



Wildlife Diversity Branch - 3000 IH-35 South, Austin, Texas 78704
www.tpwd.state.tx.us/tracker

The Texas Nature Tracker

TEXAS
 PARKS &
 WILDLIFE

2004

Catching Up!
 with
Marsha Reimer, TNT Coordinator

What's new with Texas Nature Trackers?

Again there has been a change in the weather for Texas Nature Trackers (TNT). Our department lost the TNT Assistant position held by one of our most important members, Kathryn Palmer. She was a key member who helped us tremendously with our projects and was the contact person for all of the volunteers. We were very sorry to lose her. Lee Ann Linam and I will do our best to make up for this loss. Kathryn is currently finishing her master's degree in education at Texas State University - San Marcos and we know that she will be a wonderful teacher.

We are branching out with a new partnership with the Texas Master Naturalist (TMN) Chapters this year. Along with the advanced training that we currently conduct for the TMN Chapters, we now are offering a partnership with the Chapters. The purpose of this partnership is to enable TMN Chapters to promote TNT projects and train volunteers in Texas Amphibian Watch and Texas Mussel Watch. Three TMN Chapters have so far signed on to take part in this new partnership. These TMN Chapters are: the Rolling Plains Chapter, Gulf Coast Chapter and Capital Area Chapter of the Texas

continued on the next page

Horned Lizard Detectives



At Work Again *By Lee Ann Linam, TNT Project Biologist*

When Texas Parks and Wildlife Department asked students, "What's happened to horned lizards in your town?" The answers and memories again poured in. This year's essay contest attracted 123 entries, representing the work of over 230 students who interviewed 342 people. Students used interviews with local residents and researched local records to hypothesize when and why the popular Texas horned lizard, or horned toad declined in their communities. The majority of the 2003 essays suggested that the official state reptile

began declining in the 1970s, with urbanization and habitat loss, red imported fire ants, and pesticide use suggested as the major causes of decline.

The recollections of Texas residents may provide a key in helping the species recover by helping to pinpoint why, where and when the species disappeared. In addition, the contest has proved to be a valuable learning experience for the students involved.

continued on the next page



Catching Up!

continued from page 1

Master Naturalists. We are looking forward to working closely with these and other chapters in the future. For information on the Texas Master Naturalist program go to: www.tpwd.state.tx.us/nature/volunteer/txmasnat/

Slowly but surely our web site is evolving into something we hope our volunteers and educators will be able to enjoy and find useful. Many of our Wildlife Diversity educational materials have been converted to pdf files and are in the process of being placed on our web site. Check out the Texas Parks and Wildlife Department's nature education pages to find these and other amazing materials at: www.tpwd.state.tx.us/nature/education/

We look forward to working together with all of our Texas Nature Tracker volunteers and remember, *keep sending in that data.*

Call for Submissions

Texas Nature Trackers would like to put your story in our newsletter. There are over 1,300 of you wonderful TNT volunteer monitors throughout Texas doing remarkable work. **WE WOULD LIKE TO HEAR FROM YOU.** Teachers, send in your student's class project or a winning report. Artists, we'd love to publish your poems, drawings, photographs and songs. Monitors, do you have any interesting sightings, anecdotes or tips to share?

Send by E-mail to:
marsha.reimer@tpwd.state.tx.us

or regular mail:
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Texas Nature Trackers
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I'm sorry but we will not be able to return your submissions.

Horned Lizard Detectives...

continued from page 1

Here are some highlights in the students' own words:

- Walker County - "Now I really appreciate them and know a whole lot about them."
- Harris County - "When they did see one it was like a rainbow as they would watch and play with it in they're exciting surprise."
- Scurry County - "I think we should pass a law that we must treat horned toads as if they were a member of our own family or our friends."
- Harris County - "This little creature could let the adults of today teach the children of tomorrow about their old friends."
- Nueces County - "We should preserve horny toads, not just because they are our state reptile, or because they help the environment, but most of all because many people have great memories of the horny toads."
- Dallas County - "It would be nice if kids my age got the enjoyment and childhood memories of catching these beloved horn toads. However, we won't."
- Harris County - The rush for "Texas Tea" contributed to decline. "I hope that Texas gets its beloved State Reptile back after all of the mistakes made in the past."
- Scurry County - "I also think that we should try not to use as many fertilizers in grass, because it is just grass, and it is not a needy thing."
- Eastland County - "We should focus on bringing back the horned lizard for all the pleasure it has brought while being a part of people's lives."
- Walker County - "If possible I could bring the past to the future and the Horny Toads were back then people's hopes and dreams would be back. Then I would be the hero."

2003 WINNERS

Grades 3-5 Individual:

- 1st place - Nicholas Rhyner, San Marcos, TX (See "Come Back Horned Toads!" on pg. 3)
- 2nd place - Stacey Clifton, Snyder, TX
- 3rd place - Brooke Shimanek, Texarkana, TX

Grades 3-5 Team:

- Lindsey Schraad and Jacob Garza, Burkburnett, TX (See "Horny Toad, Oh Horny Toad!" on pg. 3)

Grades 6-8 Individual:

- 1st place - Ben Lawson, Houston, TX (See "The Mystery of the Disappeared Horned Toads" on pg. 4)
- 2nd place - Eva Thomas, Katy, TX
- 3rd place - Drew Kangieser, Houston, TX

Grades 6-8 Team:

- Amber Malone, Haley Davidson, Marley Montgomery, Larissa Bland and Samantha Porthier, Rockdale, TX (See "The Life and Times of the Great Texas Horned Lizard" on pg. 4)

Grades 9-12 Team:

- Diana North and Emily Cambron, Calvert, TX (See "Where Did It Go?" on pg. 5)

Watch our Web site www.tpwd.state.tx.us/htht/ for information on 2004 winners and how to participate in the 2005 contest. Thanks to our partners in this contest, the Horned Lizard Conservation Society, the Texas Historical Commission and the County Historical Commissions.



2003 HOMETOWN HORNED TOADS ESSAY CONTEST WINNERS



Grades 3-5 – Individual Essay

Come Back Horned Toads!

Come back Horned Toads! We can't be Texas without you! You are our state reptile and we know you've been having a hard time but we hope you make a comeback. The people I talked to have many memories of you but they noticed you are becoming rare. They have several opinions about why you are becoming rare. I interviewed six people, and learned some interesting things about their memories.

The people that I interviewed came mostly from Corpus Christi, Texas which is in Nueces County. It is in Southern Texas near the Gulf of Mexico. It has a lot of flat grassy land and it has sandy land on the beaches. The climate is mostly hot and humid. The city has gas and oil and ship docks and railroads that caused the city to grow bigger during the 1930s to the 1960s. The people I interviewed mostly saw you in their neighborhoods which were next to open fields or vacant lots. Did the pollution from gas and oil make you want to stay out in the country?

They told me that you are an interesting creature. I heard that you are a lizard not a toad. You are a reptile. You hatch from eggs and hibernate in the winter. You have spikes running down your side and you have a colorful gray and brown body. You really do have horns on your head and you look mean but you're really not. You have been found in Texas and in parts of New Mexico and Oklahoma. Do those roadrunners, hawks and snakes around here scare you? I heard about your tricky ways to get rid of them. You use camouflage, or you inflate yourself to look bigger. Sometimes you run a few steps then suddenly freeze. If that doesn't work you actually squirt bitter tasting blood from your eyes! That should take care of it.

