

The Texas Nature Tracker

2005

Catching Up! with Marsha Reimer, TNT Coordinator

Last year we kicked off a new partnership program with Texas Master Naturalist (TMN) Chapters. This new program is designed to enable TMN Chapters and other regional coordinators to promote Texas Mussel Watch (TMW) and Texas Amphibian Watch (TAW) and spread the word through training volunteer monitors within their communities.

Let's give a great big round of applause for our new Texas Nature Tracker partners!

We would like to offer our gratitude to Penny Miller and members of the Rolling Plains Chapter (see article on page 4) for being our first TMN Chapter Texas Amphibian and Mussel Watch partner. They trained to be part of our monitoring team in April 2004. The Capital Area Chapter soon followed and became part of our monitoring team in June 2004. The Gulf Coast Chapter participated in the train the trainer workshop in September 2004 and became a Texas Amphibian Watch partner.

Our 2005 Partners are:
Rio Grande Valley Master Naturalist Chapter – Brownsville – March 2005
Big Country Master Naturalist Chapter – Abilene – April 2005
North Texas Master Naturalist Chapter – Dallas – May 2005
Mineola Nature Preserve – Mineola – June 2005

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Texas Amphibian Watch



Takes off *By Lee Ann Linam, TNT Project Biologist*

Last year was a good year for frogs and for frog-watching, as Texas Amphibian Watch saw big leaps in participation and data collection in 2004. In 2004:

- Data were submitted by 28 volunteers, bringing the total number of participants to 46.
- Data were submitted from 33 counties, raising the total counties participating from 56 to 69.
- Data were submitted from 52 sites, raising the total number of sites from 52 to 86.
- Data were collected on 14 roadside

transects, raising the total number of transects sampled to 16.

- Data were submitted on 35 frog species and 11 salamander species. Texas Amphibian Watch has now collected data on 38 of the 42 frog species in the state.

The most commonly reported amphibian species in the state over the last six years have been:

- Cricket frog (*Acris crepitans*) – 42 counties (>87 locations)

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Catching up ... continued from page 1

Texas Nature Tracker staff conduct initial intensive train the trainer workshops for the chapters/regional coordinators, while the chapters/regional coordinators agree to gather data and train volunteers for TMW and TAW utilizing local nature centers and state parks whenever possible.

Texas Nature Tracker Responsibilities

- Provide intensive training
- Provide an equipment kit and basic workshop materials
- Receive and analyze all data collected
- Serve as a resource for local chapters/coordinators

Partner Responsibilities

- Host an intensive "Train the Trainer" workshop
- Adopt a site for long-term monitoring
- Host at least two local outing/training sessions per year
- Serve as a local resource for Texas Mussel Watch and Texas Amphibian Watch

If your TMN chapter or nature center is interested in becoming a partner, please contact me and we will get things rolling.

We look forward to adding many new partners to this list in the future .



Texas Amphibian Watch ... continued from page 1

- Bullfrog (*Rana catesbeiana*) – 38 counties (>69 locations)
- Green Treefrog (*Hyla cinerea*) – 37 counties (>65 locations)
- Southern Leopard Frog (*Rana sphenoccephala*) – 34 counties (>68 locations)
- Gulf Coast Toad (*Bufo nebulifer*) – 31 counties (>66 locations)

A big step forward in our monitoring efforts began last year when some Texas Master Naturalist chapters stepped forward to become partners with us in Texas Amphibian Watch. As partners, these chapters receive a more intensive Amphibian Watch workshop, along with a set of monitoring equipment. In return, the partners agree to adopt a site for long-term monitoring and to conduct at least two mini-workshops or outings throughout the year. In 2004 the Rolling Plains, Capital Area and Gulf Coast TMN Chapters were trained as partners, while partner workshops have been conducted for the Lower Rio Grande Valley, Big Country and North Texas Chapters in 2005. The Mineola Nature Preserve is also pursuing a partnership agreement with Texas Amphibian Watch. I believe that we owe much of our success in generating data in 2004 to these partners — thanks for your help!

Finally, special individual recognition this year goes to **Carol Miserlian, Dan Saenz** and **April Proudfit**. Carol and Dan have now provided data to Texas Amphibian Watch for five years. Dan's data, collected nightly at eight sites in Houston county using automated frog-loggers, has been especially useful to us in providing insights regarding factors that affect calling. Carol's data are collected at the Houston ISD Outdoor Education Center using student volunteers. After getting started in December of 2003, in 2004 April collected data from the wetlands near her home on 176 nights! The dedication of these volunteers in East Texas has really paid off, as they have each recorded data on 12 or 13 species. Thanks to all three for their hard work!



Some pointers for improving your monitoring efforts

New tools and research are helping us to improve our ability to track changes in amphibian populations in Texas over time. Here are some suggestion for Texas Amphibian Watch volunteers who want to improve the monitoring data that they collect.

1. Practice call identification – The North American Amphibian Monitoring Program now has a web site where you can practice identifying frog calls. The site provides a wonderful opportunity for you to hear some new recordings of groups of species in Texas. Simply go to

www.pwrc.usgs.gov/frogquiz/ and select “Public Quiz.”

2. Increase your listening period – Some very recent research by Ben Pierce at Baylor University has demonstrated that the recommended five minute listening period may be less than optimal. His research showed that five-minute intervals tended to detect about 75% of the species that would call that evening, while a 15-minute listening period would increase that percentage about 90%. If you have the chance, then we recommend that you listen for 15 minutes at your site. Please continue to record your data in five-minute increments, but simply stay and conduct three five-minute samples if you are able.

3. Increase the number of visits – Additional recent research has shown that sites need to be visited from 12 to 24 times per year in order to detect a high percentage of the species that are present. Since species in Texas call year-round and since many of our species respond strongly to rainfall, we now suggest that you plan to visit your site at least once per month and that you add additional visits when a significant rainfall occurs.

Texas Amphibian Watch data are beginning to look like a valuable tool to track amphibian trends in the state — incorporation of a few of these suggestions will make your efforts all the more valuable to us and to the frogs!

Spadefoot Serenade

By Jim Dillard, Wildlife Biologist

Getting heavy rains during the spring here in Nort-central Texas is a hit or miss proposition. We never know which storm will be the last before the hot dog-days of summer set in and the rains shut off until fall. When it does rain, the whole country comes alive. The past few years have been a miss, but this year we’ve been blessed with numerous storms and our fair share of rainfall.

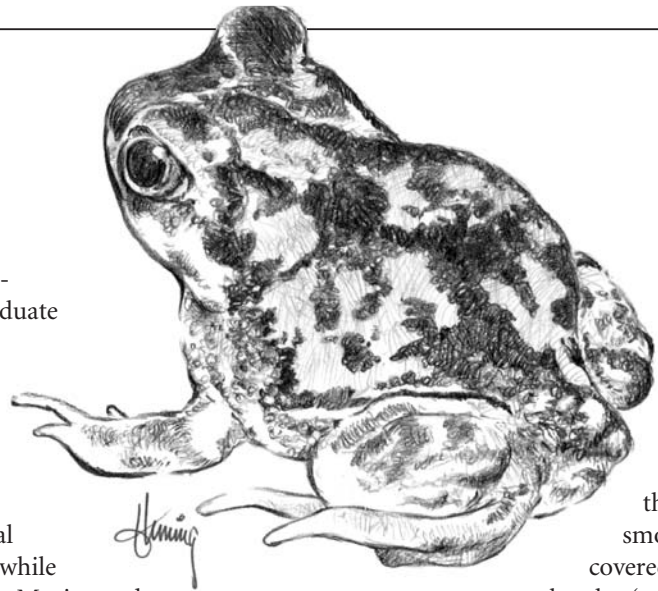
A couple of nights ago, there came a good gully-washer with high wind, lightening, hail and lots or rain. As the thunderstorms subsided and rumbled off in the distance, the sound of love-sick spadefoot toads roused from their underground burrows by the sudden downpour echoed through the neighborhood - yeowww! - yeowww! They were on a mission and time was of the essence. Their groaning chorus went on long into the night and by morning, there was no sign or sound of them anywhere.

