

Texas Horned Lizards Thriving Under the Umbrella of Bobwhite Quail Management

By Marcus C. Thibodeau, Masters Student, Advisor: Dr. Charles M. Watson

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The long term decline of the Texas Horned Lizard is a familiar story to most Texans. Anywhere you go in the state there is an old timer excited to tell you about their childhood when they would play with “horny toads” all the time. The story is retold almost to the word that they were the most common lizard encountered, but they haven’t seen one in years. Thanks to the efforts of The Horned Lizard Conservation Society, the Texas Horned Lizard, *Phrynosoma cornutum*, was officially named the State Reptile of Texas by House Concurrent Resolution No. 141 on June 18, 1993 as signed into law by then governor Anne Richards. Their decline was first noticed in the 1960’s, with their numbers slowly dwindling ever since. Many things are attributed to causing this decline, such as invasive fire ants, the use of insecticides, and habitat fragmentation. Even with years of research investigating its cause, there is still no definitive answer. The question researchers are turning to alongside the classic “What caused this?” is “What can we do to help them make a comeback?” A large part of research today is focused on where these horned lizards are still found and attributes of that habitat. Reporting these cases is important, but it is not proactive in conservation. It is in effect a reconnaissance mission. While many Texans are

quite fond of their memories of horned lizards, few are financially impacted by their decline and therefore, are content with them as memories. Our research makes the connection between the horned lizard and another animal that is affected similarly by many of the same pressures, the Bobwhite Quail. We believe that, due to the economic considerations that accompany this game species, the Bobwhite Quail is a prime candidate to serve as an umbrella species for Texas Horned Lizard conservation. Upland game bird hunting is very popular, accounting for tens of millions of dollars in hunting-related commerce each year in Texas alone. Like the Horned lizard it is also on a long term population decline that started around the 1980’s. At first glance, these animals appear to be completely unrelated biologically, but they actually have a lot in common when you take a closer look. Since both of these animals are found in the same environment their habitat requirements are very similar.

With the money invested in quail management as a game species, the specific dynamics of their habitat is regularly quantified into grades and managed toward “optimal” bobwhite habitat. This has become so commonplace and standardized that there are classes and even smart

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GOT NEWS?

**FOR THE PHRYNOSOMATICS
NEWSLETTER THAT IS...**

*Send your photos (with captions),
cartoons, artwork or articles for
the newsletter to either Ruthann
or Leslie at the email addresses
above today!*

phone apps that assist in quantification of these parameters. Their popularity as a game species has led to the bobwhite being labeled an indicator species. This means that the bobwhite is very sensitive to habitat changes and its presence indicates high quality habitat. Therefore, if you manage for bobwhite quail then you manage for every other animal found in that same habitat that is less sensitive to habitat quality. In classical conservation biology this is also termed an “umbrella species”, effectively sheltering many other less charismatic species under its conservation umbrella.



Eleven horned lizards of various ages and gender that were captured during a round of road cruising for this study. (Photo by Marcus Thibodeau)

The only issue with this is that there are different ideas regarding what is “optimal” quail habitat and what management measures should be employed to achieve this goal. This is what led to my research which investigates the specific aspects of quail management that are benefiting Texas horned lizards. I obtained data from 36 horned lizards in 18 hours of road cruising at the Gene Howe WMA in Canadian, Texas. This eco-region includes sandhills and loamy soil and is not commonly used for horned lizard research, but it is known to be among the top places for quail. I surveyed the microhabitat where I encountered each lizard, measuring the habitat characters associated with quail habitat. Included in these microhabitat analyses was the measurement of bare ground availability. This

is not included in bobwhite habitat analysis, but has been shown to be very important in horned lizard habitat selection. These results were all compiled and compared to pastures where no horned lizards were observed.


