

HORNED LIZARD



CONSERVATION SOCIETY

Post Office Box 122, Austin, Texas 78767

Phrynosomatics

The Newsletter of the Horned Lizard Conservation Society

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

Volume 4, Issue No. 2

June 1999

The Flat-tailed Horned Lizard (*Phrynosoma mcallii*), A Lizard Imperiled by Roger A. Repp

reprinted with permission of Vivarium Magazine, Volume 10:2

The flat-tailed horned lizard was documented in 1852 during a military expedition led by Colonel George A. M'Call. Since then, close to a hundred studies have focused on the natural history of the lizard and status of its habitat. The research shows a lizard with a low rate of reproduction living in an area with a high rate of degradation and loss of environment - a combination that makes it a lizard imperiled.

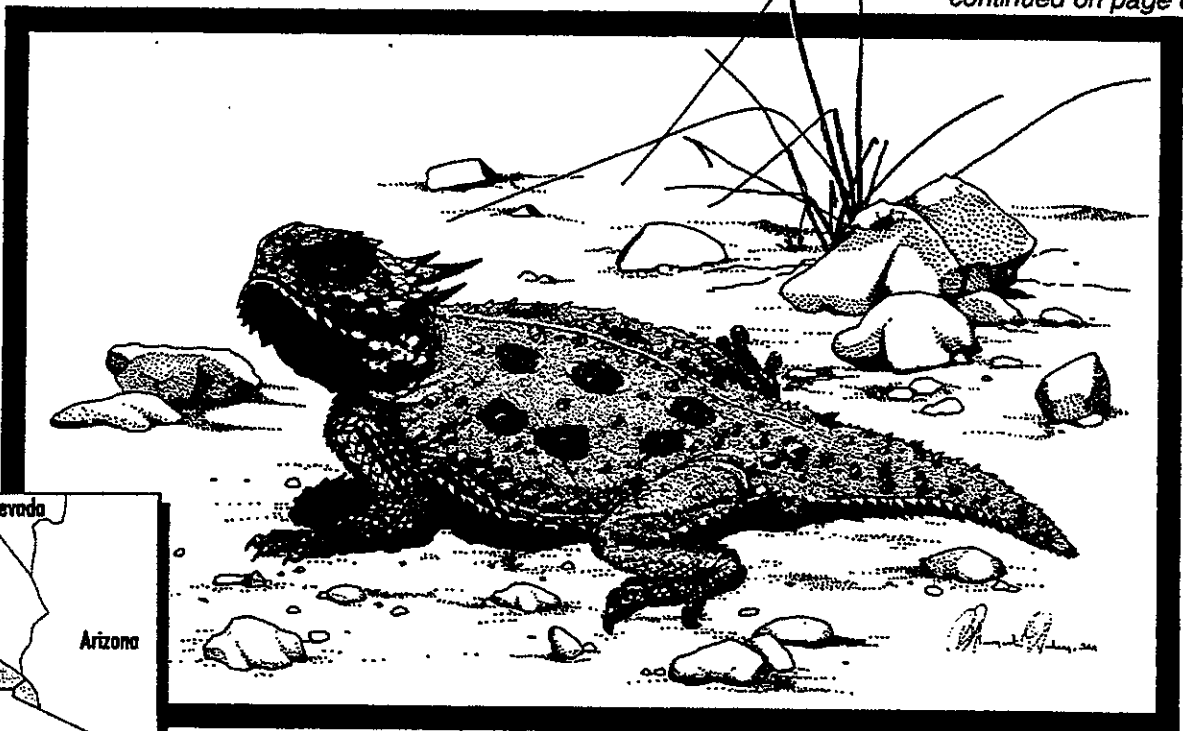
Flat-tailed horned lizards lay (comparatively to other types of horned lizards) small clutches of three to seven eggs in one or more clutches yearly. Hatchlings emerge from July through September. Research on scat reveals that the diet of flat-tailed horned lizards is comprised of mostly (97%) harvester ants.

The lizards inhabit the area known as the Lower Colorado River

Valley Subdivision of Sonoran Desert Scrub. As this lengthy moniker implies, they like it low and they like it hot. Summer daytime temperatures routinely reach 110°F (43°C). Flat-taileds can burrow into the sand to escape extreme temperatures, digging shallow burrows often less than two inches (5 cm) deep. Adults hibernate, remaining inactive from mid-November to mid-February. In contrast, juveniles can be ob-

continued on page 6

Copyright 1998 Horned Lizard Conservation Society
Illustration: Mary Hawley, Design: Steven Ray Austin
For additional copies, write: HLLCS, PO Box 122, Austin, TX 78767



Last curtain call for the Flat-tailed Horned Lizard? drawing by Mary Hawley.
From Priority One to Priority None...

