasii*). This project will track lizards in undisturbed habitat with healthy populations, and use the data gathered to formulate a list of habitat specific parameters for use in evaluating existing/designing new habitat for *P. douglasii* in similar landscapes.

Nick Cairns - Overwinter mortality of the Greater Short-horned Lizard (*Phrynosoma hernandesi*) in southern Canada seems like a potential culprit and major risk to the persistence of northern populations in the future. This project is a non-invasive monitoring program to ascertain the conditions utilized by overwintering *P. hernandesi* at its northern range limits. The results can help explain local physiological adaptation, the importance of snow for this species, and the risk climate change may pose for its persistence.

Sam Eliades - This study's purpose is to improve the Texas Horned Lizard (*Phrynosoma cornutum*) headstart program at the Oklahoma City Zoo and maximize horned lizard conservation and reintroduction efforts in the future. This project will study the gut microbial ecology of horned lizards pre- and post- release from the headstarting program, as well as assess behavioral tendencies in lizards at the Zoo and after reintroduction into the wild.

Saul Domingues Guerrero - The goal of this study is to test for differences in preferred body temperature between pregnant and non-pregnant females, elucidate if preferred body temperatures of pregnant females is inherited to their offspring, and test if preferred body temperatures during pregnancy impacts phenotype of newborns in the Mountain Horned Lizard (*Phrynosoma orbiculare*) in central Mexico. This study could help us better understand the susceptibility of horned lizards to climate change and suggest better practices for conservation strategies in the future.

Christena Stephens - Funds from this grant are for the purchase of fluorescent powder, used to monitor movement patterns of Texas Horned Lizards (*Phrynosoma cornutum*). The primary purpose of this research is to understand how a prescribed burn affected a population of Texas Horned Lizards at 3 Rivers Foundation Comanche Springs Astronomy Campus in Texas.

Padraic Elliot - The goal of this study is to identify the causes of the poor reintroduction success of

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Texas Horned Lizards (*Phrynosoma cornutum*) by comparing microhabitat use and availability between a privately-owned ranch with an established population of horned lizards and a nearby reintroduction site with recently reintroduced individuals in Mason County, Texas. By using morphological measurements, radio-tracking lizards, and habitat measurements, the project will look to see if different microhabitat use leads to evidence of higher stress in lizards. Project is through TCU.

Patrick Ryan - This study is part of a larger project to evaluate habitat variables to improve the reintroduction success of Texas Horned Lizards (*Phrynosoma cornutum*) in Mason County, Texas. This portion of the study concentrates on habitat thermal characteristics, as thermal quality differences could be a key variable in the past low reintroduction success. Project is through TCU.

Rachel Alenius - Reintroduction projects of Texas Horned Lizards (*Phrynosoma cornutum*) have been met with limited success, and the underlying causes are still unclear. Animals bred in captivity tend to have altered gut microbiomes, which could influence reintroduction success of horned lizards. Research study is in Mason County, Texas. This project aims to understand how gut microbiomes of wild populations compare to captive and reintroduced populations, which could lead to practical applications for captive breeding and release programs. Project is through TCU.



HLCS 2022 Grant Program

The Horned Lizard Conservation Society is dedicated to protecting horned lizards by documenting and publicizing the values and conservation needs of horned lizards, promoting horned lizard conservation projects, and assisting with horned lizard management initiatives. Towards those ends, the HLCS annually sponsors research that has direct conservation applications. To learn more about the society and past grants, go to <http://www.hornedlizards.org/>.

We will be offering grants again in 2022. In the past, priority has been given to projects that have direct conservation implications, including public education.

To apply, send a proposal detailing the goal of the study, the rationale for it including relevance to conservation of horned lizards, and how your work would benefit from this opportunity. The proposal may not exceed 1000 words. Also include a preliminary budget with as much detail as possible and with any other funding sources available, received for your project, and other grants you are applying for. Word format documents are preferred. In addition, send a short resume or CV (up to 3 pages) for the lead applicant and have a single letter of reference sent to Miranda Vesey: miranda.vesey@gmail.com. All three documents should be in separate digital files. The deadline is January 1, 2022. The decision will be announced by January 31, 2022.