I interviewed six people to find out their memories about you and here is what I found out. They all said you were fun to play with. They like to catch you, hold you and some of them even put a leash on you and raced you against each other. My Grandpa remembered that when he came to San Marcos in the 1950s to go to college he went to Aquarena Springs where they sold you to people out of a gift shop. They put a leash on you and pinned you to people's shirt. I know how you feel ... you probably were so humiliated to have that happen!

One person remembered a story about putting one of you in the cornerstone of a courthouse in Eastland County for fifty years and when they opened it up, there you were! How in the world did you do that?! They said the years that you were the most plentiful were the 1930s to 1950s. They noticed that there were getting to be more houses and cars, and gas powered lawn mowers were being used.

They noticed that there were more fire ants and there were a lot of poisons used until sometime in the 1970s. Most of them blamed your disappearance on fire ants, people and poisons like DDT.

I think you probably disappeared because you just got scared of all the big structures, machinery and noise and people. I think the air could have been polluted by all those things. Worst of all the poison probably killed your favorite food, the harvester ants, and that was 80 percent of your diet! Last of all, I think that maybe you didn't like to be mistreated and captured by people and you wanted to run free.

All I can say is "PLEASE COME BACK HORNED TOADS!" Kids my age have never gotten to meet you. We promise we will not put poison on you, and we will keep fire ants away from you. We will take good care of you. Please come back and make Texas "Texas" again!



Grades 3-5 – Team Essay

Horny Toad, Oh Horny Toad!

Horny toad, oh horny toad, where art thou horny toad? Actually, the horny toad is not a toad at all; it's a lizard. Horny toads are a part of the reptile family, also commonly called "horned lizards." These lizards are cold-blooded and live in hot environments, and to get warm they often "sun-bathe" on rocks or sand. When they are too hot, they relocate themselves to the shade. Horned lizards have wide flat bodies with horns, and an unforgettable feature is that they are said to "spit blood from their eyes." They can camouflage themselves by their brown dirt colored scales. If they bury themselves in the sand, they can have the appearance of a rock and fool their predators.

My Texas hometown, Wichita Falls, is located in Wichita County and North Texas. Our population consists of about 100,000 residents. Sheppard Air Force Base Training Center is located here. The last few years we have had mild winters and extreme summers. We chose this county for our essay.

For this essay we interviewed eight people, and the majority of the interviewees said horned toad lizards were common before 1978. They noted that before 1978 there was more open land, not much construction going on, a hotter climate, and more distinct seasons. Our interviewees noted a decline in horned toad lizards from 1978 to the present time. The community began to grow with more construction and population growth, there was less open land, more pesticide use with people killing fire ant beds, people catching the lizards and keeping them as pets and the weather changed.

These interviewees felt there was mass destruction of the horned toad lizards' habitat, and the construction and development of the area contributed to the lizards' decline. Population increases within communities may have been a contributing factor to their decline. The use of pesticides was also felt to be a reason for the lizards' becoming rare.

In conclusion, we feel that the Texas Horned Lizard began to decline in Wichita County during the years 1978 to our present day because of increased population growth and a decrease in open farm and ranch land. Our suggestions for bringing back the Texas Horned Toad Lizards is to educate Wichita County citizens about the plight of the horned toad lizards. We also feel that curtailing pollution would help the lizards. Parents as well as schools could educate children to stop mistreating the lizards, and we feel that the law making it illegal to pick up or collect Texas Horned Lizards without a permit should help bring back the lizards. So ... horny toad, oh horny toad, where art thou?



2003 HOMETOWN HORNED LIZARD ESSAY CONTEST WINNERS

Grades 6-8 – Individual Essay

The Mystery of the Disappeared Horned Toads

Horned Toads used to be part of growing up for people in Texas. Children dug them up, caught them in shoeboxes and then released them. Everyone got to enjoy seeing them flatten out and camouflage themselves by blending in with the surrounding dirt. Slowly and unfortunately over the last few decades Texas's most beloved reptile, the Horned Toad also known as the Horny Toad or Horn Frog, has disappeared. There are many questions on why this has happened and there are many theories for this heavyhearted loss. A few people believe that the Red non-domestic Fire Ants attacked Horned Toads. Another idea frequently heard is that chemicals killed the Horned Toad's source of food. Others blame the growth of large cities and different forms of urban sprawl. These are a few of a long list of theories proposed to explain the disappearance of Horned Toads.

Texas Horned Toads aren't toads at all they are really a type of lizard. This fascinating creature lives in dry desert regions stretching from the south central United States to Northern Mexico. In 1992 the Horned Toads became the Texas State reptile. There are three species of Horned Toads living in Texas. The Texas Horned Lizard, which is found statewide except in East Texas, is the most common. The other two Horned Toads, the Round-Tail and Mountain Short-Horn, live in the western portions of Texas. Horned Toads usually burrow underground for hibernation, insulation and mating. They start hibernating in September or October and they go until April or May. It is common for people to dig them up in loose sand or loamy soil. Harvester Ants are the main source of food for the Horned Toads. But other types of ants such as the imported Red Fire Ant prey on the Horned Toads. Between the fifties and seventies drastic declines in the population of Horned Toads started to grab people's attention, and one question comes to mind, What Happened!?!

The area that I am presently studying is a western suburb of Houston, TX located in Harris County. During the summer this land is cover with unbearable heat and humidity; however, in the few months of winter it is quite chilly. There are a lot of roads and neighborhoods scattered around the area. The closer you get to the main roads the more shops, cars, people and buildings you find. The area sprouted up with industry and people rushing in during the seventies and eighties because the oil boom struck people with the idea of easy money. The population grew rapidly and with it came tons of changes to the habitat of the Horned Toads. Now the only place that you might find a Horned Toad here is in the zoo.

I interviewed six different Texans over the age of forty that had mostly lived in this community between the years of 1955 to the present day. I heard a lot of similarities in the bulk of the information received from the interviews. The interviewees said that the Texas Horned Toads were most common during the summers in the middle of the sixties and the early years of the seventies. During this time they said that the climate was a lot dryer, there was much less human population; there was more native vegetation, and farms and grazing pastures were common. Most of the interviewees noticed the drop in Horned Toads during the 1980s, but some said that Horned Toads became rare in the 1970s, and others said that Horned Toads went away in the last five years. They had mentioned many items that were influencing the Horned Toad's habitat and the all around environment. Urban sprawl and industrial development were mentioned most often as factors leading to the change in environment. Many of the interviewees thought that the Horned Toads moved out

as the humans moved in. Another factor mentioned by the interviewees was climate. They had mentioned that the air is not nearly as dry as it had been back in the fifties and sixties. Overall they agreed that there are Horned Toads still living in the community today only in much lesser numbers. The fact that the Horned Toads were probably more common in West Texas was also mentioned. Over in the west the air is dryer and the population of humans has not grown, as much, so there is a good chance of Horned Toads living and burrowing in peace in the mountain and desert regions.