Couch’s spadefoot (*Scaphiopus couchii*) is one of four species of these anurans in the Family Pelobatidae found in Texas and the most common one here in the Cross Timbers. They’re found throughout the southwestern United States into Mexico and flourish in extremely xeric conditions. It’s

named for Darius Nash Couch (1822-1897), an 1846 graduate of West Point who fought in the Mexican War and was a Major General in the Civil War. He collected many natural history specimens while serving in northern Mexico and with the United States and Mexican Boundary Survey.

They prefer to live in dry grasslands and mesquite country but they’re also found in suburban and agricultural regions. They burrow deep and can go for extended periods of time without food. You can also find these nocturnal amphibians under old logs or other debris.

Although they resemble true toads, no discernable ears, boss (hump) between their eyes or paratoid glands are apparent. Their eyes are large and prominent with pupils that are vertically elliptical rather than horizontal. Coloration of their skin may be bright yellowish-green, brownish, buff or



olive-green with darker blotches, lines or spots. Although their skin is smooth, it is covered with tubercles (warts).

Markings are more prominent on females which are larger than males at about three inches long. The belly is white and without markings. A black keratinous sickle-shaped “spade” is located on the heel of each hind foot that is used to help burrow backwards or vertically through loose or sandy soil.

Their skin secretions, which vaguely smell like garlic, may cause allergic reactions by some people. You won’t get warts, but do like your mother said and always wash you hands after handling hop toads and keep your fingers out of your eyes.

The low frequency sound and vibration

continued on next page



Spadefoot ... continued

from thunder and rainfall hitting the ground stimulate them to emerge from their subterranean burrows to search for shallow pools of water. Breeding may not occur annually unless these heavy rainfall events occur during their spring, summer or fall mating season. Males begin calling to attract females and the race is on. As many as 1,000 to 3,000 eggs are laid by females which are then fertilized by the male and anchor to underwater vegetation. Breeding congregations are not uncommon, so there's a whole-lotta-crook'en going on when spadefoots do their thing. Eggs hatch in less than one day and metamorphosis from tadpole to toadlets can occur in a couple of weeks or less if the water begins to dry up. In more permanent pools, it may take several weeks. If food supplies are short, tadpoles may even begin to eat each other.

Couch's spadefoots are real couch potatoes! They don't eat often but when they do, it has to last them a long time. When they emerge to eat, it may be their only meal for the entire year. Spadefoots gorge themselves on beetles, grasshoppers, katydids, ants, spiders, termites and other insects. Then, they'll burrow back down into the soil to wait until it rains again. Young spadefoots must also eat as much as possible before they too burrow into the soil before it dries out.

Over the years, I've encountered a number of Couch's spadefoots while vegetable gardening. They sometimes resemble a small potato. However, potatoes usually don't go croak or wet on you when you pick them up which can be a little disconcerting. Spadefoots don't seem to appreciate it either. It doesn't rain spadefoots; it just brings them to the surface. Unfortunately, many get run over on our roadways during rainy weather so dodge them if you can. To me, their rain music is one of the coolest and most comforting night sounds I know. When it does rain here in the Cross Timbers, I'm glad there are still a few wild things around to croak about in the night. Until next time – I'll see you down the road and God Bless America!

Texas Mussel Watch in the Rolling Plains

By Penny Miller

The Rolling Plains Master Naturalists participated in the Texas Mussel Watch program for the first time in 2004. The chapter selected Lake Arrowhead State Park as its primary continuous monitoring site and also picked up records at several local lakes, ponds and rivers. The chapter conducted 10 surveys over the summer in Wichita and Clay counties.

Asian clams were prevalent everywhere, as were mapleleaves. Additionally, participants found yellow sandshells, giant floaters, and pink papershells in good numbers as well as fragile papershells, lilliputs, and pitstol-grips. No Zebra mussels!

In addition to conducting surveys, we provided programs to two local groups on mussels, increasing awareness of mussels on our area. The video provided with the chapter kit and the specimens collected during the Texas Mussel Watch surveys formed the core of these programs.

The first year was a good experience in learning the technique for conducting a survey and recording information. Some lessons learned:

- Take a buddy. Many of the survey locations are in out-of-the way areas and there is safety in numbers. Although all of our surveys were conducted walking along the edge of the water or wading ankle-deep water, accidents happen. Our team's favorite story of the Lake Buffalo "tar pit" is a humorous anecdote, but could have had a less than humorous ending had a Master Naturalist been alone.
- Keep your Texas Mussel Watch stuff in the car. Having a pair of boots, a bucket, Texas Mussel Watch book and forms in the trunk can lead to an impromptu Watch survey any time.
- Always bring your camera, binoculars and field guides. You might be out for mussels, but there are a lot of other interesting things out there — the one time our team was out without a cam-

era, we came across some interesting dragonflies. We haven't seen any similar ones since, and our efforts to identify the species later has been without success. A picture would have helped.

The Texas Mussel Watch program has been fun and has helped document a type of animal in an under-studied region of the state. During the winter we have been finding new sites for survey in 2005. Goals in 2005 include:

- Increase the number of surveys done and move into adjacent counties, especially Willbarger and Hardeman.
- Look for the Asian clam in Willbarger county — there is no record of the species in that county, but given the numbers in neighboring Wichita, it would be a surprise if it is not there.
- Begin monitoring the Little Wichita River downstream of the reverse osmosis plant to see if the plant has an impact on the populations in the river.
- Attempt to include water quality monitoring by using invertebrates in future Watch surveys.

The Texas Mussel Watch program has been an interesting program for our chapter — one that provides useful information on these interesting animals and keeps our members active in the chapter.



Southern Mapleleaf



2003-2004 Texas Mussel Watch Notes

By Marsha Reimer, TNT Coordinator

Last year I discussed how it takes a special person to be a Texas Mussel Watch (TMW) volunteer. During the 2003-2004 mussel monitoring year, one such special person was Kathy McCormack. Kathy logged a total of nine hours searching for mussels in the Colorado River drainage basin. April Proudfit followed closely with a total of six hours in the San Jacinto drainage basin. Well, it can also take a special group to be successful Texas Mussel Watch volunteers. During the 2003-2004 mussel monitoring season, the Rolling Plains Chapter of the Texas Master Naturalists (see article on previous page) logged a total of 8.25 volunteer hours in the Red and Wichita River drainage basins.

TMW volunteers collected data during the 2003-2004 monitoring year from nine Texas drainage basins in fifteen counties (see Figure 1.) All TMW volunteers participated in or were directly associated with someone who attended at least one TMW workshop, where they received training on identification and correct methods of handling freshwater mussels.

Volunteers observed 30 live unionid freshwater mussels, 204 shells and 254 valves (ranging from very-recently dead to subfossil). A total of seventeen unionid species were found within those nine drainage basins. When comparing the nine drainage

basins examined, the Brazos River drainage basin had the greatest number with a total of nine unionid species.

