

The Hunt for the Horned Lizard

By Leslie Nossaman, Eva Thomas, and Vivian Thomas

Known as the Abilene Horned Lizard Freeze Survey, this was one for the records. The high for the day was a balmy 69 degrees with wind gusts up to 15 mph bringing the wind chill into the 50's. This might not seem unusual except for the fact that it was in Abilene, Texas in the middle of July! The temperature set a record for being the coldest on record for that day.

Bill Brooks our president and trip coordinator had warned us to prepare for weather that was hot and really, really hot and rain. The weather up to that point in that area had been in the low 100's for highs and occasional severe thunderstorms. No one anticipated the drastic temperature drop and the speed at which the cold front was moving. So we brought our hats, sunscreen, ice and gallons of water prepared for the worst heat. It had also been reported that the numbers of horned lizards in the area were thick and plentiful so we also brought our cameras and lots of film.

We met at the Skinny's Convenience Store early in the morning and made our way to the Heathington Ranch, home of Mary Dell and Ron Heathington. After

making introductions with our hosts and despite the cold weather, wind, and overcast skies we loaded ourselves into the back of a truck and jeep owned by our hosts. We searched all morning in the red beds of the desert. We discovered coyote tracks, lots of red ant beds and evidence of Indian arrowhead work but no horned lizards.

The landscape was one with mesquite trees, small cacti, large groups of prickly pear cactus, and desert bushes with many thorns. This is a harsh landscape for human habitation, but one where horned lizards thrive, but where were they? Lizards do not typically come out unless the temperature is around or above 80 degrees so they must have been buried somewhere warm. However, many of us had traveled a long way to see a horned lizard. And there were four kids in the survey team between the ages of 10 and 14 who had never seen one. So we put on as much clothing as we could to stay warm and continued to trek across the desert landscape in search of the elusive horned lizard.

The landscape was covered in a rust-colored red soil. These red beds were brought on by a massive



Vivian Thomas with one-week-old horned lizard.
Photo by Bill Brooks

worldwide oxidation of the land and the seas. In geologic time this was the Permian period and was the time of large reptiles and mammal-like reptiles long before the dinosaurs. These mammal-like reptiles were as large as an African lion and resembled one except for the saber-like teeth, the scales and reptile tail. It was a very scary character and one that nightmares are made of.

We found ourselves walking in the same beds where animals like this ruled the earth and mammals were very small creatures and in short supply. These mammal-like reptiles would prey on the small mammals for food. However, they were just starting on their road to extinction at the time. Their extinc-

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tion would later give rise to the dinosaurs and larger mammals. Only this time in these beds, the same beds that the ferocious mammal-like reptiles hunted the small mammals for food, the tables were turned and the mammals were looking for reptiles. And this time the hunt was not for eating but to photograph and survey to help preserve.

We made our way back to the ranch house for lunch and relief from the cold. The Heathington home had all kinds of African animal trophies. Our hosts were African game hunters. Evidence of their hunts was all over the house, trophies of antelopes, water buffaloes, zebras, and wart hogs. They seemed quite skilled at hunting big game in the African bush. We were also skilled horned lizard hunters, but why could we not find any yet? Maybe the thrill of seeing their hunting trophies inspired us to go back out again in the afternoon.

After lunch we set out again. The weather had only warmed a few degrees. The wind was still blowing but not as much. The clouds were still thick in the sky. We had searched and searched splitting up into many groups trying to cover as much land as possible. It was getting late in the afternoon and we all had scheduled



Abilene Horned Lizard Hunters. photo by Bill Brooks

to return to our Houston, San Antonio and Dallas homes before that point. Vivian Thomas, one of the younger surveyors found the first lizard. It was about one week old and about one inch from nose to tail tip. It wiggled at first and then calmed down with the heat of her hand. A few minutes later a second was found. It was a 1-2 year old male and about 3-4 inches long. We measured them, recorded the data, rubbed their bellies, took our pictures, put them back where we found them, and then climbed back into the vehicles. We had found what we had been looking for.

Maybe the Heathingtons will let us come back again to do another survey. It looks like it would be a good spot to return to. Beautiful rolling plains, lots of red ants, good climbing terrain, limestone-topped mesas, mesquite trees covering the landscape and excellent hosts make for a good hunt.

I hope the horned lizard of today will not share the same fate as the large reptiles and the mammal-like reptiles from long ago. Even though it does look a bit like a ferocious dinosaur or something from a much earlier geologic time, it is still really cute.