National Board of Directors

President

Scott Henke
Box 156
Texas A & M University-Kingsville
Kingsville, TX 78363
(512) 593-3689
kfseh00@tamuk.edu

Member Services

Gasper Holland
529 Oakhaven
Pleasanton, TX 78064
(210) 569-4821
(210) 569-2580 fax

Research & Recovery

Richard R. Montanucci
Department of Biological Sciences
132 Long Hall
Clemson University
Clemson, SC 29634-1903
(864) 656-2328
rrmnt@clemson.edu

Treasurer

Clare Freeman
PO Box 122
Austin, TX 78767
claresfree@aol.com

Visit our Website: <http://www.psy.utexas.edu/psy/brooks/hlcs/index.htm>

***Phrynosomatics* Editor**

Pamela S. Allison
P. O. Box 30939
Amarillo, TX 79120
(806) 655-0875 or 373-6106
fax (806) 655-0875
psa1@ibm.net

Southern California Chapter

Lester G. Milroy III
Chapter President
14321 Ricaree
Apple Valley, CA 92307
(619)-242-3370
les4toads@aol.com



Texas Chapter

Sandra Holland
VP for Public Information
529 Oakhaven
Pleasanton, TX 78064
(210) 569-4821
(210) 569-2580 fax

**Please Send all Membership
Applications and Requests for
Information to:**

**HLCS
PO Box 122
Austin, TX 78767**

Researchers to determine if HL get Malaria

Many people have fond childhood memories of seeing and playing with Horned Lizards. However, over the past 40 years, this interesting reptile has seen its populations decline across their ranges. Unfortunately, the exact cause or causes of the declines are not known. There have been numerous theories to explain the declining populations, including reduced harvester ant populations caused by competing fire ants in some areas.

Horned Lizards have been called horned toads or horned frogs, but they are, in fact, lizards. Toads and frogs are tailless amphibians (as adults) that live on land or in water. Toads have rough, warty skin and frogs have smooth skin. Horned Lizards are reptiles with tails and scaled bodies.

There are currently 13 recognized species of Horned Lizards, three of which are found in Texas. The Texas Horned Lizards can be distinguished from the other Horned Lizard species by the two very sharp spikes that protrude from the back of their heads, two rows of fringed scales on their sides, dark brown to sooty-colored dorsal spots edged with lighter colors and a light-colored stripe down the middle of their back. The body length of adult Texas Horned Lizards

range from three to five inches, excluding their tails. Harvester ants are the preferred food.

Today, Texas Horned Lizards are found in the southeastern tips of Arizona and Colorado, southern and eastern New Mexico, most of Kansas and Texas, and all of Oklahoma. They seem to be doing well throughout most of their range except in Texas.

In fact, some areas where Texas Horned Lizards were abundant are now devoid of this species. Other places harbor small isolated pockets of the scaly creatures. Eastern and central Texas seem particularly hard hit. This quick decline led the state to declare the Texas Horned Lizard a Threatened species in 1977. It also is listed as a Species of Concern by the federal government and the state of Oklahoma.

Because of these concerns, Scott Henke of the Caesar Kleberg Wildlife Institute at Texas A&M at Kingsville and scientist Alan Fedynich are looking into the possibility that malaria may be responsible for declining populations of Horned Lizards in Texas.

In lizard malaria, it is thought that the

vector is a blood-sucking mosquito or mite. Basically, a vector ingests these parasites along with the blood when it feeds from an infected lizard. Once in the mosquito or mite, male and female parasites unite and form new cells called sporozoites. An infected vector transmits the disease to other lizards; the sporozoites are then released into that lizard. Once inside the new host, several stages occur. The ultimate result is the development of male and female parasites contained within the blood cells of the host, which completes the cycle.

Henke and Fedynich will begin the study in April or May when the reptiles emerge from the ground. Field work will end in October, before the lizards begin their winter hibernation. The researchers will take blood samples from Horned Lizards they capture during the study, and then will test the samples for malaria.

Henke and Fedynich hope this study will find the missing piece of the puzzle that can explain at least some of the overall declines in numbers of Texas Horned Lizards in Texas. If the study finds that malaria is a factor in Texas Horned Lizard population declines, the information can be used to help focus recovery attempts for this species by state and federal agencies.

HLCS Members Honored

Horned Lizard Conservation Society members from Texas — Bette Armstrong, Mary Surginer, and Larry Wisdom — recently were named the Society's first *Honorary Lifetime* members. Each received the honor in recognition of his or her selfless dedication to the conservation of Horned Lizards.