Four species on the Special Animal List of the Texas Biological and Conservation Data System (TPWD 2003) were recorded in four counties.

Seven live specimens, a shell and a few valves of Texas fawnsfoot (*Truncilla macrodon*), were recorded during the Texas Master Naturalist Annual Meeting Texas Mussel Watch workshop by participants in Washington County in the Brazos River.

A few shells and one valve of western pimpleback (*Quadrula pustulosa mortoni*), were recorded by TMW volunteer April Proudfit in Montgomery County in the San Jacinto drainage basin.

A long dead Texas fatmucket (*Lampsilis bracteata*) was recorded by TMW volunteer Jason Lott in the Pedernales River.

A live specimen, few shells and several valves of smooth pimpleback (*Quadrula houstonsensis*) were recorded by TMW volunteer Ronald Rushing and his Science Summer Camp students in the Navasota River.

Asian clams (*Corbicula fluminea*) were recorded in twelve out of fifteen counties



(see Figure 1.). Again, the zebra mussel was not observed in Texas by any of our volunteers.

The following volunteers took the time this year to monitor and report data on mussels in their communities:

- Robert Doyle and students
- Frances Fehribach
- Laura Gillis
- Dian Hoehne
- David Jayroe
- Jason Lott
- Karen Marks
- Matt Marks
- Kathy McCormack
- Mike McKay and students
- Jim Miller
- Penny Miller
- Julie Perrine
- April Proudfit
- Ronald Rushing and students

We would like to thank this year's Texas Mussel Watch volunteers for taking the time to monitoring our amazing mussels.

For more information on Texas Mussel Watch, please go to our web site at: www.tpwd.state.tx.us/mussels

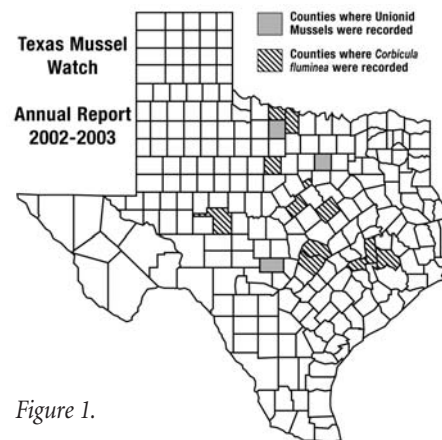


Figure 1.



Monarchs make news ... again

By Mike Quinn

Monarch butterflies made news across North America again. The monarch colonies were measured and estimated to have only occupied 2.2 hectares (or 5.4 acres) on their overwintering grounds in central Mexico last winter. This is one of the smallest amounts of land covered by the clustering monarchs since the annual winter censuses were initiated 11 winters ago. However, similarly low numbers of monarchs survived some of the freezes that hit the colonies in recent winters. (Formerly, one hectare was estimated to contain 10 million monarchs, but the latest estimates have suggested that there may be as many as 50 million monarchs per hectare!)

The low numbers of monarchs reported from Mexico last winter were predicted by our Texas Monarch Watch volunteers who reported large numbers of monarchs only in a narrow swath running down the center of the "central flyway," a 300-mile wide path centered on an imaginary line passing from Wichita Falls, on the Red River down to Del Rio on the Rio Grande.

During a good fall migration, such as in 2003, monarchs fill out the central flyway from the I.H. 35 corridor west to Midland. (My phone nearly rang off the hook from observers wanting to report monarchs blanketing much of Dallas/Fort Worth that fall.) During the '03-'04 winter, monarchs occupied an above average area of some 11.1 hectares in Mexico before a winter



storm unfortunately killed an estimated 70% of them. Unlike after the mid-January 2002 storm, the monarchs didn't recover significantly during the 2004 spring, summer and fall.

There's a lot of speculation as to why they didn't recover significantly last summer with one reason given being that a high percentage of soybeans grown, where most of the monarchs spend their summer, are now genetically engineered to be herbicide tolerant. Thus farmers can spray herbicides on their soybeans and eliminate the weeds (such as milkweed) while not harming their crop. Over 80% of the soybeans grown in

the U.S. are now of this variety so a significant portion of the area where milkweeds grew are now milkweed free.

Fewer milkweeds means fewer places for monarch to lay their eggs and this could have contributed to the prevention of the monarch's recovery, but note that the increase in percentage of biotech soybeans has been gradual since the first biotech crops were planted in the U.S. in 1996 and over this time the monarch population has twice tripled in size during their summer growth period so there doesn't appear to be a clearly negative impact on the monarch from the use of biotech crops.

The summer of 2004 was notably different in one fundamental way: it was one of the cooler summers in recent memory. Cold weather extends the time it takes caterpillars to mature and thus limits the number of generations produced which in turn severely restricts the total population size. This was probably the main reason that the monarchs didn't recover significantly last summer. Let's hope they do better this summer!



TMV Volunteer, Jason Lott, Honored for Iraq Service

Jason Lott, an integrated resources program manager at Lyndon B. Johnson National Historical Park and Captain of



the 1086th Transportation Company of the Louisiana National Guard, has been awarded the Louisiana Cross of Merit, one of the highest military honors granted in the state.

His command of this vital logistical component of Operations Enduring/Iraqi Freedom during its deployment and operation was accomplished with no significant injuries and no loss of equipment.

The 1086th Transportation Company, consisting of 127 persons and numerous vehicles and equipment, was responsible for

movement into theaters of operation and resupplying various military units in Iraq, including the 3rd and 4th Infantry Divisions and the 82nd Airborne Division.

The unit logged over 250,000 miles during its deployment. Jason was in command of his unit from January 2002 through September 2004. He now serves on the battalion staff for the 165th Quartermaster Battalion of the Louisiana National Guard. Jason's achievements have also earned him the Meritorious Service Medal. Congratulations and heartfelt thanks to Jason and his family for his service and sacrifice.



Texas Hummingbird Roundup Reports 17 Species in 2004!

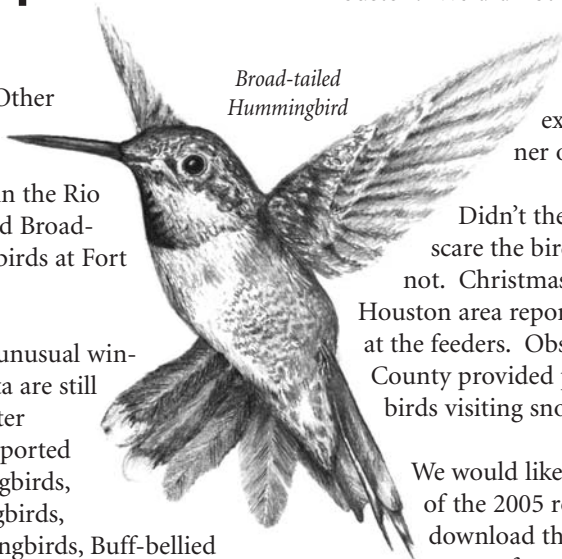
By Mark Klym

The data is just coming in and analysis is very early but 17 of the 18 hummingbird species known from the state of Texas were seen in 2004. Probably the most exciting news though was our winter hummingbird count - many areas saw more winter hummingbirds than normal this year and in some areas, like the five county capital area, more species were reported than normal this winter.