New Copy Editor Joins HLCS Volunteer Force

The HLCS has been without a newsletter editor for over 6 months, causing a big gap in our Society's primary communication tool between our Chapters and Members. Leslie Nossaman, a member from Houston, Texas, came to our rescue and generously donated her time over the busy holiday season to put together this issue of *Phrynosomatics*.

Leslie agreed to serve as copy

editor after this issue. She will receive and prepare materials for the newsletter, so any of you writers, photographers, or members who want to share your horned lizard experiences should send your information to Leslie at: LNNO@chevrontexaco.com.

We welcome Pam Allison back as the design editor for the newsletter. Pam did both jobs as copy and design editor for the HLCS in

the past, and we are very happy she's helping once again.

The HLCS is very fortunate to have these two women volunteer their time and talents.

We would like to extend a huge thanks to all of you, our members, for having the patience and endurance to withstand this dry period between newsletters. We hope you enjoy this issue and more to come.

PATRONYMS OF THE PIONEER WEST

Edward O. Moll

IX. *Phrynosoma hernandesi* Girard, 1858 Greater Short-horned Lizard

This article originally appeared in the *Sonoran Herpetologist*. 17(6), 2004, pp. 58-61. Reprinted by Permission.

If we conducted an American-Idol type popular poll to choose America's favorite lizards, the horned lizards would be a likely winner except for one minor problem – the majority of those polled would not know that they were lizards. They instead think of them as horned toads or horny toads. We educators continually try to explain to the public that since the term 'toad' implies an amphibian, which these animals are not, the name horned lizard is the scientifically appropriate term to be used. It is a losing battle, however, as I well know. More than once I have been known to blurt out, in the excitement of seeing one of these little critters sitting near an ant hill, "Look, a horned toad!"

Horned lizards are not only popular to the public sector, but their antediluvian appearance and unusual behaviors attract them to the biologist as well. With their flat, broad bodies bordered by sharp, pointed scales and heads armored with stiletto-like horns, the horned lizards present a formidable defense to any predator sharp-eyed enough to spot them in the first place. Their colors and irregular outline blend extremely well into their environment. If discovered, horned lizards react by inflating their bodies to appear larger and to further erect their body spines. Elliott Coues, one of the better known Army surgeon/ naturalists of the 1850s in Arizona, described another protective posture: "then the head is lowered, the horns set forward, the back arched up, and the whole attitude becomes ludicrously like that of a bull in miniature." One of the more unusual protective devices found in some *Phrynosoma*, squirting narrow streams of blood from the eyes, seems to have evolved chiefly to discourage canine predation. Some chemical constituent of the blood seemingly repulses canids but not other predators. Still another unique behavior that occurs in some species has been dubbed "rain harvesting." As rain tends to be sporadic in most horned lizard habitats, several species

have evolved water gathering behavior to collect the rain that falls on their broad dorsum. As rain begins to fall, the lizard extends its legs, arches its back, and lowers its head. In this position, rain falling on the back is channeled through spaces between the scales to the corner of the mouth. The lizard then ingests this water by rhythmically opening and closing its mouth in a pumping fashion. An apparent example of convergent evolution, the thorny devil (a horned lizard look-alike from Australia) harvests water in a similar manner.

Perhaps the most aberrant group of these already unusual saurians are the short-horned lizards. Compared to typical *Phrynosoma*, short-horned lizards eat a lower proportion of ants (< 52%). They deviate from the norm in several other ways, as well. Most conspicuously, the horns are much reduced. They are not confined to the typical horned lizard

habitat of deserts and grasslands, but also inhabit higher altitudes with forested habitats. In some ways the greatest departure has been forgoing the oviparity and subterranean nesting of their lowland brethren to evolve viviparity (live-birth) like certain other montane lizards (e.g., *Sceloporus jarrovi* - Patronym 7). This month's patronym, *Phrynosoma hernandesi*, is a member of this unusual group. However, before delving into the history of



P. hernandesi photo by: Erik Enderson

this patronym, let's briefly ponder the significance of reduced horns.

The horns on the back of the head of typical *Phrynosoma* can be a formidable deterrent to the lizard's predators. Should a predator grab the lizard's dorsum, it throws back its head, using the horns to stab its attacker. A recent study published in *Science* on flat-tailed horned lizards by Kevin Young of Utah State and Edmund Brodie III found that lizards impaled by shrikes had somewhat shorter horns than those in the living population. Seemingly, longer horns increase survival.