HLCS president Scott Henke commented, "Bette, Mary, and Larry's commitment to Horned Lizards and to the Horned Lizard Conservation Society should be emulated by us all.

They are excellent role models and I thank them for their tireless service."

Larry Wisdom, the creator of the life-like Horned Lizard replicas, is responsible for the many excellent displays used in educational outreach by the HLCS.

Mary Surginer recently designed and created a hand-crafted horned lizard quilt that she donated to the HLCS. The quilt was auctioned and proceeds awarded to the HLCS.

Bette Armstrong tirelessly attends wildlife expositions and meetings, visits schools, and any other gathering that provides the opportunity to discuss the plight of HL. Dressed as a Horned Lizard (no matter what the temperature!), she is a memorable HLCS contact with the community.

Each received a plaque as an expression of our gratitude for their service.

Thank you, Bette, Mary, and Larry on behalf of the Horned Lizards which we work to preserve!

TEXAS CHAPTER NEWS

SAN ANGELO STATE PARK PROJECT

by Carolyn Todd

This is an appeal for interested members to assist the HLCS Texas Chapter in the San Angelo area. We continue to receive requests for updates in our project that we had hopes of beginning in 1996. This project was to establish a preserve within the park for two areas with different needs.

One area would be dedicated to education of the public and the second restricted for research only. We need volunteers for a speaker's bureau to do educational programs for adults and children and stewards or docents to assist the park personnel in preservation and protection of the two areas.

To review our story in San Angelo, I was contacted by Don Ickles, a local San Angelo citizen and cyclist. He and his cycling club had noticed horned lizards while they volunteered with the park to construct mountain bike and pedestrian trails. He had learned about our organization by calling Andy Price at Texas Parks and Wildlife. He was interested in our organization

surveying the park to discover what populations and types of HL

were located in the park. Don contributed a great deal to the surveys and by recruiting a group of local teachers to help us.

Wendy Hodges conducted the successful survey. We provided the information to the park superintendent, John Culberson. Local media was interested and gave our project excellent coverage. Newspapers in San Antonio and Dallas ran our story. Two other surveys followed. We wanted to designate the area for the research appropriate to a sustainable population. Wendy made her recommendations and I sought and received approval from Andrew Sansom,

Executive Director for Texas Parks and Wildlife to establish the preserve through our participation in the park resource management plan.

However, most of our Chapter members that participated in the surveys were from other areas and San Angelo is quite a distance for most members. I returned to the city on several occasions to give presentations to the Rotary Club, a student science club at Angelo State and the local chapter of Audubon. I presented slide shows and introduced our goals for the preserve and a new San Angelo chapter.

Although we received wonderful support from Marion Szurek and several of her staff at the San Angelo Convention and Visitors Bureau, and from the organizations mentioned above, we have had no one locally to come forward to help establish the educational and research foundation. Puzzled, we even held our Annual meeting in San Angelo the next year.

We, as an organization, believe that the populations of horned lizards are strong in the park but they need

with respect to the sustainability and protection to be provided by the proposed preserve.

Is there anyone out there that can help establish a preserve for the present and make a commitment for the future? Members that participated in the surveys have volunteered to return to San Angelo and assist the organization effort. After it is organized and agreements reached with the Texas Parks and Wildlife Department personnel, we need local folks for the ongoing administration of the preserve and projects.

Write me if you are interested!!!

If enough people are interested and are willing to divide assignments and responsibilities, then we have hopes for a sustainable population in one of the disappearing strongholds of the Texas Horned Lizard.

I can be reached at:

HLCS

attention: Carolyn Todd

P. O. Box 122

Austin, Texas 78722

or by e-mail: ctodd@mail.utexas.edu

Volunteers needed at *San Angelo!*

monitoring and, more importantly, protection. When the media released the stories, members of the public were observed attempting to collect lizards in buckets, according to Don. He and teacher volunteers would inform these folks about the protected status of the lizards, to observe them but leave them alone in their habitat.

We need a presence in the park to teach and inform the public. The public is interested in HL but needs help understanding the plight of our Texas natives. San Angelo State students and professors have offered to help in the research as an ongoing class project but we need local citizens to administer HL initiatives



Earth Day Activities and More...

Austin Nature Center's annual Safari

by Clare Freeman

At Zilker Park in Austin, we heard a lot of stories from grown-ups about playing with horny toads as children, most of them of course from Texas, from the Gulf Coast to the Panhandle. All but a few mentioned how common horned lizards used to be and how they seldom or never see them anymore; most of the children had never seen one. There were some encouraging reports: a grandfather's ranch near Wichita Falls has "plenty"; there's a place near Mason where they can usually be seen, and even a report of three observed this month at a school just outside Austin. Texans weren't the only ones to recall playing with horned lizards; I talked with several people from New Mexico and Arizona, with Oklahomans and Californians from all over that state. Wherever they were from, their stories were similar: horned lizards used to be abundant; now they're almost gone.