There are definitely many things that contributed to the sudden loss of Horned Toads throughout Texas and in the western suburb of Houston. Climate, chemicals, Red Fire Ants, and urban growth all worked together to destroy the Horned Toad population. My theory is that during the rush for oil people came to Texas not caring about Horned Toads or anything else besides their own chance of striking Texas Tea. Suddenly factories sprouted up and forced the helpless little reptiles to move out. In the rush for big money, people accidentally introduced Red Fire Ants that gruesomely ate the Horned Toads. These ants also aggravated humans by giving them small itchy bumps on their legs and feet, so people used poisons and chemicals to get rid of the Red Fire Ants. Instead of destroying the Red Fire Ant population it just killed the Harvester Ants. Now the Horned Toads are left with no food or home, and imported Red Fire Ants still attack them. The situation seems hopeless, but there is a solution. Further in the western part of Texas the Horned Toads still have a chance to thrive in peace. Keep people off of an area of land in West Texas. Be sure to introduce a large Harvester Ant population. Hold a careful lookout on the land to make sure that Red Fire Ants don't over populate, and if they do you should give them ant poison, but keep importing more Harvester Ants, so their numbers don't suffer. It may be necessary to breed some Horned Toads in captivity, so that they have large amounts to start a strong Horned Toad society. I hope that Texas gets its beloved State Reptile back after all of the mistakes made in the past.



Grades 6-8 – Team Essay

The Life and Times of The Great Texas Horned Lizard

A legend in Texas is disappearing. Disappearing, not instantly like with tricks of the eye, but steadily year after year. This legend could once be seen all over the state, but now has taken residence only in the more remote parts of Texas. This legend has had stories told





2003 HOMETOWN HORNED LIZARD ESSAY CONTEST WINNERS

about them as ancient as the Comanche and Lipan Apache. Unfortunately, their existence will be found only in these stories, if Texans are not aware of the vanishing of this remarkable legend. This legend is the Texas Horned Lizard.

The Texas Horned Lizard, sometimes called the Horny Toad, is not a toad at all. In fact, they are not a member of the amphibian family. Horned Lizards are reptiles. They are very unique in the way that they look. They lack the typical tubular body type of most lizards. They have wide flat bodies that aid them with a camouflage defense. Each side of the lizard is skirted with small spines. A white stripe draws a line of symmetry down its back. Its head is crowned with horns.

The Texas Horned Lizard prefers a very arid to semi-arid climate. An area that is loosely packed soil. "Horny Toads" like to burrow themselves in sandy soil to get out of the extreme heat and to lay their eggs. These factors make Milam County a prime location for the Horned Lizard to thrive.

Milam County has many attractions that a Horned Lizard might find appealing. The temperature is warm most of the year. The average amount of rainfall is 34 inches per year. The soil is a unique combination of several very different types. One third of the county, the northern strip, is rich Black land. The Black lands are famous for growing hearty crops such as cotton and sorghum. The other two thirds of the county has a mix of Post Oak or Blackjack sand. This soil type is excellent for crops such as peanuts and cantaloupe. The sandy soil types are also the type of soil that the Horned Lizard looks for. It's loose. It drains quickly. It is also cool to the touch in the hot Texas afternoons.

The city of Rockdale is built upon just such a soil. Rockdale is located toward the Southern tip of Milam County, and is about 500 feet above sea level. The population is approximately 5,600 as of the 2000 Census. The city is growing past its urban boundaries and stretching out into once undisturbed prairie lands. The ALCOA lignite mining plant employees about 1,400 people. There are several farms and ranches nearby which employ only about 20% of the work force in Milam County. The urbanization of this once primarily rural county has caused environmental changes to occur in the area. Changes that have even affected the legendary Texas Horned Toad.

To gain an understanding of what has happened to the Horned Lizard population in Milam County, several interviews of local residents were conducted. The results of these interviews are as follows: Out of the ten interviews that were conducted, the amount of years the interviewees lived in the Rockdale/Milam County area were a wide range varying between eleven and thirty-seven years. Most said

that "Horny Toads" were common between 1960 and 1980. A quote from Marlis Davis described the countryside as "rural and sparsely populated" when these animals were most common; another quote from Freddie Montelongo stated that the countryside was wooded and open grassland before the Fire Ants came. Most of our interviews stated that "Horny Toads" started to decline when Rockdale became more populated, and more houses were developed. Anne Stewart stated that "Horny Toads" started to become rare in the late 70s and early 80s. Interviewees have stated the reasons why the lizards have diminished. Some think that the reason they have diminished is, fire ant population increases, habitat loss, starvation, small children taking them as pets. What many young children don't realize is that when they take a horned lizard as a pet, the lizards die from starvation, not intentionally, but it happens just the same.

The conclusions that have been reached are that the Texas Horned Lizard began to leave the county after the 1970s. As the towns grew, the Horned Lizard's habitat shrank. With more land being used for farming, many insecticides have wiped out Red Harvester Ant populations. These ants are the Horned Lizard's main source of food. The introduction of exotic ants, such as Fire Ants, has also caused a decline in the Harvester Ant population.

Due to the shrinking habitat and the decrease in the main food source the Texas Horned Lizard had to move on to more hospitable surroundings. The following are some suggestions as to how; we Texans can keep our Horny Toad populations alive and well:

We should encourage owners of natural pastureland to keep it that way and not till the soil. Horny Toads lay their eggs within six inches of soil and the eggs are very weak and will not survive the plow. We should be careful where we place pesticides to kill the Fire Ants. The pesticides will kill the Harvester Ants as well. The best thing we can do for Horny Toads is to just leave them alone. Horny Toads coexist with humans very well as long as we do not infringe upon their habitat.



Grades 9-12 – Team Essay

Where Did It Go?

I. We have searched through books, Internet sites, newspaper articles and local minds. We quickly discovered that our town was crawling with horned lizards from the 1950s to the 1980s.

II. One of the most interesting things about the Texas horned lizard is its appearance. It is most commonly the Horny Toad; this species is the best-known Horned Lizard in the United States. Although fierce looking it is timid and largely depends on camouflage to avoid detection. If captured, it may squirt blood from its eyes. It does these using special muscles; they restrict blood flow from the head until the mounting pressure burst tiny blood vessels in and around the eyes, resulting in a spurt of blood that can travel three feet or more. They are 1 to 2-1/2 inches in length, their head is crowned with spines, and the center two spines are the largest. Two rows of pointed spines fringe each side of its belly. Dark lines radiate their eyes. The female Horned Lizards lay 13 to 45 eggs, which they bury. The eggs will hatch in 5 to 9 weeks. Their diet consist of eating 60 to 200 Native Harvest ants per day. They live in dry, sparsely negotiated flat land, with sandy or loamy soil.





2003 HOMETOWN HORNED LIZARD ESSAY CONTEST WINNERS

III. We studied the Horned Lizard population in Calvert, Texas. It is a farming and ranching community, and it has been since the mid 1800s. Calvert has a current population of 1,500. The population has not changed a great deal over the last 50 years.

IV. We started narrowing down the possibilities to why they disappeared. We decided we would look into population, environment, pesticides, diseases and imported fire ants.

V. First, we looked into the population. We quickly came to the conclusion that Calvert's population did not effect the Horned Lizard, because there was very little growth in the number of people during the time they started seeing a decline in the Horned Lizard population. Calvert's population has not increased very much over the last fifty years.

We then looked into the environment from 1970 to 1990, the rainfall average was about the same, the climate is the same, and the land is unchanged.