So if long horns provide better protection against predators, might we assume that short-horned lizards have fewer predators at the lofty altitudes that they inhabit? We know that some birds

inhabiting islands with few or no predators have become flightless. Could this be the same sort of phenomenon? Dr. Wendy Hodges (University of California - Riverside) called to my attention still another correlation accompanying the reduction in horns of this group – viviparity. Certainly a reduction in horn size might make mama lizard's pregnancy go a lot smoother. However, not all high-altitude, viviparous horned lizards show a reduction in horns. In Mexico, the rock-horned lizard (*Phrynosoma ditmarsii*) of Sonora shows both viviparity and extreme horn reduction, but three other viviparous species, the Mexican plateau lizard (*P. orbiculare*), the short-tail horned lizard (*P. braconnieri*) and the bull-horned lizard (*P. taurus*) of southern Mexico have moderate to pronounced horns. This problem has become too taxing for a retired herpetological historian to contemplate further, so I will move on to history and leave this problem for the Phrynosomologists to figure out.

Although our patronym this month is *Phrynosoma hernandesi*, the history of this taxon is intricately entwined with another (*P. douglasii*) and one can not be discussed without the other in our historical review. *Phrynosoma douglasii* was described first. Thomas Bell christened the species as *Agama douglassii* in 1829. Bell, a dental surgeon and naturalist, was a Resident at Guys Hospital in London when he described this lizard. He named it after David Douglas, British botanist, explorer, and collector (misspelling his name with two 's's) who collected two specimens of the species near the Columbia River. Although Douglas' name may not immediately ring a bell, most of you are probably aware of plants, other animals, and landmarks that bear his name (e.g., Douglas Fir, Douglas' squirrel, Mt. Douglas in the Canadian Rockies, etc.). Douglas was born in Scotland in 1799. Early in life he became interested in plants and gardening and became an apprentice at several formal gardens, including those at the University of Glasgow. It was here that his knowledge and enthusiasm caught the eye of legendary botanist, William Jackson Hooker. With Hooker's recommendation, in 1823 the London Horticultural Society sent Douglas on his first of several collecting trips to Western U.S. and Canada. This trip proved so successful that, in 1824, the Hudson Bay Company, along with the Horticultural Society, sent Douglas back to the Pacific Northwest for a three-year stint. It was on this second trip that the horned lizards were collected. Douglas died in Hawaii in 1834 under somewhat mysterious circumstances. He either accidentally fell or was pushed into a pit containing an enraged bull and was trampled to death.

Phrynosoma hernandesi was described in 1858 by Charles Girard, based on undesignated specimen(s) collected in New Mexico. You may remember Girard from the last Patronym account concerning Louis Agassiz. Girard was one of Agassiz' students in Switzerland and followed him to America. In 1850 Girard broke ranks, leaving

Agassiz' service to work with Spencer F. Baird, Assistant Director of the Smithsonian. During his nine-year stint at the Smithsonian, his main areas of expertise became reptiles, amphibians, and fish. *Phrynosoma hernandesi* was described in a rather unlikely work entitled the U.S. Exploring Expedition Under the Command of Charles Wilkes, 1838 - 1842. Volume 20. Herpetology.

The U. S. Exploring Expedition was a grand seafaring expedition under the command of Charles Wilkes that began in 1838 to explore and chart the Antarctic Sea, the islands of the South Pacific, parts of the North American Coast, and the mouth of the Columbia River. The expedition which returned in 1842 after covering 87,000 miles, brought back thousands of biological and cultural specimens. Many of these ended up in the Smithsonian. In subsequent years, a five-volume account of the voyage was published by Wilkes and these were followed by a series of volumes by specialists who examined various collections from the trip. Volume 20 was Girard's report on the herpetological material. An interesting aside, concerning this publication, is that the official copies of Volume 20 were published under Spencer Baird's name not Girard's. Apparently Baird signed the contract with the Navy to do this volume, and then assigned the work to Girard. Naval authorities, however, insisted that Baird (the signer of the contract) not Girard be listed as author. Subsequent unofficial copies carried Girard's name as author. But back to the subject at hand, how and why do specimens of a western U. S. montane lizard collected in New Mexico get described in a volume concerning collections from a seafaring expedition? In part it was a matter of expediency. Both Baird and Girard, when publishing on collections from government sponsored surveys in government funded reports, would include with the salient material, other unpublished material that they had lying around, whether it was related to a particular survey/ expedition or not. Such appears to be the case here

Girard had become interested in horned lizards and here was a good chance to publish his most recent findings. In this report, he created a subgenus *Tapaya* (based on a generic name first used by Cuvier and applied to the horned lizard species *orbiculare*) that encompassed a group of horned lizards with reduced horns, including *douglassii*, *hernandesi*, *brevirostre*, *ornatissima* but also *orbiculare*.