Everyone wanted to know why horned lizards are disappearing and if anything can be done to prevent it. One father sadly observed that

"we come and they go".

We often hear from folks who grew up in West Texas in the '50's and '60's who were paid five cents by buyers for every horny toad they caught. This time I got to hear about someone at the other end of that line: a woman from New Jersey told me how her brother

would buy them from a pet store for about a dollar apiece. She didn't remember that he ever received any information about how to care for them and, of course, they didn't live very long.

We handed out a lot of brochures, newsletters, membership forms, and all of the management papers by Scott Henke that we had on hand (that's an encouraging sign). Larry Wisdom's displays drew a lot of attention and, as always, people asked where they could buy some of his models. Because *Safari* is for families, we provided hands-on activities for kids. Everyone wanted to play with Larry's "petting zoo" models, lots of little hands went home stamped with the HLCS logo, and I think Mary Hawley would have been pleased to see the rainbow of colors bestowed on her lizards on the coloring sheet.

I want to thank some very special people for their help with our booth at Safari. All are students at Austin area schools. Emily Kennedy, a 7th grader at St Andrews Middle School, Joseph Cizmar, from the 9th grade at Austin High School, and 11th-grader Ben Cassell from Westwood High School were the Saturday crew. On Sunday, Chelsea Wright and Jenni Anderson, both 9th-graders at Austin High, helped keep things moving smoothly with the stamping and coloring.

Brazos Bend by Cheryl Franks

A good turn-out, even with gusty winds, though we had to chase papers across the park occasionally, but all in all it was a pretty good day.

We had a lot of visitors to our booth that remembered playing with HL as kids. Almost everyone had a story to tell. Most were from TX but others were from NM and CA. A Park Ranger from Varner-Hogg State Park had the booth next to ours. He recalled seeing them for mail order in the backs of comic books as a kid. Everybody wanted to know why they didn't see HL much anymore. Three-fourths of our visitors wanted to know if the fire ants had anything to do with it.

Two separate families had seen one in the last year on their deer leases in West Texas. One lady that lived west of Houston said she came across one in her flower beds last fall. They all took sighting surveys and said they would fill them out and mail them in. They also took information on the Texas Horned Lizard Watch since they felt that they would have a good chance of seeing them again. They were all interested in knowing what they could do to make sure they keep on seeing them. They took pieces of all the literature we had including Scott Henke's management brochure.

Most kids that visited the booth had never seen a horned lizard. One little girl had seen one last year in Palo Duro Canyon and another had seen one on her Uncle's place in Amarillo. One little girl visited our booth that had never seen one but had seen the Texas Parks and Wildlife program about them. She was very interested in them and it was remarkable the things that she remembered from the program.

My daughter, Lauren, helped me with the booth. I couldn't have done it without her. She stamped kids' hands with the horned lizard stamp and helped them color pictures. That is pretty much how the day went.

The next **OLD RIPPER** in Eastland, Texas, will be celebrated Saturday, September 18, 1999. Make your plans now.

Ben Armstrong has challenged (again?) the creative wizard Larry Wisdom to the world's *only* remote-control **HL race**, and may the *best toad* win.



Yuma Dunes, Habitat of the Flat-tailed Horned Lizard

Photo by Randy Babb

continued from page 1

served out and about during the colder months of winter.

During the spring, summer, and fall months, Flat-taileds are active for more than half of the day. In cooler spring periods, activity is greatest during the warm mid-day. In the hot summer, activity becomes bimodal (early morning and late afternoon).

Flat-tailed Horned Lizards inhabit the southeast corner of California, the southwest corner of Arizona, and southward into northern Sonora and Baja California, both in Mexico. This is a tiny area geographically, and multiple uses by its human inhabitants, past and present, are a continuing threat to flat-tailed habitat. In the early 1900s, for example, flooding from a diverted Colorado River created the Salton Sea – and eliminated 320,000 acres of flat-tailed habitat.

At present, the biggest threat to flat-tailed horned lizards is agriculture. Habitats are plowed and pesticides added. Irrigation canals often split viable populations into fragments. The lucky lizards that aren't initially affected by the bulldozer and crop-dusters face ravens, roadrunners, kestrels, loggerhead shrikes, and burrowing owls.