Next we looked into pesticides. We asked local rancher Bobby North, who has his applications license, if pesticides had a great deal to do with the decline in the Horned Lizard population. His answer was, "That the chemical that are used now are less harsh on the environment, and many advances have been made to protect the native wildlife." He believes that, "If pesticides caused the decline in their population, that we should be seeing an increase in their population, Bobby North has a love for the wildlife, and he has done a great deal of research on the effects that the pesticides he uses has on wildlife." Our next field of research was common diseases that could infect them. We found our information in The Merck Veterinary Manual. We found two diseases that were of interest. The first was Nutritional Osteodystrophy. It is an extremely poor skeletal calcification, green stick features and old unhealed fracture will be visible. Often these lizards will swallow pebbles and gravel, presumably in an attempt to obtain calcium, on x-ray films these pebbles will be apparent in the intestinal track. The second one is Ectoparasites. It alone effects many lizards. Many species of mites infect lizards. Mites cause a degree of anemia, and skin irritation, particularly around the eyes and ears. Also they may transmit blood borne diseases as well as bacteria, and may initiate sub-cut abscesses. This information was helpful, but we didn't feel that these two diseases were responsible for the Horned Lizard disappearance.

Last, we studied Imported Fire ants from South Africa. All of our sources pointed directly at these small insects that caused a great deal of damage. In Calvert they are held responsible for the disappearance of the Horned Lizard and the Bob White Quail. All of our interviewers started that when Horned lizard started disappearing Fire Ants were appearing. After studying numerous books we came up with information to how the Fire Ants effect the Horned Lizard. As it turns out they had a huge impact on the Horned Lizard population. First, they attacked their food source. Fire Ants raid the Harvest ant mounds and steal their larva and pupae. They also eat Horned Lizard eggs. We also looked into the Horned Lizard population in Utah. We asked local Gena Cain for information regarding this field. She lived in Utah until 1996, when she moved to Calvert, TX. When she moved here she couldn't believe that

20 years ago Calvert was crawling with Horned lizards, since she has not seen one in the seven years she has lived here. They were never as numerous in Utah as they are were in Texas during the 1950-1980. But on any given day during the summer you could go turnover a few rocks and find one. She told us there was not a decrease in their population. We asked her what she thought had caused the Texas Horned Lizard to disappear, that had not effected the Utah Horned Lizard. Her reply was that the only difference she could see was the imported Fire Ants had not invaded Utah. We did not find any-one, or anything that had a dispute against the fire ant theory.

VI. Through Our research we have come to the conclusion that the imported fire ants from South Africa are responsible for the disappearance of our beloved Horned Lizard.


VII. After finding the problem we started searching for a solution. This was the difficult part. We first had to find what we needed to do, and then how we would do it. First we have to rid Texas of Fire Ants, and second we need to increase the population of the Harvest ants. Each of these is going to be extremely difficult. Our solution to the first one is, to study the Imported Fire Ants very closely. We need to study its Immune system, it might be possible that the Native Harvest Ant has an immunity that the Imported Fire Ant doesn't. If one is found, by releasing a certain chemical it would affect the fire ant, and it would not affect the Harvest Ant. The solution to the second, is to find Harvest Ants that have not been exposed to pesticides, and start breeding in chambers. Once you have a substantial amount, locate a few Horned Lizards and monition them in a controlled environment. We spoke with Herpetologist at Waco and Fort Worth zoos. Both of them said that they couldn't receive enough Harvest ants to keep Horned Lizards alive. That is why the first step would be to breed a large amount of Harvest ants before locating Horned Lizards.

VIII. We really enjoyed the project, and we hope that one day we will be able to see a Horned Lizard. Studying them the last few weeks has made us fall in love with them! We hope that this information was of some help to you.





TEXAS Horned Lizard WATCH



A little good news

By Lee Ann Linam, TNT Project Biologist

New data came into Texas Horned Lizard Watch in 2003 from all over Texas – from El Paso County in the west to Bowie County in the east and from Carson County in the north to Hidalgo County in the south. While the bad news is we didn't receive data sheets from many participants, the good news is that several reports from different portions of the state were very encouraging:

The first reports were received from El Paso County, where volunteer **Xeorxe Cadena** actually spotted eight horned lizards on one transect!

A horned lizard was reported from Texarkana via E-mail. Was it an escaped (illegal) pet, or is there really a population in far northeast Texas? Only our horned lizard watchers can tell us!

Several E-mail sightings of Texas Horned Lizards came in from Bastrop County. Combined with reports in recent years from Lee, Robertson, and Milam counties (where one volunteer even reports an increase in THL) – things are looking good in the sands of the Post Oak Savannah!

Also in Central Texas, **Jake Norman**, a mail carrier, reported his first horned lizard sighting in more than 10 years in Burnet County.

Some other highlights of the 2003 Texas Horned Lizard Watch:

Data has now been received from 151 of Texas' 254 counties. Texas Horned Lizards have been reported from 132 of those counties (see Figure 1).

Two THLW volunteers, **Alice Liles** from Bailey County and **Norman Powell** from Hidalgo County, submitted data for the fifth year in 2003. Thanks to these dedicated horned lizard watchers – their data is valuable!

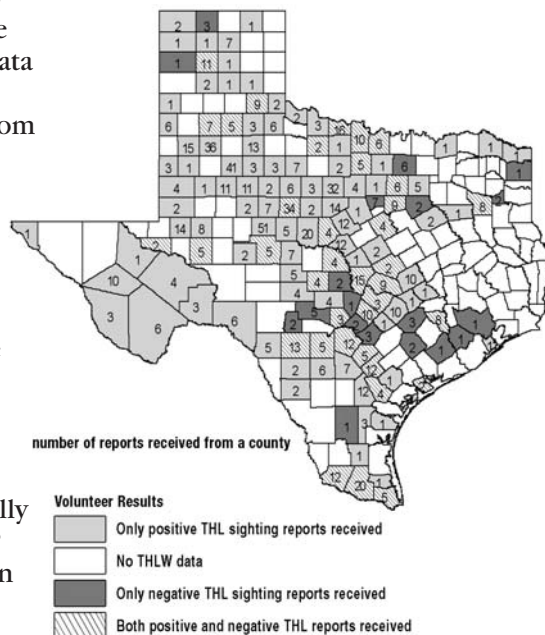
Congratulations of a different sort go to Jo Ann Frisco. She simply wanted to report a thrill at reliving a moment of her childhood when she found a

horny toad this spring in Alice. Sometimes the lizards *are* the reward in Texas Horned Lizard Watch!

Top county participation award for 2003 goes to Stephens County, where with seven volunteers reporting sightings of more than 43 horned lizards from two transects, two sites and numerous spotter records. Students at Texas State Technical College Breckenridge under **Mike McKay's** leadership again adopted Texas Horned Lizard Watch as a class project (see their project notes below), and class alumni **Judy Creager** continued to collect data.

THLW Teaches Students; Students Teach Us: During 2003 Malcom Bufkin, Glen Andrews, and Hector Quezada in the Environmental Biology class at Texas State Technical College West Texas in Breckenridge adopted Texas Horned Lizard Watch as a class project. The students conducted a transect, collected sightings from around the community, and prepared a detailed report about the findings and a Powerpoint presentation about Texas Horned Lizard Watch. Not only did the watch provide a practical learning experience for the students, the students gained some valuable insights regarding horned lizards in Stephens County. In their words, "Even though our participants have only seen a limited number, in talking to different persons in our community of Breckenridge, Texas, farmers have told us they see them constantly when plowing, some have seen them crossing the road, and still others in the field past their backyard. We have to admit that we have not seen as many Horned Lizards as we expected, but we plan to follow up with the Texas Horned Lizard Watch in the future. The Texas Horned Lizard is holding steady as a species and hopefully will become more plentiful in the future. We feel we have made persons aware of the Texas Horned Lizard so as to acknowledge them as an intricate part of our wild surroundings."