Phrynosoma hernandesi in a defensive posture. Photo by: Wendy Hodges

Patronym Continued Page 6

Girard's type description of *hernandesi* contained only 15 lines and made no mention of the person he was honoring with this eponym. In Edward Cope's 1900 tome on *Crocodylians, Lizards and Snakes of North America*, the name *hernandesi* began to dwindle in importance being demoted from a species epithet to that of a mere subspecies, *Phrynosoma douglassii hernandesi*.

For over a century thereafter, the taxonomy of short-horned lizards remained relatively stable. In the first edition of Stebbins (1966) field guide, *Phrynosoma douglassii* with five subspecies (*douglassii*, *hernandesi*, *brevirostre*, *ornatissimum*, and *ornatum*) had become the most widely distributed lizard in North America. The taxon *hernandesi* remained a little-known, poorly-defined subspecies. By the second

edition in 1985, *P. douglassii* was listed sans subspecies and *hernandesi* had all but sunk into oblivion as an invalid junior synonym of *Agama douglassii*. Then just when things appeared darkest for *hernandesi*, help arrived in the form of a small band of molecular taxonomists led by Dr. Kelly R. Zamudio. There ensued a flurry of, phenol/chloroform extractions, gel purifications, and other procedures too debased to mention. When the DNA dust had finally settled in 1997, *P. douglasii* had been exposed as a genetic misfit among short-horned lizards, an interloper dethroned from its lofty perch by parsimony, paraphyly, and phylogenetics. The once mighty *P. douglasii* now existed only in the Columbia River Basin, a paltry shadow of its former domain. Conversely *P. hernandesi* had risen from obscurity like the proverbial Phoenix to become the new 'most widely distributed lizard in North America' - ranging all the way from Canada south to Durango, Mexico. In the latest edition of Stebbin's field guide (2003), even the respective common names reflect this reversal of fortune — *P. douglasii* has been demeaned to the Pygmy short-horned lizard, while *P. hernandesi* has become the Greater short-horned lizard. Only in America!

One question remains, who was the mysterious person for which *hernandesi* was named? Hobart Smith et. al. (1999) felt that Girard was clearly honoring Francisco Hernández. The difference in spelling resulted as a product from Girard's knowledge of classical Latin. As we saw in the case of *Sceloporus jarrovi* (Patronym 7) honoring Henry C. Yarrow, the letters j and v were substituted in the specific epithet because y and w do not exist in classical Latin. In this case, s was substituted for z to form *hernandesi* for the same reason. Hernández certainly would be a logical choice for the honor, as he was the first European to observe and report on a horned lizard squirting blood from its eye.

Francisco Hernández is known for being the first naturalist to write extensively about the flora and fauna of Mexico. He was born in Toledo, Spain in 1517, graduated as a medical doctor from the U. of Salamanca, and eventually became a court physician for Phillip II. In addition to medicine, Hernández was very interested in botany and made collecting trips to Castile and Andalusia. Relatively late in his life, he began to develop a wanderlust for the New World. Upon reading accounts of de Oviedo, who was long stationed in Panama, he decided that he must visit this exotic land. After much persuasion, in 1570 Hernández convinced King Philip to send him to Mexico on a scientific venture. At the age of 53, he began a six-year tour covering most of the country, accompanied by artists, interpreters, collectors, and naturalists. Hernández' main interest was in recording what the local people knew about the plants and animals that surrounded them. He included relatively little in the way of original observations (the horned lizard blood squirting being an exception). Only one of his scientific names for a herp (*Lacertus orbicularis*

**THE HLCS COLLECTION OF
HERPETOLOGICAL SOCIETY
NEWSLETTERS**

**AVAILABLE FOR RESEARCH AND FUN
READING**

I thought the HLCS members should know about another resource we have. The HLCS has past issues of "The Forked Tongue" (the newsletter of the Cincinnati Herpetological Society), "The Journal of the San Joaquin Herpetological Society", the "North Texas Herpetological Society" (newsletter from the Dallas/ Fort Worth area), and "Herp Talk" (a publication of the Maryland Herpetological Society).

We currently have a newsletter exchange agreement with "The Desert Monitor" (the newsletter of the Arizona Herpetological Society), the "Southwestern Herpetological Society News" (of the Los Angeles area), The East Texas Herpetological Newsletter" (of Houston), "The Cross Timbers Herpetologist" (from the Dallas/ Fort Worth area), the "Texas Herpetological Society Newsletter" and the "South Texas Herpetology Association" (newsletter of San Antonio).

If you would like some more information or these newsletters or to check them out, please send a WRITTEN request to our mailbox: HLCS, P. O. Box 122, Austin, TX 78767.