Moreover, habitats of the flat-tailed are losing ground to rampant urban sprawl. Palm Springs and El Centro in California are examples, as are Yuma and San Luis in Arizona. Additions of roads and power lines further fragment habitats. One example is the construction of the Yuma Area Highway (a short cut from San Luis to Interstate 8) which will cut through the stronghold of the flat-tailed in Arizona.

The most avoidable tragedy may be off-highway vehicle use by the

burgeoning human population. On any weekend, thousands of dirt bikes, three- and four-wheelers, and other off-road vehicles tear into the fragile desert landscape.

The plight of the flat-tailed has not gone unnoticed. Throughout their entire range, the lizards are protected by law and can be collected and kept only with a special permit. In 1980, the Bureau of Land Management (BLM) awarded the lizard the status of "Sensitive Species." In 1982, the United States Fish and Wildlife Service (USFWS) designated the flat-tailed as a "Priority 2" candidate, bumping it to "Priority 1" in 1989. In 1993, USFWS proposed to list the lizard as "Threatened" under the provisions provided by the Endangered Species Act. Incredibly, the mechanism for protecting the lizard then ground to a halt until 1996, when groups of concerned organizations and scientists began litigation to force the USFWS to make its decision. Even more

incredibly, in July 1997, USFWS withdrew its proposal to list the lizard, opting instead to back a well-written – albeit weak and unenforceable – management strategy. At present, litigation continues to attempt to force USFWS to reconsider using the full benefits of the Endangered Species Act to protect this species.

The Flat-tailed Horned Lizard was first documented a recent 146 years ago.

During this brief span of time, half of its habitat has been lost. Field studies support the same message: *protect the lizard now, before it is too late.*

While we ignore the findings, more and more habitat is lost. Will we wait until it is too late before we react?

Or will we react at all?

This author has visited a land whose sandy substratum reveals a place ripe with wildlife. It is a land of sidewinders and horned lizards; of shrikes and kangaroo rats; of shovel-nosed snakes and fringe-toed lizards.

There are these and so much more.

Their tracks last less than a week in the sand. During a windstorm, they can blow away overnight. Yet a different type of storm is underway. Overnight, it has obliterated half the range of a lizard that was rare to begin with. It is gathering in intensity, and is poised to wipe clean all traces. It is a relentless storm, one that feeds off itself without regard for that which is consumed. The flat-tailed is one of the victims of this onslaught. Going, going – and like the windblown tracks on a sandy, desert plain – soon will be gone.



**Flat-tailed Horned Lizard,
Victim of Shrike-attack**

Photo by Wendy L. Hodges

Acknowledgements: The author wishes to thank all naturalists and scientists, past and present, whose studies on the Lower Colorado River region are helping to highlight an endangered landscape.

Roger lives in Tucson and herps in the Southwest--ed.

Vivarium can be reached at P.O. Box 300067, Escondido, CA 92030-0067 or at their website www.thevivarium.com

THE HLCS ARCHIVES ARE (FINALLY) BEING COMPILED

Due to HLCS member Leigh Sanders' kind offer to help, the archives of the Horned Lizard Conservation Society are being collected and catalogued.

Please search your files and send in articles, pictures, or anything else concerning the HLCS or horned lizards in general to the society. Now is the time to lighten your load. Let us archive your papers. Or, make copies of your horned lizard papers and donate them to

the society! All donations are gleefully accepted.

The collection, filing, and protection of our horned lizard papers is the first step of a huge project.

Eventually we would like to index all our old newsletters. We want to provide a catalog to our members offering the papers and articles we have collected for research and for your own private collections. For the widest possible use of your collections, please send originals

or copies to HLCS, P. O. Box 122, Austin, TX 78767.

We would like to acknowledge the generous offerings already made by Lee Stone, Clare Freeman, Joyce Roach and Bette Armstrong. We are beginning to get organized. This will become a wonderful resource. How great a resource this becomes, depends entirely on our members' contributions. Thank you!

---Bill Brooks

MAKING HORNED LIZARD MODELS

PART III: Casting Replicas

by *Larry Wisdom*

The fun part is casting exact replicas of the loaned horned lizards (HL). The stress of having some institution's valuable specimens in your possession is over. All you have left is a block of silicone rubber containing a cavity which has captured the detail of each individual scale on the lizards' skin. You can drop, stomp, heat, chill or soak the mold without harm. So the stress just slides away to pure enjoyment of casting a virtual clone of the HL used to make the mold.