Figure 1. Texas Horned Lizard Prevalence – based on 1997-2003 Texas Horned Lizard Watch results





Texas Amphibian Watch

Marks Fifth Year



By Lee Ann Linam,
TNT Project Biologist

The year 2003 marked the fifth year that volunteers have collected data on amphibians in Texas, and their efforts are beginning to pay off. In 2003, 14 Texas Amphibian Watch volunteers submitted data. TAW volunteer data combined with findings from FrogWatch USA and other monitoring efforts in Texas provides the following highlights:

- Data has been received from 56 counties; the most reports have been received from Harris County, but the most frog and toad species have been reported from Trinity County (13), followed by Fort Bend County (12) and Houston County (12)
- Data has been received on 38 frog and toad species; Cricket Frogs have been most often reported (37 counties and more than 51 locations), followed by Bullfrogs (27 counties and more than 43 locations) and Gulf Coast Toads (26 counties and more than 36 locations)
- 24 TAW frog ponds have been adopted, while data from 28 FrogWatch ponds and eight U.S. Forest Service research ponds have also been compiled



- Six transects have been run

Notable accomplishments:

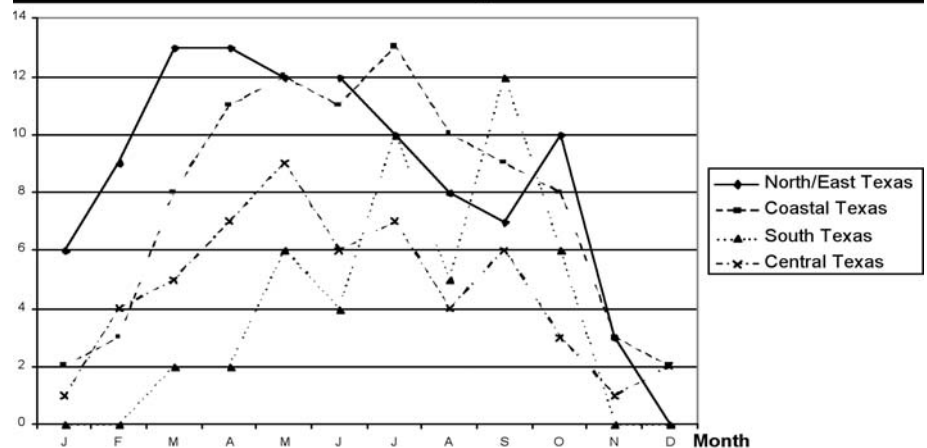
- Findings have helped to refine our understanding of peak calling periods in Texas. The chart below shows months when the greatest numbers of species were calling in various regions of the state.
- A Texas Amphibian Watch workshop documented the first record of the Rio Grande Chirping Frog in Brazos Bend State Park. Since then volunteer data has shown a steady increase of this South Texas native in the park and in coastal Texas in general.
- Reports indicate that the Cricket Frog is secure in Texas, despite declines elsewhere in its range
- Other results are encouraging, such as the frequency that Strecker's Chorus Frogs are reported in Central Texas. This species has been thought by researchers to be declining in some parts of its range.
- Wonderful educational applications have emerged – Houston ISD Outdoor Education Center uses TAW to allow 5th graders to explore their natural surroundings at night; St. Philip's Episcopal School in Uvalde has incorporated malformation monitoring into monitoring the health of the Nueces River; and Waco ISD Gifted and Talented program gets children into the field for some "hands-on" science.



Special thanks go out to two volunteers who have provided data for all five years. **Jaime Gonzalez** attended the first Texas Amphibian Watch training and since then has collected data at the Houston Arboretum and Nature Center while training TAW volunteers. Jaime also coordinates the Texas Coastal region for the North American Amphibian Monitoring Program (Texas Frog and Toad Survey). **David Heinicke**, naturalist at Brazos Bend State Park, has participated in FrogWatch USA since its inception, gathering valuable trend information at four ponds on the park. David has also trained a group of volunteers to assist in monitoring and hosted a Texas Amphibian Watch training at the park.

Finally, our five-year analysis has simply demonstrated to us how very valuable it is for volunteers around the state to provide observations about amphibians. Please consider adopting a frog pond or a transect. It's important information—both for now and for the future!

Number of species calling per month, based on
1999-2003 Texas Amphibian Watch data





Future Science Teachers Adopt-a-Frog Pond



By Marsha Reimer, Texas Nature Tracker Coordinator

Each semester since September 2002, students in Dr. Sandra West's Nature Study and Science Processes and Research classes at Texas State University at San Marcos participate in the Texas Amphibian Watch project and take on the task of surveying the frogs and toads at the Aquarena

Center wetland from the wildlife-viewing boardwalk. Each semester Marsha Reimer, Texas Nature Tracker Biologist, visits their classroom and provides a presentation on Texas Amphibian Watch as well as other opportunities available from Texas Nature Trackers for these future science teachers. They then go out to the boardwalk and learn how to conduct the nocturnal call counts. Students have observed bullfrogs and gulf coast toads; and heard green treefrogs, cricket frogs and bullfrogs.

Texas Amphibian Watch is used to teach not only about amphibians, but to also teach about descriptive research design or descriptive studies as required in the K-5 Texas Essential

Knowledge and Skills.

Descriptive research design is implied in the 6-12 TEKS when they call for using various scientific methods. The use of various research designs, not just experimental design, is part of the National Science Standards that is trying to dispel the myth of The Scientific Method. So, Texas Amphibian Watch is used to teach about how real science is conducted, using descriptive research, and the use of long term data sets to identify patterns and make predictions. Other Texas Nature Tracker projects such as Texas Mussel Watch, Texas Horned Lizard Watch, Texas Monarch Watch and Texas Hummingbird Roundup can also be used to teach about descriptive research design.

A wide variety of materials and opportunities are available from Texas Nature Trackers. For more information please go to our web site: www.tpwd.state.tx.us/trackers



Science Camp Students See Connection Between Freshwater Mussels and Their Environment

By Ronald Rushing, Science Camp Coordinator, Navasota ISD

June of 2003 marked the third year the Navasota Jr. High Environmental Studies Science Camp kayaked the Navasota River and the second year data was collected for Texas Mussel

Watch. During the first year the camp participants paddled down the river, it was pretty obvious the Navasota had a very rich population of freshwater mussels. It was common for our students to find threeridge mussels (*Amblema plicata*) bigger than their hands, which usually sparked a "find the biggest mussel" contest. Collecting data for Texas Parks and Wildlife Department's Texas Mussel Watch has been an excellent way for our Navasota students to see the direct connection between an organism and its environment. Our students are pretty pumped to visit the



river again this summer and count shells, and I too look forward to another river trip and another mussel count. And this time, I'm going to find the biggest shell!





2002-2003 Texas Mussel Watch Notes

By Marsha Reimer, TNT Coordinator

It takes a special person to be a Texas Mussel Watch (TMW) volunteer. A TMW volunteer is someone who enjoys wading along the banks and shallow regions of Texas waterways searching for those often inconspicuous bivalves. Many people don't even know that these important creatures exist in our ponds, lakes and rivers. Fifty-one or so native unionid freshwater mussels live in Texas alone and many of these species are imperiled. Why are they important? Not only are these bivalves an important part of the food chain but they also play an important role as indicators of a healthy aquatic environment.