Special events contributed heavily to our surveys this year. Participants at the Davis Mountains Hummingbird Festival reported 10 species (a record for that event), while participants at the Rockport Fulton Hummer-Bird Celebration reported at least four species. Allen's Hummingbird was reported at both events and the reports of Allen's Hummingbird just kept coming

from the coast! Other unusual species were the Green-breasted Mango in the Rio Grande Valley and Broad-billed Hummingbirds at Fort Davis.

What about our unusual winter? Well, the data are still new but this winter observers have reported Rufous Hummingbirds, Allen's Hummingbirds, Calliope Hummingbirds, Buff-bellied Hummingbirds, Broad-tailed Hummingbirds, Anna's Hummingbirds, Green-breasted Mangos, Black-chinned Hummingbirds and Ruby-throated Hummingbirds. These were reported from



Broad-tailed Hummingbird

Bedford to the Valley and from El Paso to Houston! We did not have any reports thus far of winter hummingbirds in the Panhandle or in the extreme northeast corner of the state.

Didn't the white Christmas scare the birds off? Apparently not. Christmas day e-mail from the Houston area reported hummingbirds at the feeders. Observers in Brazoria County provided photos of hummingbirds visiting snow covered feeders.

We would like to have you be a part of the 2005 roundup, you can download the forms for the 2005 season from our web site at www.tpwd.state.tx.us/hummingbirds. The information is providing data that will help us further understand these remarkably resilient birds.

How Are Horned Lizards Doing?



Six new counties added data to Texas Horned Lizard Watch in 2004, bringing the total number of counties participating to 157. In 2004 a total of 21 volunteers submitted data sheets, while an additional 17 informal reports were received. THLW now has had 171 people formally participate. Congratulations to Nick Olson for submitting his fifth year of data in 2004!

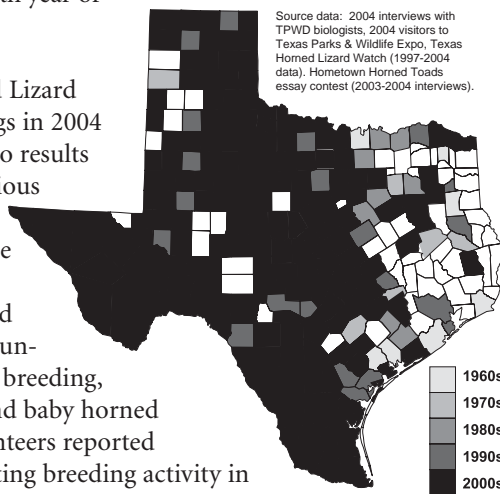
Texas Horned Lizard Watch findings in 2004 were similar to results over the previous six years; however, some special high-lights included reports of volunteers sighting breeding, egg-laying, and baby horned lizards. Volunteers reported thrills at sighting breeding activity in Childress and McMullan counties in April; egg-laying in Comal county in April, Tarrant county in May, and Wilson county

in June; and baby horned lizards in Hartley and Stephens counties in August and in Potter, Lubbock, Bailey and Hartley counties in September.

2004 Texas Horned Lizard Watch sightings were combined with results from the 2002-2004 Hometown Horned Toads essay contests, interviews of TPWD biologists, and attendees at the 2004 Texas Parks & Wildlife Expo to produce a map depicting dates of recent sightings across the state. Results indicate that, while horned lizards may be more rare now than in the past, they still have been seen recently in many parts of the state. That's good news! See Figure 1 for dates of sightings in your county.

For more information on Texas Horned Lizard Watch visit www.tpwd.state.tx.us/hornytoads/

Figure 1. Most recent decade in which horned lizards were reported sighted.



Source data: 2004 interviews with TPWD biologists, 2004 visitors to Texas Parks & Wildlife Expo, Texas Horned Lizard Watch (1997-2004 data), Hometown Horned Toads essay contest (2003-2004 interviews).

Maybe Not So Bad!

By Lee Ann Linam

During 2004 TPWD asked everyone when they last saw horned lizards. Results of those interviews, along with the 2004 results from Texas Horned Lizard Watch indicate that the species is hanging on in many parts of the state and even thriving in others!



West Texas students bring home top prizes in horned lizard essay contest

By: Lee Ann Linam

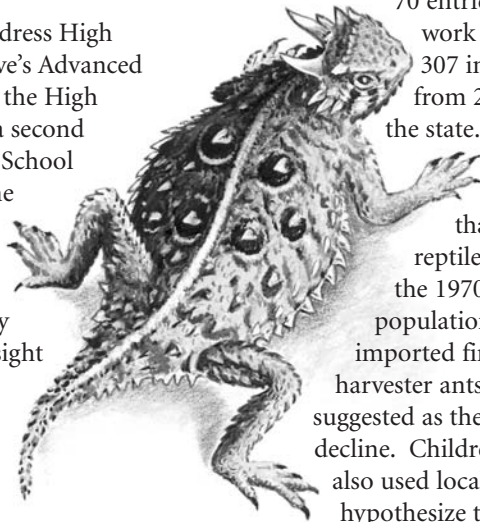
If you want to find horned lizards in Texas, go west. If you want to find winning student researchers and writers, you also need to look west of I.H.-35. West Texas schools produced all the winners in this year's Hometown Horned Toads essay contest.

Leading the pack was Childress High School, where Russell Grave's Advanced Wildlife Science class won the High School Team division for a second time. The Childress High School students really captured the essence of the contest — using the recollections of local residents and data about the local community and ecology to provide insight about why Texas horned lizards have declined in their hometown.

Russell Graves believes that participation in the contest also allowed his students to gain valuable research skills. "I think that the horned toad essay contest has allowed my students the chance to take a community approach to solving the mystery behind the Texas Horned Lizard's disappearance. Through interviews with citizens throughout the community, analysis of county highway and cropland data, and the study of why

the reptile is plentiful on the school's land gave all of the students a chance to work as a team in order to search for a relevant answer to this pressing issue."

The essay contest this year attracted 70 entries, representing the work of 137 students, 307 interviews and data from 23 counties around the state. The majority of the winning 2004 essays suggested that the official state reptile began declining in the 1970s and 1980s, with population growth, red imported fire ants, decline in harvester ants and pesticide use suggested as the major causes of decline. Childress High School also used local records to hypothesize that increases in traffic, increased pesticide application as part of the boll weevil eradication program, and loss of open ground in the Conservation Reserve Program may have decreased the prevalence of horned lizards in Childress County. All of the essays suggested that horned lizards do still live in their communities.



The contest is funded in part through sales of the Texas horned lizard conservation license plate. TPWD launched Texas' first conservation license plate in 1999 and it has since become the third best-selling specialty plate in the state, more evidence of the horned lizard's status as a popular icon of Texas. For details on conservation license plates please visit: www.conservation-plate.org

We believe the contest offers students the chance to better understand their own communities. Amy Inman, a senior at Childress High School stated, "I really enjoyed participating in the Horned Toad Essay contest. The research we collected was like a window into Childress twenty to fifty years ago. While reading the compiled information, I began to realize how much our hometown and the surrounding rural area has changed. Horned Toads are not the only wildlife being affected by our growing economy. I sincerely hope that through contests like this, my generation can learn from past generations' mistakes, so in the future we can better preserve our wildlife."

Data from the first three years of the contest have been analyzed to provide a better look at patterns in different parts of the state. To request a copy of the complete 2004 Hometown Horned Toads essay contest report, contact Lee Ann Linam at (512) 847-9480 or e-mail: lalinam@wimberley-tx.com





2004 HOMETOWN HORNED TOADS ESSAY CONTEST WINNERS



Grades 3-5 – Individual Essay

Can You See It Now?