This does not mean that the mold can't be ruined or that it will last forever, for one simple reason—**UNDERCUTS**. Undercuts are the main reason you have not seen highly detailed castings of subjects like Hls. To illustrate — have you ever tried to extract a hook from a fish or, worse yet, from your finger? The barb on the hook is a severe undercut. It cannot be extracted without tissue damage. Well, all the horns, toes, claws and side scales of a HL make it the mother of all undercuts and a caster's nightmare.

The way most casters handle undercuts is to eliminate them. For example, Carolina Biological Supply Co. (CBS), as world-wide supplier of biological models sells a Texas HL (*Phrynosoma cornutum*). The lizard is posed on a rock eliminating all undercuts due to claws, toes, legs and tail. Further, filler has been added between the horns and body to the point that they look like wedges protruding from the neck. The side scales are nubs less than one mm long. Detail has been sacrificed in this model to make it easier to cast.

The Texas Parks & Wildlife 75th anniversary catalog also offers a Texas HL by taxidermist and sculptor

Ben Haden. In this case the lizard was cast separately and mounted on a wooden base. Major undercuts were eliminated by adding filler between the legs and body, eliminating claws and using wooden pegs for horns. Side scales are nubs, like the CBS model.

A third caster, Carlos Estevez, an Austin Sculptor, also has a HL mounted on a rock. Mr. Estevez has a Buffalo sculpture in the TP&W catalog, but not his HL. He uses a vacuum fill technique which permits greater detail. For example, you can see daylight under all four legs, side scales are decent, but rounded, and horns are integral without use of wooden pegs. It is by far the best commercial casting of a HL that I have seen. But with vacuum, the maximum fill pressure is only 14.7 psi.

To achieve complete detail, higher levels of pressure are required especially to fill the smallest cavities in the mold such as claws, side scales and horn tips.

However, once all the minute cavities in a mold are filled, the next problem is extracting the casting without destroying either the mold or model. This is possible, but only by strict adherence to the laws of physics, chemistry and a semi-rigid or flexible casting resin.

Never try to cast a HL with a resin that sets up rigid. The model won't come out of the mold until you have succeeded in breaking off every horn, claw, and side scale. The resulting replica looks like a salamander with a severe case of acne. Even worse is the possibility of ripping the mold where each undercut was located.

The preferred resin for HL replicas is polyurethane. These materials can be cast in silicone molds without a release agent (release agents obscure scale detail in Hls). The

primary resin that I use is C-1509 from Smooth-On. This is a semi-rigid resin which requires seven days to reach maximum rigidity, but has sufficient tensile strength after 12 hours to allow removal of the replica. The only undesirable property of this resin is cost. A two-gallon kit currently costs \$140.90.

Replicas cast with this resin are extremely durable. I once ran over one that dropped out of my pocket in a parking lot. With the exception of tire marks, the model was not harmed. Thus they stand up well to grubby little hands in a classroom or as a "hands-on" display.

At this point let's assume you have a new mold and a fresh supply of C-1509 resin and you are ready to cast a replica. The amount of resin required for the first cast is an educated guess. Except for really large specimens, 100 grams is usually enough. 50 grams of part A and 50 grams of part B are weighed in a clear smooth wall plastic cup. A small amount of titanium dioxide is added and the resin is thoroughly mixed. When the pigment is evenly dispersed, it's ready to pour.

The mold is placed upside-down and a pouring ring is inserted over the sprue. The resin is poured into the mold. Any spills must immediately be wiped as the resin is an outstanding adhesive and will stick to virtually anything except silicone. The mold is then placed in a chamber and pressurized to 120 psi with compressed air. The resin is allowed to cure overnight at room temperature. The next day the pressure is bled off and the mold is removed. The two halves are separated by severing the sprue with a scalpel (after the resin cures, the mold and pouring ring are held together by the sprue acting like a rivet). The replica is carefully removed and examined.

Most likely it will contain an air pocket and some loose scales from the lizard's skin. After two or three castings all the loose scales will be extracted. But any air pockets will remain indefinitely until a vent is added to allow trapped air to escape. Normally by the third casting all mold problems have been corrected and good castings are obtained. The first good casting is stored along with the mold in the event a new mold needs to be made.

The beauty of this technique is that a single rare preserved specimen can be duplicated dozens of times. Further, instead of looking and smelling like a dead critter floating in a jar of preserving solution, it will look alive after it's finished and painted. While it takes only a few minutes to cast a replica, it takes two to three hours over several days to properly paint a HL replica. While I consider painting an ornery chore, it is never the less a rewarding task. As each paint component is added to the replica, it begins to come to life. Once the eyes are added (last step), the HL looks like it is ready to jump off the lab bench.

This past October at the TPWD Wildlife Expo, I had a HL model mounted on my cap. If I had gotten a dollar for every time "Is it real?" was asked, I would have done better than any vender at the show!