Texas Mussel Watch – Colorado River

Twelve TMW volunteers, one team of students from Ronald Rushing's Navasota Junior High Environmental Studies Science Camp, one team of students from Mike McKay's Texas State Technical College Environmental Biology Class, one team of Houston ISD students from Allen Bartell's Outdoor Education Center and participants in four TMW workshops by Texas Parks and Wildlife Department collected data for TMW between Sept. 1, 2002 and Aug. 31, 2003.

TMW volunteers collected data during the 2002-2003 monitoring year from fourteen Texas counties (see

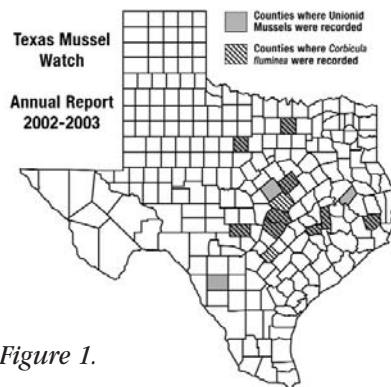


Figure 1.

Figure 1) and observed 67 live unionid freshwater mussels, >132 shells and >176 valves. A total of 16 unionid freshwater mussel species were found within six major Texas drainage basins (Brazos, Colorado, Neches, Nueces, San Marcos and Trinity rivers). The largest number were from the Brazos River drainage basin with 12 species: threeridge, Tampico pearlymussel, yellow sandshell, fragile papershell, washboard, pink papershell, giant floater, southern mapleleaf, smooth pimpleback, pistolgrip, Texas fawnsfoot and pond-horn species.

A rare immature, recently dead sandbank pocketbook and a relatively-recently dead western pimpleback were recorded by The Nature Conservancy of Texas Pineywoods Conservation Initiative Preserve Stewardship Technician, Debbie Flowers, in Harden County in the Neches River drainage basin. That section of the Neches River is also one of the listed sanctuaries for Texas freshwater mussels. Freshwater mussels may not be harvested from that section of the Neches River. Other freshwater mussel sanctuaries can be found in the Sabine River, Concho River, Red River and Elm Creek. A live specimen of a smooth pimple-



Texas Mussel Watch – Brazos River

back was recorded by Ronald Rushing and his Navasota Junior High Environmental Studies Science Camp students in Grimes County in the Brazos River drainage basin. Seven live, rare specimens of Texas fawnsfoot were recorded during the Texas Master Naturalist Annual Meeting's Texas Mussel Watch workshop by participants in Washington County in the Brazos River basin.

Asian clams were recorded as present in 11 out of 14 counties (see figure 1). Again there is good news as far as the zebra mussel is concerned. The zebra mussel was not recorded by any of our volunteers in Texas. Let's hope it stays that way, but keep watching!

We received data from the following Texas Mussel Watch volunteers:

- Allen Bartell
- Mary Ann Everett
- David Jayroe
- Sky Lewey
- Jason Lott
- Karen Marks
- Mike McKay
- Chris Pasch
- Ronald Rushing
- Betty Watkins
- Gloria Wilcox
- Kevin Young

Thank you for all of your hard work and we look forward to seeing your 2003-2004 data. Texas Mussel Watch volunteers are truly special people!



Environmental Science Program Observes Freshwater Mussels

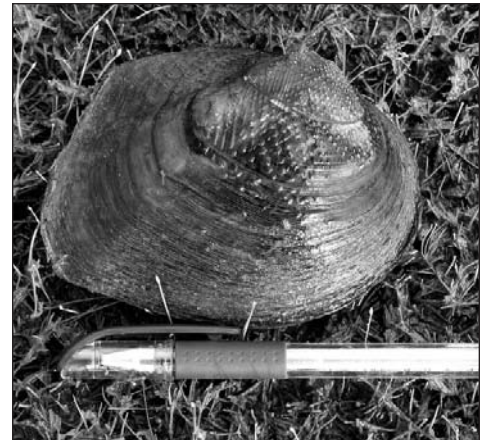
By Judy Hernandez, Araseli Sanchez and Shannon Rankin-Taylor, Texas State Technical College, Breckenridge, Texas

Students from the Texas State Technical College (TSTC) of Breckenridge in the Environmental Science Program participated in the Texas Mussel Watch Program with the Texas Parks and Wildlife Department (TPWD) on June 18, 2003.

After the students in Mike McKay's Environmental Biology class learned

from a PowerPoint presentation about the importance and history of mussels, they participated in a student driven lab. This lab was presented by Judy Hernandez, Araseli Sanchez and Shannon (Rankin) Taylor, at the Sandy Creek Marina (located at Hubbard Creek Lake) west of Breckenridge on highway 180 on the north side of the one mile bridge. Students collected information about the conditions of mussels in Hubbard Creek Lake.

Students participated in a random and shoreline search in addition to conducting a 20-foot transect. Students collected data from many



Southern Mapleleaf

live to a few very-long dead southern mapleleaves, one relatively-recently dead fragile papershell, and a few broken long dead pondhorns. Students noted that Asian clams were also present.

This data reported to TPWD is important for understanding the condition of the freshwater mussel's life in Texas. Even though Hubbard Creek Lake has been under drought conditions for seven years and the lake level has been 15 feet below normal, signs of a healthy population and reproduction are present.



Houston Students Enjoy Searching For Freshwater Mussels

By Allen Bartell

I have been teaching for Houston ISD's Outdoor Education Center for about 15 years. We have about 8,000 fifth-graders attend our week-long program every year. Our weekly schedule is very tight, but we schedule one 45-minute block every week devoted entirely to having our students participate in a conservation project. We have always struggled to find meaningful, hands-on conservation projects that can be conducted in 45-minute blocks.

Mussel watch is perfect for a variety of reasons. First, Lake Livingston actually provides the drinking water for most of the students in Houston so the concept of mussels as an indicator species is very meaningful. Second, we conduct our shallow shoreline searches with virtually no cost to the program, not so with most of our other conservation projects. We use old tennis shoes donated by local thrift stores and a couple of old five-gallon buckets, nothing else required. Finally, mussel watch is fun, as long as the weather is warm. Kids LOVE wading in the water looking for mussels and let's not forget all the other interesting things they discover in the process. The only problem we have is that we don't have enough shoreline for 8,000 students to search so only a fraction of our students actually participate each year. But those who do participate truly enjoy the experience and feel they are contributing to an important cause.

REMINDER

Volunteers,
don't forget
to send in
your data!



Texas Hummingbird Roundup

A Unique Opportunity to Help Study These Birds

By Mark Klym



Hummingbirds. The thought of these feisty spots of light zipping about our gardens brings a smile to every face.

These little gems are so fascinating that naturalists through the ages have been left struggling for words to describe their sheer beauty.

Texas has a remarkable place in the natural history of these ornithological wonders - we lead the nation in hummingbird diversity. With eighteen species of hummingbirds recorded from the Lone Star State, there is no region of this state where multiple species are not possible in a single year. And Texans can enjoy these birds all year round, with more counties being

added to the list where over wintering birds have been observed.

Texans also lead the nation with the only organized backyard survey of hummingbirds. The Texas Hummingbird Roundup, one of the Texas Nature Trackers projects, is in its tenth year. Through the Roundup, we have learned several things about hummingbirds in the state - the citizen science aspect makes it possible to retrieve data from remote regions of the state without a biologist being on sight. The Roundup has helped to learn about the birds, their habitat and ecology and many of their behaviors.