HLCS Newsletter Access

As part of HLCS's strategy to save money to better focus what we have, we are asking our members who are receiving the newsletter by paper and post mail to move to having it delivered by email instead. This will save HLCS printing and mailing costs for sending the paper newsletter. It will also save time for our print manager, Taylor Dee.

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Horned Lizards

By Jane Manaster

Horned lizards have a mystique, an appeal that defies their less than handsome appearance. Scientists can explain their every characteristic, their temperament and lifestyle and unique means of self-defense that entails shooting a small pool of blood held in the sinuses around their eyes. Once looked upon as a single species, and drawn accordingly, they can be found ranging from the southwestern provinces of Canada through to the south of Mexico. The majority make their home in the western states of the American southwest, others head east to the far edge of Texas. My interest is on the personal interaction people have had historically with the lizards, affectionately known as 'horny toads.'

Let's begin in 1651. Horned lizards did not first appear on earth in this year, but 1651 saw the publication of a book written in Spanish, sent to the King of Spain by one of his subjects. Translated to English, the title is *Animals, Vegetables, and Minerals of Mexico*. The book is illustrated with detailed drawings of specimens the author identified, including one of a horned lizard. Long before this, *Phrynosoma* images had appeared on petroglyphs and the pottery of Southwest Indians. But in order to become better acquainted with its human interaction, the seventeenth century drawing makes a good starting point.

I'll jump forward to 1804 in the United States as Meriwether Lewis and William Clark gathered a team, equipment, and supplies to follow President Jefferson's instructions. 'Head out towards the Northwest,' he told them, 'See whatever's interesting out there, write and tell me everything, so we can expand what we know about the natural history of our country.'

Before they left, the men sent the President a package revealing their expectations: maps of their projected trip, a hairball from the stomach of a bison, and a horned lizard which, their letter said, 'has the size and a good deal the figure of the common black lizard. But their bellies are broader, the tail shorter and their action much slower; they crawl much like the toad.' The President forwarded the lizard to his friend Charles Peale who collected such oddities and had recently opened a natural history museum in Philadelphia. Again, the lizard was illustrated, this time by an Italian immigrant, Pietro Ancora, an artist and drawing teacher.

Throughout the 19th century there were many sightings. While Texas was a Republic (1836-1845), William Kennedy, the British consul in Galveston, bought one from a sailor who had kept it in his hat. No mention of its survival on the voyage home across the Atlantic Ocean.

Reuben Thwaites edited *Early Western Travels (1748-1846)* with articles and correspondence from explorers, soldiers, and likely adventurers. The lizard was never one of the lead players but nevertheless found its way onto many pages prompting curiosity, superstition, and wonderment.

On separate occasions, Frank Cushing and Frank Russell, ethnographers and anthropologists, wrote about their forays to discover more about the little-known Indians of the Southwest. Frank Cushing, (1857-1900) despite ill-health, spent some years with the Zuni in New Mexico. At first, he was suspected of spying to learn the tribe's sacred secrets but later a friendship developed. He lived with the governor's family and felt sufficiently at home there for the governor to berate his wife's aunt, describing her as 'a bag of hard howls,' with the habit of 'storing up breath like a horned toad, which accounted for her extraordinary circumference, and her ability to make a

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noise in the world.' When Cushing's experience was published, he was credited with developing a new anthropological strategy called 'participant observation,' sharing all he had learned first-hand, not as an outside observer.

Frank Russell's research, under the auspices of the Bureau of American Ethnography, took him to the Pima Indians on the Gila Reservation in southern Arizona in 1901-1902. There he documented the tribe's culture and lifestyle, their myths and social organization. He prepared almost 50 plates of photographic images and acquired a number of their fetishes.