Maybe you can, maybe you can't. The horned lizard is becoming endangered and is going way down in population, so we need to find a way to keep them alive.

There are 14 kinds of horned lizards in North America, from southern Canada to Guatemala. The Texas horned lizard, *Phrynosoma cornutum* (Chihuahuan), is a member of the reptile family. When the horned lizard is threatened it first hisses and swells up with air. If that doesn't work, it will flatten its body to make a shield and tip all of its horns toward the attacker in the hopes of being too difficult to swallow. As a last resort, the horned lizard's eyes will swell shut. A hairlike stream of blood comes shooting out from a tiny opening near the eyelids, and with dead-eye accuracy nails its predator. Then its eyelids will go back to normal. The horned lizard usually lives for eight years and its main food source is harvest ants, but it will also eat grasshoppers, beetles, and spiders. Its predators are hawks, roadrunners, snakes, lizards, foxes, coyotes, ground squirrels, mice, cats and dogs. Most horned lizards live in deserts or semi-arid environments.

The Navajo people respectfully call the horny toad "Che" or grandfather. In early times the men would carry them to battle as good luck charms. They also believed "Che" would make extra arrowheads. In some Mountain tribes they used the horned lizard as a hunting guide. The hunters would put the horny toad down, then they would turn their backs, and turn back around, then they would follow it in whatever direction it went expecting it to lead them to game. As for the Native Americans, they believed he was a healer. Zuni Indians thought he was a medicine man. When women were expecting a child they would put them on their bellies for an easier labor.

San Angelo is located in Tom Green County, between I-20 and I-10, it covers 58.61 sq. miles in West Central Texas between the Texas Hill Country to the southeast and the Rolling Plains to the northwest. The estimated population in 2000 was 104,010 with an average rainfall of 20.45 inches per year. The average annual temperature is 64.9 degrees and there is usually 251 days of sunshine.

I interviewed seven people: Lisa Tindol (my mother); Elmer Kelton (a novelist); Ross Dutton (a veterinarian); Hugh Tucker (a rancher); Felton Cochran (owner of the Cactus Book Store); Rod Dearth (Executive Director of the Nature Center); and Mark Priest (owner of Legend Jewelers). These people said that the "horny toad" was most common in the 50s. They also said there were not as many paved roads, restaurants, hotels and there was not a mall in San Angelo at that time. The horned lizard started to decline when all of this urbanization took place, and that was between the 1960s and the 1980s. They said it wasn't just all the building, but it was also because ant beds were getting poisoned and the horned toads lost their food source.

I think the horned lizard started to decline in population in the 1960s, but was not noticed to be disappearing until the mid 1980s. The population of San Angelo has almost doubled in the last 50 years and with this growth in population it has taken away the natural habitat for the horned lizard. The horned lizard population has declined because of the building of houses, the paving of roads, the poisoning of harvest ant beds, fire ants eating their eggs and babies, their babies being made into jewelry, and many lizards were shipped out of the state as "midget dinosaurs."

I think we could save the horned lizard by discovering a way to only poison fire ant beds and let the harvest ants live. Also if we were to keep some vacant lots vacant and more natural environment for them to live in.



Grades 3-5 – Team Essay

Oh Where, Oh Where Have the Horned Toads Gone?

The Texas Horned Lizard is one of the famous creatures of West Texas. Lately however it seems like its doing a disappearing act! If you are lucky enough to spy this lizard that looks like a toad you will notice it is a flat bodied, fierce looking lizard covered in horns. It is brownish and has lots of scales. While it is not very pretty, it is a favorite animal and now a protected species.

Horned lizards eat mostly ants, but will also eat grasshoppers,





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beetles and spiders. They wait for the prey to pass in front of them and quickly snap it up with a flick of their tongue and swallow it whole. Hawks, roadrunners, snakes, other lizards, coyotes, ground squirrels, mice, cats, and dogs like to eat horned lizards. People think horned toads might be almost gone because of the drought. I disagree because our information tells us that the horned toads get the water they need from ants they eat. Rain does attract fire ants. Fire ants have the same food source as red ants.

A person we interviewed was Don Crocket. He said they were most common in the 1950s. He realized they were beginning to disappear around 1970s. He thinks they are disappearing because houses were destroying their homes, getting killed on the road, less food and boys who keep them for pets. Jonell Cristiani, another person we interviewed, said that back then the alleys were made of dirt and were much larger, she also said that a man in San Angelo melted horned toads in liquid gold, and made tie tacks and jewelry out of them. Charlie Godfrey, the last person we interviewed, started to notice they were becoming more rare. He thinks they are disappearing because the town was developing and people were poisoning ants. Their food source was destroyed. Ronald Brice said he put cigarettes in horned toad's mouths, but did not light the cigarettes. That is what we got from our interviewees.

Today horned toads are rarely in sight. We think it is because their habitat was destroyed. They are unique and it is right for them to be a protected species. It is good to educate people about the horny toad because once they were "everywhere" and now they are few. We hope they come back.



Grades 6-8 – Individual Essay

Llano County "Horny Toads" or Texas Horned Lizard

Since people first settled Llano County in the 1840s, the Texas Horned Lizard, commonly known as the "horny toad," has been a source of curiosity for people all over the county. For over a century, people have laughed at and children have played with the horny toad. Over the last thirty years, there has been a sharp decline in the population of the horny toads.

I am a student in Mrs. Goerdel's sixth grade Pre-AP Science class in Llano. We are trying to draw conclusions as to what has happened to the horny toads in Llano County. By doing research in our school library, using the Internet, and interviewing residents of Llano County, we have tried to come up with a theory as to why the Texas Horned Lizard is disappearing.

The Texas Horned Lizard, or the *Phrynosoma cornutum*, is a flat-bodied, fierce-looking lizard. It is about 2 1/2 to 6 1/2 inches long. The head has many horns, and the two central spines of the lizard are much longer than the others. It has two rows of fringe scales at each side of the abdomen. It is a brown color with a light line down the head to the middle of the back. This is the only species of horned lizard to have dark brown stripes that go down from the eyes and across the top of the head.

The Texas Horned Lizard has a dragon-like appearance that

can be intimidating, however, the horny toad is really calm and gentle. The horny toad spends its days eating, bathing in the sun, and trying to stay away from predators. Their bodies and activities are based on a biological clock. They come out of their burrows right before sunrise with their backs to the sun. They lay in the sun to bring a fast rise in their body temperature. Once they are warmed, they remain active until it is time to go to the shade during the most intense heat of the day. Burrowing also helps the horny toad to regulate its body temperature.

When the horny toad is threatened, its first reaction is to flatten out and freeze in place. This enables it to blend in with its surroundings. Horny toads have the ability to lighten or darken their bodies to camouflage themselves also. Another defensive reaction of the lizard is to run briefly and suddenly stop, creating the illusion of disappearance. The horny toad is also capable of inflating its body, hissing and even squirting up to one third of its blood supply from their eyes at its predators.

The horny toad eats mainly Harvester ants, but will also eat grasshoppers and beetles. The horny toad must eat from several colonies of Harvester ants to get enough food for itself. When the prey comes into reach, the horny toad flicks its tongue and quickly snatches it and swallows it whole.

Hibernation begins in September usually and continues until late April. A reproduction occurs soon after the toad comes out of hibernation. After mating, the female will lay 13-45 eggs in a nest. After burying the eggs, she leaves them, never to be seen again. Some five to nine weeks later, the baby horny toads will hatch and use a specialized "egg tooth" to make their way out of the egg. The baby horny toads must then fend for themselves.