Short-horned Lizard. Photo By: Dale Turner

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novae Hispaniae) has been perpetuated to present day. This was a horned lizard, now known as *Phrynosoma obiculare*.

By 1577, Philip had stopped bankrolling the expedition and Hernández had collected so much information, that he took up residence in Mexico City to practice medicine allowing him time to write up his extensive findings before returning to Spain. By fall of 1577, he had put together 6 folio volumes of text and 10 of illustrations and, with this huge manuscript in hand, departed for Spain. Upon his arrival, Phillip gratefully received the manuscript, had it bound, and placed in the royal library but never published it. This was likely the crowning disappointment of Hernández' life. He died in 1587, never seeing any of this great work published. Although various attempts were made to publish an abridgement, none succeeded until 1648. However, Smith (1973) referred to this work as " a sorry abridgement, several revisions removed from the original." Several other naturalists had access to the original and quoted portions in their own works but a fire in the royal library in 1671 destroyed the original and these excerpts and abridgements are all that are left of Hernández' outstanding achievement. Today Hernández is hardly a household word. It isn't even familiar to many present day naturalists. However, Francisco can be proud to be namesake of a horny little lizard who went from obscurity to being the widest ranging saurian in North America, at least until the next band of molecular taxonomists hits town.

Acknowledgements: Special thanks to Dr. Wendy L. Hodges for critiquing the manuscript, supplying hard to find literature, and for responding promptly to my many emails.

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Chapter News

Texas Chapter News

Lee Ann Linam, Texas Chapter President

Howdy from the Texas Chapter! I'm excited to have come on board as the new Texas Chapter president in September 2004. For those of you that I have not yet had the pleasure of meeting, I am a biologist in the Wildlife Diversity Program at Texas Parks and Wildlife Department. My career there has led me to work on a variety of species and habitats; however, for the past several years, I have been working to develop citizen watch programs aimed at monitoring rare species in the state. Two of the programs that I have developed have included the Texas Horned Lizard Watch and the Hometown Horned Toads Essay Contest, so my work duties have much in common with the goals of the Horned Lizard Conservation Society.

HLCS is a unique organization dedicated to some species that

many Texans hold dear, and I'm eager to see how we can work together to benefit horned lizards and reach out to the Texas public. At an organizational meeting in September I got a quick course in the activities of the chapter under Bill Brook's leadership (Thank you, Bill, from all of us). We also took a little time to discuss some priorities for the next couple of years. I'd like to highlight these for you:

1. Festivals - Bill has done a wonderful job of sharing our message and recruiting members through booths at wildlife festivals across the state. HLCS has a very nice collection of items for exhibit and education, and I would like to encourage you to consider borrowing these items to represent HLCS at events in your local area. We decided that, as a chapter, we

would try to make definite commitments each year to be present at the Kenedy Horned Lizard Fun Day (Saturday of Labor Day weekend), the Eastland Old Rip Festival (third Saturday in September), and TPWD Wildlife Expo in Austin (first weekend of October). Please consider whether you can help with these events or represent HLCS at other events.

2. Field Surveys - Field surveys are some of the "funnest" things that we do as a chapter and also offer a service to interested private land owners and public land managers. Carolyn Todd already has in inquiry for a field survey, probably, in April, and I'm planning to contact some of our TPWD field biologists to see if we can provide assistance for any requests they receive. If you know of any one else that would like to have a field survey done, then please let me know, and we'll try to organize an outing. We'll keep you posted as those dates develop.

3. THL relocation - Another valuable service that the Texas chapter provides is to return "misplaced" horned lizards into their original habitat. Many times misguided families or individuals bring home a horned lizard from a trip out west and then wonder what should be done with it. We'll be renewing our educational permit so that selected HLCS members can help to transport horned lizards back into their habitats of origin. We also have some flyers that discourage keeping horned lizards as pets, so everyone can help spread the word.

Mark Your Calendars!!!

The Texas Chapter has scheduled a field survey for April 16, 2005, at the Shumla School property near Comstock. Meet at the Wal-Mart parking lot on Veteran's Drive (Hwy 90 west) —this is the main street with restaurants and motels —at 9:00 am on Saturday, April 16, 2005, for the approximately 45 minute drive to Shumla. We may have lunch provided but we are not sure yet. So, everyone needs to bring lunch sacks (possibly), snacks and plenty of water. You will need comfortable shoes because we will be hiking over rough rocks. Long pants are recommended along with hats and sunscreen. It is a desert environment. Very nice restrooms with water facets are provided in the Shumla compound. If anyone would prefer to camp on the property, please email Carolyn Todd at ctodd@sulross.edu. Due to the terrain and possible heat, it is not recommended to bring small children. If you are interested in participating, please contact Lee Ann Linam at 512-847-9480 or lalinam@wimberley-tx.com.