England re-entered the picture in 1873. Frank Buckland, an unconventional scientist whose genuine research encouraged him to sample the flesh of wild or domestic animals (anathema to a vegetarian). When he read a 'sensational paragraph' in the papers that a 'horned frog' had arrived at the Zoological Gardens,' he hastened over to see the 'celebrated animal,' and described it in an article published in *Popular Science Monthly*. 'Imagine a large bug, about four inches long and two inches across, with a tapering tail, which he can cock up in the manner of a scorpion or the beetle known as the 'devil's coach-horse' and you have some idea of the 'Crowned Tapayaxin.' The body is very flat though, I believe, he can blow himself out quite fat, if he likes.' The article was accompanied by a splendid drawing and further description: 'Near the nape of the neck there are two sharp-pointed horns directed backward: the sides of the neck are armed with three or four shorter horns.'

In the 1880s, the focus of interest turned to the West Coast. An article in the *Journal of Herpetology* tells how William Henry Wakeley, a taxidermist and entrepreneur in Pasadena, California, paid boys a nickel apiece for each San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*) they found. Soon he exceeded his target of one thousand lizards and hired over a dozen workers to stuff them before they were transformed into curios. These he sold either at his natural history store or mailed to outlets further east. His success was enriched with the development of the winter tourist trade along the coast, particularly during the days surrounding the annual Tournament of Roses Parade. His venture was so successful that the boys' hunting ground moved from the environs of the city into the edge of the Mojave Desert. As a result, the population of horny toads in the Los Angeles Basin was decimated and others took up the trade in their respective regions.

No less than the *New York Times* ran an article in November, 1928, under the headline 'Toad Extinction Is Threatened by Tourists.' The growing industry of collecting horned toads and selling them to tourists is beginning to threaten extinction of the species on the Arizona Desert, declare officers of the biological survey here. The following year the same paper announced sadly, horned toads now are widely sold. One way and another the little lizards' future didn't look too good.

Then the horned lizards ventured into popular culture. It was all very well to be seen in wild, unpopulated places but it was time for them to put in an appearance with larger audiences. Texas took first place among the folklorists who wrote articles extolling the horny toad's distinctive appearance and behavior. Folklorist John Strecker, at Baylor University in Waco, was among those who collected superstitions and folk tales as well as publishing scientific data.

In 1928 a legend was launched that has been perpetuated ever since. An audience stood with baited breath outside the courthouse in Eastland County in West Texas. They had come to witness the amazing sight of a horned lizard being extricated from the building's foundation stone. Old Rip, they heard, had slept there peacefully since 1897 when he was ceremoniously interred

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at the courthouse groundbreaking. On this day, a live lizard was produced, presumably by sleight of hand. A surprising number of people watched incredulously, others skeptically. Either way, the news of the event spread around the country.

In New Mexico, Lenore Dils graphically told a story about the railroad which ran between Albuquerque and El Paso in the early decades of the twentieth century. She recalled how millions of horny toads were squashed as they scuttled over the tracks, on occasion causing the engine to derail. In order to reduce the mortality rate, and the danger for passengers, the engineer had to leap out with a broom to sweep away the slippery, pungent remains. The band of men who in turn took on this duty were known collectively by her book's title, *The Horny Toad Man*.

When the Coalinga Junior Chamber of Commerce in Central California held their annual dinner in 1933, some of the kids grew bored and started racing their horny toads over the floor. Little did they or anyone else know that this would expand into a full-scale event that in 2019 celebrated the 83rd Memorial Day Horny Toad Derby festival. The event was placed on hold during part of World War 2 and cancelled in 1983 when an earthquake destroyed 70 per cent of the city's business district. It achieved national notice back in 1956 on an early Johnny Carson show when the host's lizard refused to leave the starting post in a race across the studio floor.

In 1950, the second International Boy Scout Jamboree took place at Valley Forge near Philadelphia. Boys were invited to bring something to show and tell from their home base. A troop from West Texas brought horny toads, carefully boxed so they would survive the journey. They were a great success and, probably 'by accident on purpose,' many escaped and ran off far and wide. Anxious mothers called to ask what was the mini-monster their Scouts brought home.