My results showed that horned lizards were found in areas with more bare ground is available and where the cover aspects associated with quality quail habitat were high. The combination of cover and bare ground appears to be the determining factors of horned lizard presence. This makes sense since bare ground does not limit the lizard’s mobility and cover offers protection from predators. I also compared the thermal aspects of the habitat where these horned lizards were and were not found. I did this using 3d printed horned lizard models that were attached to a microcomputer set to record the temperature of these models every minute. This technique of using 3d printed ABS models and the Arduino-based thermal coupler were designed and developed by Dr. Charles Watson and Dr. Richard Simpson at Midwestern State

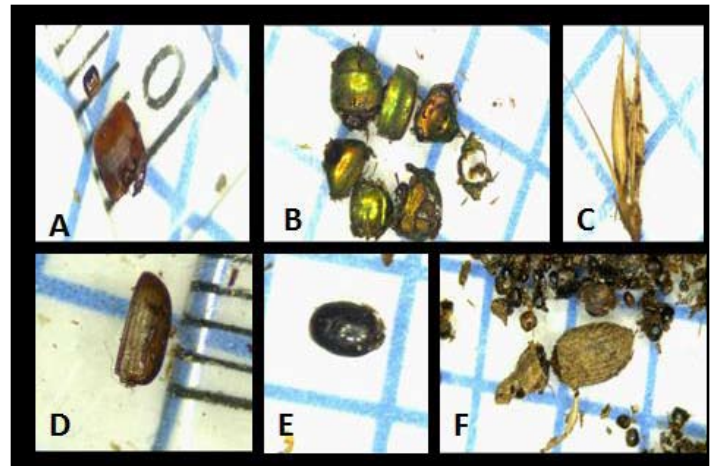


3d printed ABS horned lizard attached to the Arduino-based thermal coupler used to measure microhabitat thermal spectrum. (Photo by Marcus Thibodeau)

University. I found that the bare ground and cover associated with horned lizard presence were also benefiting them thermally. These microhabitats were offering a broader thermal spectrum for these ectothermic lizards to thermoregulate. This

allows for them to be more active and spend less time “heating up” or “cooling off” which can leave them exposed to predators while having cover close by. This mosaic of bare ground and cover has been shown to be important to horned lizards in other habitats such as thorn scrub.

I also wanted to see if these management practices also affected their diet, which is known to include harvester ants almost exclusively. I found that their diet is much more complex than commonly believed. Many different types of beetles were found to be included into their diet along with a few bees and even a cluster of side oats grama seeds. The consistent presence of these different prey items cannot be directly attributed to the quail management because this level of dietary diversity is unprecedented among *P. cornutum*. At the end of the day though, we see that this popular management regime is benefiting horned lizards by providing favorable habitat. This research will hopefully be used to promote habitat management by guiding managers toward those practices that benefit Bobwhite quail while maximizing the positive effects on their non-game cohort, the Texas Horned Lizard. 



Prey items discovered to be included in the sampled *P. cornutum* diet. A) Harvester ants B) Halictid bee C) Side oats grama D) Carabidae beetle E) Hister beetle F) Weevil (Photo by Marcus Thibodeau)




Dr. Charles M. Watson and Marcus Thibodeau

Horned Lizard Research Grant 2017 Applications

By Leslie Nossaman

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

We will be offering grants again in 2017. In the past, priority has been given to projects that have direct conservation implications, including public education.


To apply, send a proposal detailing the goal of the study, the rationale for it including relevance to conservation of horned lizards, and how your work would benefit from this opportunity. The proposal may not exceed 1000 words, excluding up to ten references. Also include a preliminary budget with any other funding sources available or received for your project. In addition, send a short resume or CV (up to 3 pages) for the lead applicant and have a single letter of reference sent to Megan Lahti: megan.lahti@gmail.com. The deadline is January 1, 2017. The decision will be announced by January 31, 2017. 



President's Message

By Tim Tristan DVM DABVP
(Reptile and Amphibian Specialty)

Welcome to another issue of *Phrynosomatics* and welcome new members! First and foremost I hope everyone had a great Christmas and holiday season. The New Year brings many new and exciting things for 2016 and HLCS. The HLCS has appointed 2 field survey coordinators, Vivian Thomas and Carolyn Todd. They are a phenomenal team and a huge asset to the organization. They already have 3 surveys planned (members only) for the spring and summer and there may be more to come. If you're interested, watch for updates on upcoming surveys.