Part Four will cover the ten-step painting and finishing procedure.

MATERIALS

G-1500 Resin — Available from the Reynolds Co. Weighing 200 grams is approximately one ounce and the can is as described in Part Two (p. 118). The mixture is \$0.50 by weight or volume. This resin is translucent amber in color until pigments are added.

Pigment — A small amount (approximately 0.1-0.5) quantity of oxide or light blue resin in white color. It is also available from the John Reynolds Co.

EQUIPMENT

Pressure Tank — I painted my HL in a pressure chamber from 3" to 3 1/2" diameter with a 3" cap. The end cap is one inch thick and is held in place with a 1/2" diameter compression nut.

The secret to using that pressure chamber is to use small cavities like side caps or small holes. With smaller cavities, like the hair on a spider's leg, the pressure is not required. It is available commercially available commercial pressure vessels for production paintings. A 2 1/2 gallon tank is listed in Grainger's 1999 catalog for \$107.80 (stock #2239). It is rated for 110 psi, but should work well.

John Reynolds Co.
2200 S. Hamwood
Ocala, FL 32175
1-800-214-1378

W.W. Grainger (350 U.S. locations)
1520 Roubidoux Dr.
Dallas, TX 75207
1-214-387-2300

Observation from Clare Freeman

"I just bought a set of the new *Nature of America* series Sonoran Desert postage stamps... and not a horned lizard any where!!! Are we falling down on the job?"

Web-Sites from Bill Brooks —

To learn more about **Old Rip**, honored by celebration in Eastland, Texas, try
<http://www.roadsideamerica.com/pet/rip.html>

and

The Handbook of Texas is now online and easy to search (check out <http://www.tsha.utexas.edu/handbook/online/search.html>)

The scientific journal *SCIENCE Magazine* has been added to the many other journals on-line on UT Library's electronic journals page. The web-site is <http://www.lib.utexas.edu/ejour/>

from Wendy Hodges --

FISHES OF TEXAS ...

"just wanted to let you know about an exhibit at the Texas Memorial Museum at the Univ. of Texas at Austin. The exhibit is *Fishes of Texas*.

Opening Day is May 27 and the exhibit runs through April 2000, so you out-of-towners, if ever in Austin, can stop by and still see it! If you are still unable to go, take a tour of their website for a virtual exhibit:

<http://www.utexas.edu/depts/tmm/exhibits/fish/>

which includes two movies and a suggested curriculum guide.

Mary Hawley, Friend and Artist of the HLCS Since 1997

by *Bill Brooks*

Mary Hawley became a member of the HLCS in July 1997. About that time she proposed to draw a series of HL posters and donate them to the HLCS. Since then, we have talked at least once a month. Although I have not yet met Mary, we have become e-mail friends and I look forward to her notes. Mary is a Veterinary Technician at the University of California, Irvine. It is obvious that she cares deeply for the animals she tends at school, the turtles she raises at home, and even the mountain lion that recently strolled through the yard of her southern California home.

A native Californian, born and raised in San Diego, she actually developed her love for animals and the outdoors in the Imperial County desert. Her dad was a weekend prospector and dragged the family up one dusty hill after another in search of gold. Most of the "dragging" was pulling Mary away from some plant, bug, or lizard she found.

As a young girl, Mary particularly enjoyed two things: art and animals. This led to a dilemma later when she felt she had to choose between them. She turned down a scholarship to study art in college to know how things worked. Science had a strong hold on her. After college, she became a laboratory technician in the natural sciences and went on to become a licensed Veterinary Technician, working with everything from monkeys to horses to squid.

In 1982, because "Art had given me so much joy," Mary again picked up the brushes and pens that she had packed away. Soon, she started to win ribbons at local juried shows. This led to shows out of state and then to juried membership in the Society of Animal Artists, founded in 1960. Membership in the SAA is one of the most difficult of juried societies to obtain. The initials after Mary's



name signify her acceptance into this organization.

Lately, Mary has found great fulfillment from contributing her artwork to organizations that work to protect the environment, rare plants, and endangered animals. A few recipients of her work include The California Turtle and Tortoise Club, Project ReefKeeper, and, thankfully,

our own Horned Lizard Conservation Society.

I am proud to announce the sale of posters, artwork by Mary Hawley. The national organization of the Horned Lizard Conservation Society is offering these 11" X 17" black-and-white fine art prints for \$10 each (plus \$3 s/h).

A portion of the proceeds will be set aside for the protection of the Flat-tailed Horned Lizard. Please send your requests to the HLCS, P. O. Box 122, Austin, TX 78767.