The Texas Horned lizards live from South-Central United States to northern Mexico. They are found mainly in arid and semiarid areas in sandy and loamy soils. The study area I chose for my interviews is rural Llano County, Texas. Llano County is located in Central Texas. Llano County is made up of 941 square miles of the Texas Hill Country. It is on the eastern edge of the Edwards Plateau. Elevation is from 800 to 2,000 feet above sea level. The soil is sandy to sandy loam with granite outcroppings throughout much of the county. Horny toads really like the sandy to sandy loam soils. Temperatures in Llano County range from an average high of 98°F in July to an average low of 34°F in January. Average yearly rainfall





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is 26.20 inches.

Llano County had a population of 1,109 people in the 1858 census. This included 58 slaves. Farming was the chief occupation in the northern part of the county, and ranching was widespread in the southern part at this time. The census showed 5,377 residents in Llano County in 1950. In 1970, the census showed 6,979 people. In the 1990 census, the population was 11,631 residents in Llano County. The latest census of 2000 revealed that 17,044 people lived in our county.

I interviewed six people ranging in age from 43 to 85 years. They have all lived most of their lives in Llano County. The 85 year-old-woman went to school in Llano in the 1920s and 1930s. She said that one could always find the horny toads around the red ant beds. Another person I interviewed said that when she went to school in Llano in the 1940s and 1950s there were lots of horny toads at the schools on Oatman Street. School children would catch horny toads and play with them. One man I interviewed said he used to catch the horny toads and hook them up to little wagons that he made out of matchboxes with string. He would then let the horny toads pull his wagon.

Most of the people interviewed thought the horny toad probably declined or disappeared because of extensive use of pesticides. Interestingly, there was a chemical factory on the north side of town that manufactured DDT, which was a very potent and long-lasting insecticide. It was built in the 1940s. It was stored in many warehouses throughout the town.

The people I interviewed remembered seeing the horny toad less and less in the 1960s and even more so in the 1970s and 1980s. Some did not remember the last time they even saw a horny toad. I believe that the horny toads are becoming rare in Llano County because of pesticides and the fact that the community is expanding. In conducting the study, I have heard of some people recently sighting horny toads in the remote areas of the county. I plan to further explore this on my own.



Grades 6-8 – Team Essay

The Case of the Missing Texas Horned Lizards

Have you ever seen a reptilian creature with spikes running from the tip of its tail all the way to its blood-shooting eyes? If you're under the age of about 20, your answer may possibly be "No," because these small interesting creatures have become less common than what they used to be. This is tragic! Our own state reptile, the Texas Horned Lizard, is becoming rare. We decided we **MUST** find who or what is to blame, and find them we did! We surfed the web! We pored through pages and pages! We asked around our home town! And now we present the product of our efforts! Our dear Texas Horned Lizard, your absence has not gone unnoticed! Your case shall be revealed!

The Texas Horned Lizard is actually of a rather gentle nature, despite its rough-looking appearance. It is light brown with dark brown stripes running down its back. It is covered in small, but noticeable spikes that increase in size around its crown. They emerge slightly before the sun peeks over the horizon in order to sunbathe. In this way they warm their bodies quickly and may then proceed to go about their daily activities, such as eating insects, including red harvester ants, beetles and grubs. They also occupy their time by avoiding predators. When a predator comes along, they press themselves against the earth and remain motionless so that the hungry predator will overlook them. If the predator detects them, they may make themselves appear to be larger by inflating themselves with air. The Texas Horned Lizards are also capable of hissing and emitting a jet of blood from their eyes in order to frighten away hungry predators. Most of their activity goes on during the warm days of summer or early autumn. Texas Horned Lizards hibernate from approximately September to April or possibly May. After they reappear from their hibernation, mating season begins. After two lizards mate they dig an underground tunnel. The female lays from thirteen to forty-five eggs. She warms them with her body for one night in the nest and leaves the nest, never to return. After five to nine weeks, the baby Texas Horned Lizards emerge from their shells. These babies will have reproduced by the time they are three years old, but the exact age of sexual maturity is unknown (TPWD 2003).

Texas Horned Lizards can be found in Oklahoma, Kansas, New Mexico, Colorado, some of Arizona and Mexico and, naturally, Texas. They are considered a threatened species in Texas and Oklahoma (Davidson 2001). Our study covers an area in Hood County and the surrounding region where there are many farms and ranches. Nearby water sources include the Brazos River and Granbury Lake. There are small hills throughout the region. One in particular is Double Mountain in neighboring Palo Pinto County.

After interviewing twenty-seven people, we discovered that Texas Horned Lizards were most common during the 1960s-1970s, at which time there were only about five or six thousand people in Hood County (Forstall 1995). During this time period, the community was less populated. They began to decline during the 1980s when the population increased to approximately 18,000 people.



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Since then, the population has continued to increase rapidly. Most people agreed that Texas Horned Lizard's decrease was due to the increase of population. Several people stated that at the beginning of Vacation Bible School when they were kids, they would capture Texas Horned Lizards and bring to church, have lizard races, and just watch them run around.

We have concluded, based on interview results and research that our dear and beloved Texas Horned Lizard's decline is due to a combination of several events that can be summed into one, the increase in population. When people move in they clear land to build a house, during which they kill red harvester ants. They also bring pets that devour the Texas Horned Lizards. People frequently flatten them with their cars, because the lizards sun-bathe on the highways and should a vehicle approach, they freeze, thinking the car is a predator that will not kill them if they do not see them. Whenever the lizards freeze in the middle of the road, the vehicle flattens them with their deadly tires.

To help the Texas Horned Lizards repopulate Texas, we have only to review our hypothesis and give our best efforts to prevent these things from occurring. We need to try providing ideal places for them to flourish. For example, during the year, mating season especially, we can find a red harvester ant mound, feed the ants, dig a hole a few yards away and fill it with moist earth. This will make tunnel-digging easier and a food supply convenient and plentiful. We should try to keep our pets away from ideal habitats for Texas Horned Lizards. In addition, we can create convenient basking areas such as small concrete slabs or flat rocks. This will give the lizards more options besides basking on roadsides. We should watch for lizards along the roadsides, and if we see one, we can try to scare it off of the road, since touching it is illegal. A major step would be to convince the general public that harvester ants do us no harm unless we bother them first and that they do not need to be exterminated. We can tell people Texas Horned Lizards are a threatened species. We must get people on the lizard's side. We need to convince everyone to save the Texas Horned Lizards, our official state lizard. What a shame it would be for the TEXAS Horned Lizard to be wiped out from TEXAS. We MUST do our best to save the Texas Horned Lizard!



Grades 9-12 – Individual Essay

Horned Lizards

Do horned lizards, well known as horny toads, still exist in our area today? My research and interviews with a few locals might give you an idea of the number.