Chapter News

Texas Continued

4. **Education** - HLCS also has an important role in educating the public. I'm hoping to work with Carolyn Todd to update and reproduce her horned lizard curriculum. Let us know if you'd like to help with that effort. In addition, we may work with the Caesar Kleberg Wildlife Research Institute to reprint their horned lizard management guidelines, a very useful document for landowners.

5. **What else?** You tell us! There was some discussion as to whether we should try to host regular chapter meetings, perhaps featuring a speaker. There was also a suggestion that a horned lizard management workshop might be a popular option, both for our members and for landowners in Texas. Please do let us know the types of meetings, if any, in which you would be interested...

Well, this has been a long introduction, but we've had some catching up to do...I am really eager to hear from all of you horned lizard aficionados out there in Texas. Please feel free to contact me with any ideas you have for how to improve our Chapter! lalinam@wimberley-tx.com or 512-847-9480.

Oklahoma Chapter

Richard Stark, Oklahoma Chapter President

The Oklahoma Chapter conducted a survey for the roundtail horned lizard (*Phrynosoma modestum*) in the Black Mesa area of Oklahoma during late August 2004. This disjunct population of the roundtail horned lizard at Black Mesa is known from only two museum records (Sam Noble Oklahoma Museum of Natural History) and two verified sight records (Oklahoma Natural Heritage Inventory). The most recent record is from 1990. Nevertheless, personnel at Black Mesa State Park and local landowners of the area have indicated to Investigators/HLCS OK Chapter members Stanely Fox and Richard Stark as recently as 2002 that the species is regularly seen within the park and nearby.

Roundtail horned lizards were not found during the survey effort. We are seeking funds to conduct an intensive two-year survey of the herpetofauna at Black Mesa utilizing drift fences with pitfall and funnel traps, systematic visual sampling, road cruising, and opportunistic encounters of reptiles and amphibians. The effort would particularly focus efforts on those species listed as rare or of special concern by Oklahoma Natural Heritage Inventory, including the Texas horned lizard and the roundtail horned lizard.

If you are interested in participating in any of the upcoming surveys for 2005, please contact Richard Stark: starkkrv@prodigy.net



Roundtail Horned Lizard, *Phrynosoma modestum*.
Photo By: Wendy Hodges

Texas Horned Toad Fun, September 7, 2004

By Bill Brooks

Once again, the Horned Toad Club of Kenedy, Texas hosted the 3rd annual Texas Horned Toad Fun day. The HLCS was there for this wonderful festival in the Horned Lizard Capital of Texas.

For the third year, the HLCS supported our sister organization with a booth, handouts, kids activities, and a reptile presentation by Bill Brooks. Members also lead surveys, but the weather was cold and rainy this year. We found nothing until the afternoon, when a group ventured down to the home of Joe and Ann Lang. Here, as usual, we found the guest of honor. Joe helped us find the tiniest baby horned lizards I think I've ever seen. We also found several adults. Even on this cool day, the horned lizards of Kenedy appeared for many of us to admire. Many thanks to Wade Phelps, the president of the Horned Toad Club, and all the great citizens of Kenedy who made us feel so very welcome. We are looking forward to next year.



Adult and hatchling Texas Horned Lizard found during Texas Horned Toad Fun Day. Photo By Bette Armstrong

Kenedy has also received a grant from the Texas Parks and Wildlife Department for improvements to a local park and nature preserve. This is an exciting project. Trails and an area of improved habitat for Horned Lizards are planned. This sounds like a great project and the HLCS looks forward to seeing how the park is developed.



Hatchling Texas Horned Lizard found during Texas Horned Toad Fun Day. Photo By Bette Armstrong

The HLCS wants to express our sincerest sympathies at the passing of tireless horned lizard promoter and Kenedy Horned Toad Club founder, Carter Snooks. Carter supported the goals of the HLCS and his leadership will be sorely missed. We grieve with his surviving family members

HORNED LIZARD CONSERVATION SOCIETY

Post Office Box 122, Austin, Texas 78767



Facts About Horned Lizards Alias: The Horny Toad

Introduction

Horned lizards - also known as horned frogs, horned toads and horny toads - are well loved by virtually everyone who has ever come in contact with them. People in the western United States, southern Canada and Mexico have fond memories of playing with these docile creatures when they were young. Many people tried to keep them as pets; unfortunately, few succeeded.

Horned lizards are not as common or widespread as they once were. Our organization, the Horned Lizard Conservation Society, hopes to promote appreciation, conservation and a better understanding of the "horny toad."