In the year 2000 Texas became the first State to feature a horned lizard on the automobile license plate. Designed for Texas Parks and Wildlife Department by artist Rob Fleming, it became the most popular plate in the Conservation series and garnered considerable funds for the Wildlife Diversity programs. With this widespread visibility, horny toads stand high among the best-loved Texas icons.

Traveling back a few years, students at Ad-Ran, more formally the Addison and Randall Clark Male and Female College, chose the 'Horned Frog' as their mascot, promoting it in their 1887 yearbook. Times change, and Ad-Ran has become Texas Christian University in Fort Worth. One story tells that the mascot originated after the football team's first practice when the idea sprung from spotting a group of horny toads taking space on the field. A second legend suggests that one of the college deans chose it to replace the team's original name, the 'Fightin' Preacher Boys. No one has yet explained, though, why Horned Frogs didn't become 'Horny Toads' despite the familiar image blazoned across campus.

I've had a good time hunting down references to the horned lizard in stories, fiction and otherwise. They are usually well-hidden and come as a surprise. The short story writer William Sydney Porter (a.k.a. O. Henry) introduced me to Muriel who was Jimmy Hayes' pet horny toad. When the popular young Texas Ranger was killed in a shootout, his buddies found the horny toad with a 'faded red ribbon around the neck,' upon the shoulder of the dead man who was still wearing his weather-beaten rags.

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It is likely no exaggeration to claim nine out of ten American kids know Fred Gipson's Old Yeller, the story of Little Arliss who carried a horny toad and other small 'varmints' in his pocket. In the movie, the lizard's role is more significant when the over-excited Little Arliss exchanges the horny toad for Old Yeller, the stray dog of the story's title.

William Saroyan was an Armenian-American writer who almost invariably set his stories in and around the city of Fresno. In one of my favorites, *The Pomegranate Trees*, the fictional uncle takes his young nephew to see where he plans to make a fortune growing and selling pomegranates. When a horny toad is seen on the sandy ground, the uncle is terrified. 'Is it poison?' he asked. 'To eat,' I said, or if it bites you? 'Either way' my uncle said.

While stories are still few and far between, kids' books abound, especially picture books. Inasmuch as few kids actually get to see horny toads they must seem as mythical as Julia Donaldson's *Gruffalo*, yet they do please whether anthropomorphized or in nature books.

And then there are the poems, affectionately adding to the aura of delight that embraces the horned lizard. Popularity seems to rise in defiance of declining numbers. All is not lost, evidence of baby horny toads, arriving by assisted insemination or natural birth, seem to be on the rise after a period of depression.

We shall be optimistic and applaud every new arrival. Horny toads can fix you with their unblinking eyes. It's disconcerting, but they do no harm.



President's Message

by Mason Lee

Spring has sprung, and so have the horned lizards! What species have you seen out and about? Feel free to share your observations with us on social media—we love seeing your pictures!

Speaking of pictures, mark your calendars for May 29th-May 31st for HLCS' first annual range-wide horned lizard BioBlitz on iNaturalist. Whether you're recreating outside that weekend and happen to find a horned lizard, or if you go out specifically to document horned lizards for the BioBlitz, we are looking forward to seeing how many species our HLCS members can find! We have set up a friendly competition on iNaturalist—see which state and/or region can document the most horned lizards, the most species, and which area has the most participants. We will have prizes available for the top observers in each area.

Also mark your calendars for our Horned Lizard Conservation Conference! Join us in Phoenix, Arizona at the Phoenix Zoo on September 25th, 2021. We are still planning on moving forward with a hybrid conference, so that those of you unable to join us in person can attend the conference virtually. Keep an eye on your emails and our social media pages for more information in the coming months. We cannot wait to see our horned lizard loving friends as we learn about the amazing horned lizard research going on in North America.





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