Have you ever seen a horned lizard? If so, do you know what kind it is? Well, after thorough research, I have discovered that there are three kinds of horned lizards in the state of Texas. These species are the Texas horned lizard, mountain short horned lizard, and the round tail horned lizard. The most well known in our area is the Texas horned lizard. Some of the physical characteristics of the

Texas horned lizards are they are a flat-bodied, fierce looking lizard. There are many horns on the head and down the back. In all of the horned lizards, there is some kind of pattern that takes place with the placement of their horns. It has blotches in pairs down the center of the back. These lizards are related to the anoles, and the anoles are related to some branch of the iguana family. If a horned lizard has high blood pressure, it shows when the lizard starts to squirt blood from its eyes. When it gets angry or scared, that causes the capillaries to rupture. The ranchers like to keep the horned lizards around because they like to eat ants, so the rancher gets in return, clean vegetables. There are many different kinds of horned lizards besides just those three kinds. Most of them are found in Kansas and Nebraska, westward to the Pacific Ocean. They also range from Canada, down to the south, to Mexico. The climates that they live in, or you can also say the landscapes that they live in, are places like deserts, prairies, plateaus and mountains. The reproduction of horny toads is pretty simple. They go and dig a hole and lay their eggs inside of the hole, this mostly happens in June, and then about seventy to ninety days later, the babies hatch. There is no scientific basis to this next statement, but it is lead to believe that some horned lizards are known to live up to two or three decades when they are sealed in cornerstones or any other kind of similar place.

My hometown, Andrews, Texas, is located in Andrews County. It is located near the towns of Odessa and Midland. We are known as a desert town. We are probably also well known for our oil. As I research our town, I came to find that in 1929, an oil well bursts and creates approximately six million oil barrels. This town doesn't have many buildings, or many activities to do. Many of these facts could result in the answering of the mysterious horned lizards.

As I have interviewed quite a few locals, some of their information became very useful towards my hypothesis. Some of the locals said that the horned lizards were common in the 1960s. During this time, our community had a few differences from what we are today. First, our population wasn't near as high as it is now. Therefore, there weren't as many houses, and most people lived out in the country. The result of this is that there are more ant hills, horned





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lizards main food is ants. In the years 1990 to 2000, the horned toads started to decline. The community then started to increase. The population grew, and the houses began to overcome the town. Some people believe that they declined because of pesticides, children, cars, and other environmental causes. The pesticides are killing all the ants, once again, the horned lizards favorite food. The children probably like to play with them, and we all know children can't be gentle with everything that they get their hands on. The cars are known for road kill and horny toads are on the list of the animals that lay on the side of the road. These reasons are very useful towards the decreasing of horny toads.

My hypothesis is that horned lizards started to decline within the late 1990s. This is taking place in Andrews, Texas. All of the research and interviews have helped me come to this conclusion.

Some of the investigation results of the town before and after the Texas horned lizards declined are changes in landscape, changes in the community, changes in agriculture and changes in pests, such as the fire ants. Some of the changes in the landscape are the fact that there are more houses are being built. As our community grows, there are going to be more houses built so that everyone will have a place to live; therefore, there are less open areas. That means that if there isn't anywhere for horny toads to make a home, since they dig holes to lay their eggs, then there really isn't a good reason for them to stay around. Some of the changes in our community is that we are growing in population and also that more buildings and houses are being built. This is practically the same reason as the changes in landscape. Agriculture is different from the past two we just talked about, some of those changes are that we need more space to grow crops and raise livestock, so we need more land so that all of the horny toads won't go farther and farther away since all of these houses are being built. If we don't have any crops, then we don't have any bugs, so that means we don't have any horny toads. The thing is, we don't use space to grow crops or raise livestock anymore because we can just buy everything at the store, and everyone would rather do it the easy way, and just buy the things they need at the store instead of growing it themselves. Now for some changes in pests, farmers are using pesticides to kill ants, ants are horny toads main food, the horny toads might have gone somewhere with more ants, and there are more birds coming to Andrews and birds eat horny toads. The farmers are using the pesticides to kill the ants, so the horny toads could have left or died because there are no more ants, or they could have left or died because of the birds coming.

My analysis of what may have affected horned lizards decline in Andrews have mainly been expressed throughout this whole paper. The fact that our population is growing and the houses are being built, the pesticides, the children, the cars, birds, and anything else that was named throughout this paper.

My conclusion about what, where, and why Texas horned lizards became rare in this community has also been repeated. The when is around the 1990s, quite a few of the interviewees have mentioned different kinds of years that they have declined, but they have all been throughout the various numbers of the 90s. The

where is in our good old town of Andrews. The why is the many reasons brought up throughout the interviews and the research and common knowledge. The reasons are the population, the houses, the pesticides, the children, the cars, birds and many others. Some things that can be done to keep the lizards here are, we can make a park resort. Where we can breed and keep horned lizards safe at. Also, if we can make a place near the resort that's made up of crops and everyone can use the pesticides on their property and then no one uses it on this part, that way the ants will be there and maybe some more lizards will migrate over there, and they can put them in part of the resort.



Grades 9-12 – Team Essay

Reasons for the Decline of the Texas Horned Lizard in Childress County, Texas

Introduction

For ages, the Texas Horned Lizard has been found all over Childress County. The Texas Horned Lizard grew abundantly over the years in Texas, and many hold fond memories of playing with them as kids growing up in the Lone Star State. What happened to these reptiles is still somewhat a mystery.

Today, there are fewer "Horned Toads" in Texas than ever before. It is the goal of the Advanced Wildlife Class of Childress High School in Childress, Texas to solve the mystery.

By seeking information from the people of our community who have lived in the area over 40 years, we received several humorous and informative stories — many of which helped us solve the puzzle of why the Texas Horned Lizard is disappearing.



Some Information about the Texas Horned Lizard

The Texas Horned Lizard, also known as *Phrynosoma cornutum*, is listed as a threatened species in Texas. This fierce looking creature is composed of many spikes and horns across the top of its body with two central spines on the top of its head. Its body length is from about 2 1/2-4 inches long. It has a variety of



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color patterns, but it is the only species of horned lizards that has a dark brown strip from the eyes across the top of head. Along with the stripes on the head, it has a distinctive marking of dark brown or yellow spots across the back with a white mid-dorsal stripe.

Although the horned lizard has an intimidating exterior, it has a calm and gentle nature. It digs, burrows or occupies one taken from another creature, which often is found near the mounds of its favorite food source. The lizard is most active during the warm days of summer and early fall, hibernating around September or October. Mating begins right after hibernation, usually in April or May. Its metabolism is lowered during the period of hibernation. Most of the time, a horned lizard can be found lying on a hot surface tanning its body for warmth or in the middle of a harvester ant bed eating.

The Texas Horned Lizard has some very unusual defense mechanisms. The first defense mechanism is expressed when danger is felt. The horned lizard will flatten out its body and literally freeze. It also has the ability to lighten or darken the body to camouflage itself against the ground or bury itself under loose soil. The lizard also has ducts near the eyes with which it can "squirt" blood at predators. If it is sufficiently agitated, it may release up to 1/3 of the blood in its body!

About the Hometown Study Area

Childress County is located at the southeastern edge of the Texas Panhandle. It's bordered on the east by the state of Oklahoma, to the north by Collingsworth County, to the south by Cottle County and to the west by Hall County. Physical characteristics include miles and miles of prairies and river bottoms. Occasionally, you will come across a few large hills but nothing more. The elevation of Childress County is approximately 1,600 to 1,900 feet above sea level.

Wildlife in Childress County includes whitetail and mule deer, feral hogs, bob-white quail, mourning doves, assorted ducks and other wildlife species. The soils range from sandy loamy to alluvial sands.

Brushy vegetation ranges from shin oak, salt cedar, hackberry and mesquite; while grasses are predominately mixed grass species including little and big bluestems, grammas and buffalo grass.