CALENDAR OF UPCOMING EVENTS

Camp-out and HL Survey, Amarillo, Texas

July 3-4, 1999

Yes, Amarillo is in North America! Details are unfolding...

Contact Bill Brooks or Pam Allison for information.

Phrynosomatics

Vol. 4, Issue 3, submit by

August 1, 1999

Vol. 4, Issue 4, submit by

November 1, 1999

Old Rip Days at Eastland, Texas

Saturday, September 18, 1999

The challenge of the century (toad to toad) and more!

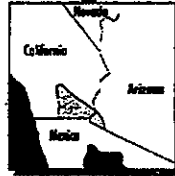
HLCS Archives (story p. 7)

mail to P.O.Box 122, Austin, TX 78767

accepted anytime, so why not send it *now*?



Copyright 1992 Horned Lizard Conservation Society
 Illustrations: Mary Hawley, Texas Journalist
 For additional copies, write HLCS, P.O. Box 122, Austin, TX 78767



Flat Tail Horned Lizard
"Phrynosoma mcallii"



**Dig this:
 We live here too!**



These thumbnails are miniature replicas of the two 11" x 17" black-and-white fine art posters featuring Mary Hawley's artwork (story p.10). Either can be purchased from the HLCS for \$10/each. As always, \$3 additional will cover shipping and handling of items to one address.

Partial proceeds will be set aside for the protection of the Flat-tailed Horned Lizard.

New Member Profile Of Joyce Ann Gibson Roach

by Bill Brooks

Many of you who periodically search the web looking for horned toad sites may already be aware of Joyce Roach. She has a huge presence on the Virtual Texan web-site, and at least three of her stories are on line: *The Night of the Moving Shadows*, *A High Toned Woman*, and *The Horned Toads' Christmas* can be found at

<http://www.star-telegram.com/comm/virtual/writers/joyce/toadxmas.htm>

As fate would have it, each time I attempted to get through to Joyce's story, I was unsuccessful and couldn't order her book or even contact her. Luckily, she has now contacted us! Last month, Joyce became a new contributing member of the Horned Lizard Conservation Society and sent us one of her delightful horned toad books for our archives.

Joyce Ann Gibson Roach grew up in Jacksboro, Texas. This heritage continues to be an inspiration for her writing, be it non-fiction, fiction, personal prose, or humorous narrative. She holds degrees from Texas Christian University and has taught there as a member of the adjunct English faculty for the last fifteen years, specializing in *The Western Novel and Life and Literature of the Southwest*.

Her writings have brought her numerous awards. She is the past president of the Texas Folklore Society and a member of the Texas Institute of Letters.



Joyce keeps the latest "News from Horned Toad, Texas" at <http://www.star-telegram.com/comm/virtual/writers/joyce/toad.htm>

and from there you can link to her site for kids, "Horned Toad Corners". Joyce writes a bi-monthly column on folklore for the Star-Telegram newspaper (the Northeast Edition). Many of her great articles are archived on the net: <http://www.star-telegram.com/comm/virtual/writers/joyce/roach.htm>

We are extremely glad to have Joyce Roach as a new member of the society and look forward to seeing her at our up-coming meetings and field trips. Joyce has generously donated 100 copies of the book *The Horned Toads' Christmas* to HLCS. This wonderful book can be ordered by sending a request and \$6.50 (plus \$3 s/h) to: HLCS, P. O. Box 122, Austin, TX 78767.

**HORNED
LIZARD**
CONSERVATION SOCIETY
Post Office Box 122, Austin, Texas 78767



**NON PROFIT ORG.
U.S. POSTAGE
PAID
AUSTIN, TX
PERMIT NO. 383**

Address Correction Requested

Please renew if your membership has expired.
We appreciate your support.

Don't Forget to Renew-Consider giving a gift membership to the Phrynosomorphs in your family!
PLEASE JOIN US NOW! Students/Seniors 65+: \$10, Subscribing: \$10 (newsletter only), Regular: \$25, Contributing:
\$50, Patron: \$100.00, Lifetime: \$250.00. (Families=\$25 for the first person and \$10 for each additional member).

Printed on Recycled Paper

Table of Contents

P 1 The Flat-tailed Horned Lizard, Imperiled
Roger Repp

P 3 Research -- HL and Malaria
Three HLCS Members Honored

P 4 San Angelo State Park Project
Carolyn Todd

P 5 Earth Day Activities
Clare Freeman & Cheryl Franks

P 8 Horned Lizard Models Part III
Larry Wisdom

P 10 Mary Hawley, Artist
Joyce Roach, Writer
both by Bill Brooks

P 11