Anyone can participate in the Hummingbird Roundup - you do not have to be an expert birder or have hundreds of hummingbirds every day. To find out more about Texas hummingbirds and the Texas Hummingbird Roundup visit www.tpwd.state.tx.us/hummingbirds

Upcoming Texas Nature Tracker Events

JUNE 18-19, 2004 - The Center for Environmental Research; *Texas Amphibian Watch and Texas Mussel Watch Training Workshops*; Sponsored by the Capital Area Texas Master Naturalists. 2210 South F.M. 973, Austin, Texas 78725. Advanced training for Texas Master Naturalists. SBEC credit available for teachers. Workshop begins at 5 p.m. on June 18 and continues into the evening on June 19. Registration fee is \$10 per workshop. Pre-registration is required. For registration or more information contact: Roger Myers at rw.myers@sbcglobal.net or Melissa Macdougall at (512) 445-4406.

Visit the Texas Parks and Wildlife Department Web site for future workshops:

www.tpwd.state.tx.us/nature/education/tracker

Go to the "Texas Nature Tracker Links:" on the upper left side and click on "• Workshop Schedule"



Summary of the Fall 2003 Monarch Migration

By Bill Calvert

According to Chip Taylor, who heads the Monarch Watch at the University of Kansas, the size of the monarch population in any given year is dependent upon the number of eggs laid by females in the northern breeding range (> 39 degrees N latitude) in the last two weeks of July and the first week of August and the conditions encountered by those larvae. These are the monarchs that mature to become the migrants that we see in Texas beginning in late September.

Mid-summer reports to the Monarch Watch listserve "Dplex-L" indicated that moderately good numbers of monarchs were present in nearly all of the important areas of the northern breeding range. A drought that had been apparent in these areas had diminished and mid-summer conditions appeared to be favorable for the buildup of the monarch population; consequently the prospect for a sizable fall migration through Texas was good.

The Pre-migration Migration 2003

Studies in Kansas and Texas including monitoring transects sponsored by the Texas Parks and Wildlife Department revealed that in addition to the main migration which begins in late September and is often dramatic and showy, monarchs arrived in Texas as early as the first weeks of August in much lower numbers.

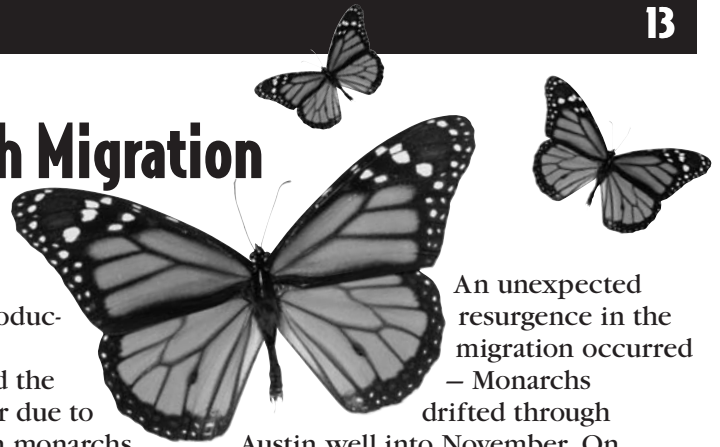
Unlike the main mass of migrants that are in reproductive diapause, these monarchs are breeding and lay eggs on any milkweeds that they can find. Because of the practice of cultivating the showy red and yellow flowered Mexican milkweed (*Asclepias curassavica*) in Texas gardens, these fall caterpillars have become noticeable. Observers in Austin and Tyler indicate that as many as three generations of monarchs have been raised on Mexican milkweeds during this and previous

falls. Whether this increase is due to reproduction by the few local monarchs that survived the summer in the south or due to a flow of pre-migration monarchs from the north is not yet clear. The fate of these monarchs raised outside the main breeding grounds (> 39 degrees N) is unknown, but they are presumed to join the main migrants in their trek to Central Mexico.

The Main Migration 2003

The main mass of migrants began to arrive in Texas around Sept. 28. As usual the first to report them were observers in the Abilene area. Thousands were seen clustering 19 miles north of Abilene and thousands were seen on the Abilene Christian University campus. A day later reports of migrants started from throughout the Dallas/Fort Worth area and continued steadily for the next three weeks. Several long time monarch observers said this was one of the best migrations through the Metroplex in memory. Thousands were reported flying through Dallas on Oct. 2 – by the 21st only 10 per hour were observed. On Oct. 1 an observer driving from San Angelo to Abilene reported up to 15 per minute along the route. It was the beginning of October and monarchs were on the move in Texas!

Another transect from Abilene to Del Rio showed monarchs to be traveling in that area on Oct. 6 – by the 13th they had arrived in mass near Del Rio. By Oct. 16 thousands were seen in the Quemado Valley area near Eagle Pass. And on Oct. 11-13 thousands were seen at the Balcones Canyonlands NWR near Austin. On Oct. 14, 32 per minute were passing over I-10 near Langtry.



An unexpected resurgence in the migration occurred – Monarchs drifted through Austin well into November. On Nov. 5 they passed through northeastern Milam County at a rate of nine per minute and nearly two weeks later on Nov. 17, they flew over a small lake in North Austin at a rate of nearly one per minute. On the coast at the Lavaca Bay Causeway, 200 were counted as late as Nov. 27. During past years we have seen very little movement after October except in coastal areas.

The migration along the coast is seldom as dramatic as the migration through the central flyway and monarch migration there is confused with the presence of breeding monarchs that reside there, perhaps for the entire year. But on Oct. 16 somewhere near 100 per hour were observed flying along the well-monitored Lavaca Bay Causeway near Port Lavaca. Another large passage of monarch occurred on Oct. 19 in this same well-monitored area. On Oct. 18 a hundred were seen near Port Arthur.

The migration through East Texas (east of the Balcones Fault) is still a great mystery. Reports from this area are sparse and never as dramatic as in the central flyway. However, south of Sam Rayburn Lake, a hundred monarchs were spotted on Oct. 12. We need your help in determining what is happening in East Texas.

The observations reported above were only the highlights of the fall 2003 migration. Many of you called in or e-mailed us to give us this information and many others were not mentioned. We are greatly indebted to you for your participation.





Project Prairie Birds – A Citizen Science Project

By Robert Reeves, Project Prairie Birds volunteer

Project Prairie Birds is a five-year, all volunteer effort to map the distribution of over-wintering avian grassland species along the upper Texas coast and in East and Central Texas, and to identify their specific habitat requirements. Prior to Project Prairie Birds, most of the research on these species had been conducted in their breeding ranges, usually hundreds of miles or more from their southern winter ranges. Information about their winter habitat requirements is incomplete. However, those responsible for conservation of grassland birds knew one fact – the native prairies and other grasslands required by these species are disappearing quickly, giving way to highways, subdivisions and shopping centers. Time is growing short to save the remaining suitable areas, but strategies for conserving them must be based on science, not speculation. Thus, the objectives of Project Prairie Birds are to: (1) determine the abundance of wintering grassland species, (2) identify their winter habitat preferences, and (3) utilize the data collected to develop land management guidelines



Henslow's Sparrow

and recommendations for these little-known species.