What is a Horned Lizard?

Horny toads, horned frogs, or horned lizards, are not frogs or toads, but a type of reptile - a lizard. Like all reptiles, horned lizards depend primarily on their environment for body heat - and they like it HOT! Most horned lizards live in desert or semi-arid environments. They are seen basking

in the morning sun on a summer day. However, they can still overheat, so as the day gets warmer, lizards move into shade by crawling under plants or rocks or hiding in burrows. Horned lizards have many features that distinguish them from other lizards. The most obvious characteristic is their body. They lack the sleek, tubular body shape of most lizards. Instead, they have a wide, flattened form, which is well adapted for camouflage and their burrowing habits. Horned lizards are noticeably spiny, with a crown of horns adorning the back of their heads and spines all over their bodies.

Thirteen species of horned lizards are distributed across North America from southwestern Canada, the western half of the United States, and throughout Mexico. In this pamphlet, we only refer to eight horned lizard species whose ranges are included within the United States and Canada. The remaining five species are restricted to Mexico.

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

Popular HLCS Brochure Revised

Our Popular "Facts About Horned Lizards" Brochure was revised in 2004 to reflect changes in species names and to better describe what species look like and where they live. We updated the maps and images using the most recent book by Wade C. Sherbrooke, "Introduction to Horned Lizards of North America" (University of California Press, 2003). The Press and Dr. Sherbrooke gave the HLCS permission to use the images in the brochure. Ruthann Panipinto did the layout and Wendy Hodges oversaw content revisions with several other HLCS volunteers, including Clare Freeman, Bill Brooks, Roger Repp, and Cheryl Franks. If you would like a copy of the brochure, please stop by any HLCS activity, or write: PO Box 122, Austin, TX, 78767.

1. Pygmy Short-horned Lizard

(*Phrynosoma douglasii*)

The Pygmy Short-horned Lizard is found in the Pacific Northwest from northern California through Oregon and Washington to British Columbia, Canada, and east through southeastern Idaho. The species occurs in forest habitats and open plains with sagebrush at elevations from about 400 to 8,000 feet. *Phrynosoma douglasii* can be distinguished from other horned lizards by its small adult size of only 2-3 inches, one row of abdominal fringe scales, and head spines that are very short and reduced with a deep notch between them. Their back scales are irregular in size and distribution and set in a rosette of smaller, keeled scales while scales on their ventral (belly) side are smooth.

2. Greater Short-horned Lizard

(*Phrynosoma hernandesi*)

The Greater Short-horned Lizard is a wide-ranging species; it occurs from southern Alberta and Saskatchewan, Canada, through Montana, Wyoming, Utah, Colorado, Arizona, New Mexico, Texas, then through northeastern Sonora, Chihuahua, and Durango, Mexico. The species lives in short-grass communities of the northern Great Plains, in sagebrush and grasswood of the Great Basin, and on mountain hillsides and valleys with pine, juniper, aspen, and coniferous forests throughout its range. The species is found between 2,000 and 10,400 feet in elevation. *Phrynosoma hernandesi* can be distinguished from other horned lizard species by the following: one row of abdominal fringe scales, reduced central horns separated by a deep notch and slightly longer side horns, back scales are arranged in 6-8 rows. This species is the Wyoming State Reptile.

3. Desert Horned Lizard

(*Phrynosoma platyrhinos*)

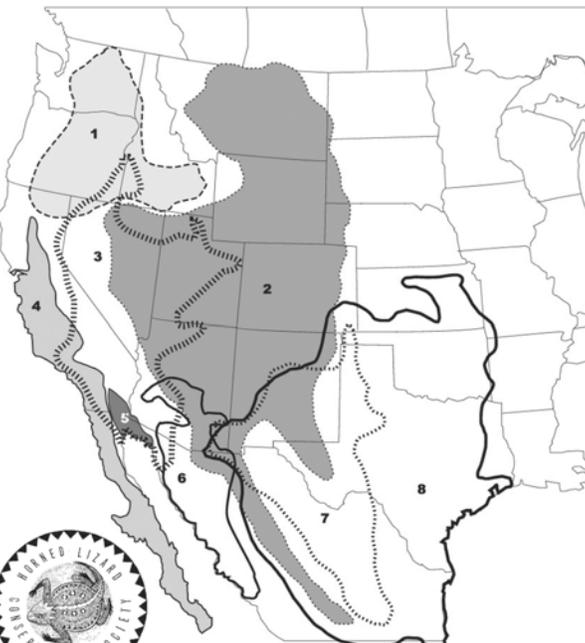
Desert Horned Lizards have a widespread range from Oregon and Idaho, south through Utah, Nevada, western Arizona, southern California and into northeastern Baja and northwestern Sonora, Mexico. They occur at elevations from below sea level to about 6,000 feet throughout the Great Basin, Mojave, and Sonoran Deserts. The species can be found near woody shrubs, cacti, rocks and yuccas in alluvial fans, flats, washes, and valleys. *Phrynosoma platyrhinos* has two long central horns and shorter side horns. Desert horned lizards have a single row of abdominal fringe scales and a smooth back with a few scattered, larger spines.