The temperature range in Childress County is from 24 degrees Fahrenheit in the winter to 100 degrees Fahrenheit during the summer. On average, we can expect about 20.67 inches of rainfall annually. The only river in Childress County is the Prairie Dog Town Fork of the Red River. The county seat is also named Childress. Both were named after George C. Childress who wrote the Texas Declaration of Independence. Childress originally served as a stop for trains passing through. All in all, Childress County is one of the most diverse areas in Texas in terms of vegetation, wildlife and people.

Interviewee Results

The interviews we conducted were in December 2003, and the results were compiled in early January 2004. Each class member was asked to interview two people that have lived in this county most of their lives. We compiled 24 interviews total.

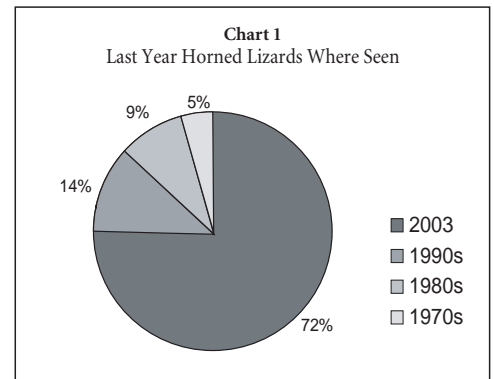
Interviewee Profile

- Average age of interviewees is 58 years old.
- Each interviewee lived in Childress an average of 41 years.
- 100% of the interviewed people remember seeing horned toads in their lifetime, and 73% replied that they have seen a horned toad in the last year.
- When asked when they first saw horned toads, the average answer was around 1958 and they thought horned toads were most prevalent around 1962.
- 76% replied that the town was less populated when Texas Horned Lizards were more plentiful.
- 24% said the town hasn't changed.
- 64% said that horned toads started to become less prevalent around 10 years ago, and 36% said it was over 20 years ago.
- Most people think the leading cause of horned toad population decrease is due to cotton boll weevil eradication and

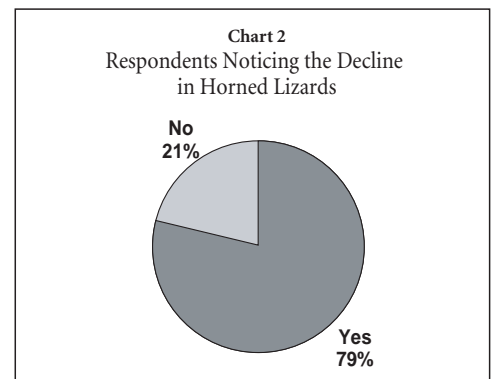
more spraying of pesticides which in turn affects the Horned Toad's food supply.

- The lack of bare ground due to the Conservation Reserve Program and a decrease in farm and rangeland is also believed to be a leading cause of Texas Horned Lizard decline.
- With the population increase, there are more cars, which put horned lizards at the risk of being run over on the road. Studies show a 66% increase in traffic in Childress County from 1988 to 1998.

When we analyze the interviewee composite data, we notice that trends begin to occur that help us to unravel the mystery of what is happening to the Texas Horned Lizard in our community. First, let's take a look at Chart 1:



When asked if interviewees noticed the decline of Texas Horned Lizards, according to Chart 2, 21% said that they never noticed the decline in horned toad population, whereas 79% said that they did notice a decline in the number of horned toads over the years.





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Chart 3 illustrates interviewee's perception of our hometown and how it has changed. A mere 24% of people thinks that the population is the same as it was in the 60s. There are about 76% that believe there are fewer people since the 60s.

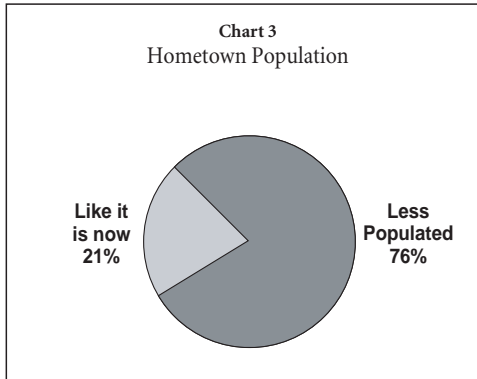
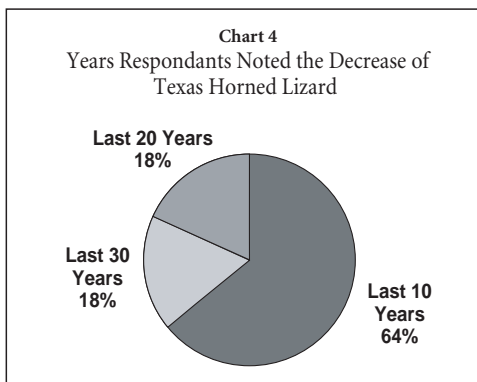


Chart 4 represents the time frame in which interviewees started noticing the disappearance of the Texas Horned Lizard. Most people didn't realize that they started to become scarce until the last ten years, but an equal amount of people noticed the decrease as long ago as 20 and 30 years.



Investigation Results

According to our research, we have found that the horned toad population started to decrease in the 1970s. Despite the decrease, seventy-two percent of people in this hometown have seen a horned toad in the last year. This percent indicates a healthy but reduced horned lizard population.

The interviews we conducted indicate the reason for the decreased population. The general consensus believed the leading cause of horned toads disappearance is due

to the cotton boll weevil eradication program. Also, the increase in spraying of pesticides further depletes the horned toads food supply, which is composed of ants and other insects. The Conservation Reserve Program also took its toll on the Texas Horned Lizard population because it took bare ground and turned it into grassland. This disappearance of bare land has caused the ant population to decrease; therefore, diminishing the food source of the horned lizard. Many horned toads are on the roads because of the bare ground. They are trying to catch ants. Therefore, the increased population of cars has also hurt the horned lizard population.

Looking at research conducted by the Childress High School's Advanced Wildlife Management Class in 2001, they reported that over the past years in Childress County several changes have taken place including:

- A 15.5% increase in population
- A 63.3% increase in daily traffic
- A 56% decrease in Farm Land
- A 100% increase in Conservation Reserve Program acreage

The class reported that these factors conspired in the reduction of the overall Texas Horned Toad numbers in the community, and we concur with these findings as our interviews uphold their results.

All in all, we think several things influenced the decline of Texas Horned Lizards in the Childress County area including increased population, traffic and loss of

farmland. Above all, it is our conclusion that the loss of two critical habitat components, food and bare ground, are the main culprits for their demise. The loss of food, primarily harvester ants, can be attributed to the aggressive spraying of Malathion used to control cotton boll weevils and other insects that affect cotton, and the loss of bare ground can be attributed to the increase in CRP land and a decrease in farmland. Since farmland creates ideal bare ground habitat around its margins in which harvester ants find ideal foraging conditions, Texas Horned Lizards are naturally drawn to these areas.

In conclusion, we believe that Texas Horned Lizards prefer open ground areas devoid of plant litter because it makes foraging easier. Last year on the Childress High School's Wildlife Management Area, over two dozen Texas Horned Lizards were sighted. Investigating the frequency of the sightings, we discovered that the composition of the land is made up of 57.6% grassland and 42.4% bare ground. On the land there is also an ample supply of harvester ants.

Finally, as bare ground steadily disappears so does the Texas Horned Lizard population. Whether it is purposely or accidentally, urbanization, the decrease in farmland, and the increased use of pesticides is slowly taking its toll on the Texas Horned Lizard.





The Texas Nature Tracker

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