In November 2000, staff of the Gulf Coast Bird Observatory and the Texas Parks and Wildlife Department, two of the Project Prairie Birds partners, conducted orientation and training for volunteers in Austin, Texas. From this training, a team was formed to conduct surveys at the City of Austin Indiangrass Nature Preserve in far east Austin. The preserve is approximately 200 acres, comprised of tallgrass prairie and woodland (see a brief description of the property at www.ci.austin.tx.us/cepreserves/indian.htm). The survey sites are composed predominantly of native and non-native grasses, with a much lower percentage of forbs and woody species. Five 100-meter long transects were established in the survey area. A team comprised of an observer and two beaters walked the entire length of each transect; as the beaters slapped the ground with long cane poles, the observer recorded the number and species of birds flushed. The team conducted bird surveys once each month during December, January, and February of 2000-2001, 2001-2002, and 2002-2003. During each season, the team conducted a survey in mid-March to determine the density and types of vegetation and other physical features present on each transect.

Over 60 percent of the identified birds were Le Conte's Sparrow, a very small (4-5 inches long) sparrow, beautifully marked in ochre, brown and white, with purplish streaks on the nape. This species breeds in marshy grasslands, primarily in the Canadian Prairie Provinces and the northern Great Plains of the U.S. It winters in damp weedy fields, primarily of mid to tall grasses, arriving in Central Texas in late October and departing



Le Conte's Sparrow

by late April. Identifying Le Conte's Sparrows in the tall grass is difficult, since this species tends to wait until the last moment to flush, flies a short distance and quickly drops back into the grass. To complicate the identification process, the bird often runs as soon as it hits the ground, making it almost impossible to locate for a confirming view. After some practice, the Indiangrass team learned to recognize the bird's characteristic flight behavior and realized that virtually every small sparrow flushed from the tall grass was Le Conte's. Not surprisingly, most of the birds counted during the surveys (including the unidentified sparrows and Field and Vesper Sparrows) were found on the transects comprised primarily of Little Bluestem and Indiangrass, two tall-grass prairie indicator species. The remainder of the survey area was dominated by the exotic species King Ranch Bluestem, and held far fewer birds.

Volunteers are continuing Project Prairie Birds at Indiangrass Preserve. Their work will help ensure healthy populations of Le Conte's Sparrow and other bird species that depend on grasslands for their survival.

For more information on Project Prairie Birds, visit the Gulf Coast Bird Observatory Web site at www.gcbo.org or the Texas Parks and Wildlife Department Web site at www.tpwd.state.tx.us/nature/birding/prairie_birds



Adopt-a-Species Volunteers Guard Pieces of Texas' Biodiversity

By Lee Ann Linam, TNT Project Biologist

Volunteers continue to help us monitor sites of selected rare species. Here are some of the highlights of the 2003 Adopt-a-Species monitoring:

HOUSTON DAISY (*Rayjacksonia aurea*) and **TEXAS WINDMILL GRASS** (*Chloris texensis*) – 2003 was a year of mixed results for these two native prairie species found in the Houston area. Long-term monitoring by **Janice Hartgrove-Freile** at North Harris Community College shows that the Houston daisy population there is holding steady, perhaps due in part to the maintenance crew at the college working with Hargrove-Freile to develop a mowing plan. **Gary Neal, Jennifer Leighton, Jessica Brenek and Allison Satterwhite** assisted in monitoring in 2003.

At another site, hardy volunteers **April Proudfit** and **Bob Harris** helped to survey prairie openings within the woody thickets of Addicks Reservoir. Monitors determined that Houston daisy had declined at some sites. Although some extensive populations are found in the site, there is concern that this species of barren soils is being overgrown by other grasses in the absence of fire. Harris and Lee Ann Linam also were unable to find Houston daisy and Texas wind-

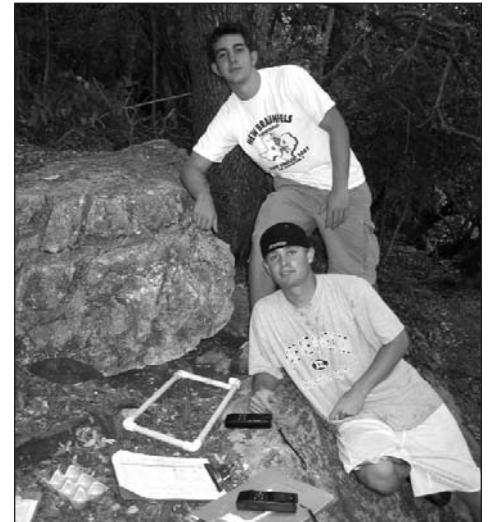


mill grass at a former Houston Community College site that has been overgrown by very tall carpetgrass.

BIG RED SAGE (*Salvia penstemonoides*) – 2003 was another discouraging year for the Boerne population of the big red sage. The **Spurgat family** and teacher **Mary Kennedy**, who have monitored this population along Frederick Creek, have documented an ongoing decline in total plants numbers, as well as a decline in the number of plants flowering. Monitors have also noted an increase in woody vegetation and in rank grass cover and have approached the Texas Department of Transportation about changing management strategies at the site.

BRACTED TWISTFLOWER (*Streptanthus bracteatus*) – Texas Nature Tracker volunteers in Travis, Bexar and Medina were joined last year by corps of new volunteers searching for populations in new locations. Most sites seemed to indicate a mediocre year for this beautiful annual, with moderate rainfall producing plants at most sites, but with numbers at many sites much lower than 10 years ago. The 2003 volunteers included **Carolyn Meredith, Paul Cox, Carl Hagenbush and Mary Ruth Holder**.

SPRING-DWELLING SALAMANDERS (*Eurycea* spp.) – It takes a skilled eye to find the quick and cryptic *Eurycea* salamanders that are found in many Hill Country springs, but **Mary Beth Bauer's** Advanced Biology class at Ingram High School has what it takes. Their classroom continued to keep their eyes on the salamander population at Stockman's Spring in Kerr County, where populations seemed to hold steady in 2003. Intermittent streams are another challenge, and **John Wilcox** and Lee



Ann Linam were unable to locate Fernbank Spring salamanders at the Travis Audubon Sanctuary in 2003.

PALMETTO PILL SNAIL (*Euchemotrema cheatumi*) – Experience paid off, as a small but skilled crew that included Caldwell County 4-H Club members under the direction of **Melba Sexton** and Austin Community College staff **Bernice Speer, Elizabeth Maxim and Sarah Strong**, detected an increase in palmetto pill snails near wetlands at Palmetto State Park. Monitors felt that the increases might be due to a wet winter and fall, as well as sampling strategies that have been improved as a result of the volunteers' observations in previous years.

HORSESHOE LIPTOOTH SNAIL (*Polygyra hippocrepsis*) – The horseshoe liptoath snail continued to be elusive in 2003. Volunteers from **Denise Ortiz's** Environmental Science Class at New Braunfels High School combed the hillsides of Landa Park, but were unable to find more than a handful of shells from dead snails. This species, known only from a few locations in Comal County, is extremely rare and difficult to find.

The Texas Nature Tracker

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The Texas Nature Tracker



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OUR PURPOSE



Texas Nature Trackers, associated with the Texas Master Naturalist program, is a citizen science monitoring effort designed to involve volunteers of all ages and interest levels in gathering scientific data on species of concern in Texas through experiential learning. The goal of the program is to enable long-term conservation of these species and appreciation among Texas citizens.

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