4. Coast Horned Lizard

(*Phrynosoma coronatum*)

Coast Horned Lizards live along the Pacific Coast of California to the tip of Baja California, Mexico, and they are found in chaparral, oak woodland, coniferous forest, inland valleys, foothills and mountainsides from sea level to 6,600 ft. in elevation. *Phrynosoma coronatum* has two long central horns on its head, sometimes with a short horn or scale in between them. The side horns are also long, and this species has two rows of abdominal fringe scales. The scales on this species' back are elongated and keeled, giving it an overall spiny appearance.

8 Species of Horned Lizards Found in North America



www.hornedlizards.org

5. Flat-tailed Horned Lizard

(*Phrynosoma mcallii*)

Flat-tailed Horned Lizards are found only in the lower Colorado division of the Sonoran Desert in southeastern California, southwestern Arizona, northern Baja California, and Sonora, Mexico. They are found in very open habitats on a variety of soil types, from mud flats to sand dunes, typically at elevations from below sea level to 1,000 feet. Flat-tailed Horned Lizards have a long tail, which is broad and flat. *Phrynosoma mcallii* has two central horns, which are very long and sharp, and long side horns. The species has two rows of small abdominal fringe scales; the second row is often reduced. The species also has a dark line down the middle of the back.

6. Regal Horned Lizard

(*Phrynosoma solare*)

Regal Horned Lizards are found in the Sonoran Desert of south-central Arizona and the southwestern edge of New Mexico and south into Sonora and Sinaloa, Mexico. The species is found in arid and semiarid flats, valleys and mountain slopes with desert scrub and cactus, sometimes entering open oak and juniper woodland at elevations from sea level to about 4,500 feet. *Phrynosoma solare* is the only species with four central horns and elongate side horns, which form a complete crown (the scientific name, *solare*, means "of the sun"). They have a single row of large abdominal fringe scales and a spiny back. Background body colors are often combinations of browns, grays, and black.

7. Round-tailed Horned Lizard

(*Phrynosoma modestum*)

Round-tailed Horned Lizards occur in Chihuahuan desert and grassland communities from extreme southwestern Colorado and western Oklahoma through west Texas and New Mexico to southeastern Arizona. The range extends south into the Mexican states of Chihuahua, Coahuila, Zacatecas and San Luis Potosí. They are found on rocky substrates in desert flats, canyons, semiarid plains, and scrublands at elevations from about 600 to 7,300 feet. The four short horns on the back of the head are equal in length and additional side horns are short. Their backs are not spiny. The species has round, cylindrical tails that are usually banded. Background coloration varies to match local soil, but the species does have dark blotches on the sides of the neck and shoulder area. *Phrynosoma modestum* is the only species that lacks abdominal fringe scales.

8. Texas Horned Lizard

(*Phrynosoma cornutum*)

Texas Horned Lizards are found farther east than any other horned lizard. They live throughout most of Oklahoma, Kansas, New Mexico and Texas, a small section of southeastern Colorado and Arizona, and south to the Mexican states of Durango, Zacatecas, and San Luis Potosí. The species lives in arid and semiarid grasslands, chaparral and thornscrub habitats with cacti, yucca, mesquite, acacia, oak and juniper at elevations from 0 to 6,000 feet. *Phrynosoma cornutum* has two long central horns, often separated by a short horn or enlarged scale. The species also has sharp side horns, spiny backs and two rows of large, abdominal fringe scales. The intensity of their colors differs between individuals and populations, but they usually have a white or pale stripe down the middle of their backs and dark stripes radiating from the eye to upper lip and on the top of the head. This species is the Texas State Reptile.

Species head images and maps are from: Sherbrooke, W. C. 2003. Introduction to Horned Lizards of North America. California Natural History Guides, No. 64. University of California Press, Berkeley, CA. Spiny Lizard is from: Conant, R. 1975. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. Houghton Mifflin Company, Boston, MA. All Used By Permission. Horned lizard line drawings were illustrated by Ruthann Panipinto and Mary Hawley.

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