As our organization continues to grow, help spread the word to others that may want to become members and help horned lizards throughout the US, Canada and Mexico. Your membership and dedication are vital to HLCS and our programs. Enjoy this issue and Happy New Year! 

Editor's Note

By Leslie Nossaman

Every quarter the editors of *Phrynosomatics* search for articles and photos for this newsletter. As you probably noticed, we have been very fortunate to have received many excellent articles and photos that you have submitted. Thank you to all who have submitted an item for the newsletter!

The types of items we are looking for include:


- local news and events (booths, fairs, meetings)
- national news and events
- newspaper article reprints
- scientific article reprints
- articles on experiences with horned lizards
- survey experiences
- poetry and prose
- kid's contributions
- photographs or drawings
- cartoons

If you'd like people to know about your interest in horned lizards, we would like to hear from you!

Typical questions people like to hear about:

- How long have you been a member of HLCS?
- What type of activities have you done regarding horned lizards?
- When and why did you get interested in horned lizards?
- What are your interests other than horned lizards?
- Do you have any interesting hobbies (sky diving, hang gliding, bag piping, gardening, etc.)?

Also our readers really like to see photos of horned lizards. Many of us are not fortunate enough to live around them and have to travel many miles to even be in their neighborhood. So photos are a good way to connect to our beloved lizard friends.

We receive so many nice notes about our newsletter from our readers. Our newsletter becomes excellent due to contributions from you. Consider contributing and encouraging others to contribute too. 

Casas Grandes Effigy Pot

By Thomas R. Van Devender, *GreaterGood.org*, 6262 N. Swan Rd., Suite 150, Tucson, AZ 85718, yecora4@comcast.net

Eric J. Kaldahl, *Amerind Museum and Research Center*, P.O. Box 400, Dagoon, AZ 85609, ekaldahl@amerind.org

We have always been fascinated with horny toads. A pot on exhibit in the Amerind Foundation Museum suggests that pre-Columbian cultures were fascinated by them as well. The Amerind Foundation is a museum and research facility dedicated to the preservation and interpretation of Native American cultures and their histories. It is a delight to travelers tucked away in Texas Canyon near the village of Dagoon, about 65 miles east of Tucson, Arizona (<http://www.amerind.org/>).



Images courtesy of the Amerind Foundation.

The pot (Amerind Catalog No. 3301) labeled as a horned lizard effigy is about five inches across. It was among 204 pieces donated to the Museum by Joseph Memmott in 1960. He lived near the Mormon community of Colonia Dublán, Chihuahua, which is quite close to the ancient Paquimé archaeological ruins. Dublán has since been absorbed by Nuevo Casas Grandes. Memmott excavated ancient relics for fun. The Amerind's Joint Casas Grandes Expedition led by archeologist Charles Di Peso was in 1958-1961. Artifacts excavated from Paquimé are on exhibit in the Museum today. Di Peso identified #3301 as prehistoric effigy vessel that was most likely created between the AD 1200s and 1400s.



Paquimé ruins in October 2014. Photo by Van Devender.

Spanish explorers looking for the fabled seven gold cities of Cíbola in the 1500s saw the adobe walls of Paquimé and called it Casas Grandes (big houses in Spanish). It is located ca. 69 miles south-southeast of the boot heel on the New Mexico border. It is one of the largest and most complex culture sites in the region. Settlement began after AD 1130, and would see the larger buildings developed into multi-storied dwellings after AD 1350. The community was abandoned approximately AD 1450.

Archaeologists believe that Paquimé controlled the area for about 20 miles around, with a population of 2,500 in the city and perhaps 10,000 people in the area. Casas Grandes pottery with ornamentation in red, brown, or black on a white or reddish surface was of a very high quality. Effigy bowls and vessels were often formed in the shape of painted human figures, or as in this case, animals. Casas Grandes pottery was traded among prehistoric peoples as far north as present-day New Mexico and Arizona throughout northern Mexico as far west as Trincheras, Sonora.

Pot No. 3301 is very stylized. If it is indeed a horned lizard, it does not closely depict the Texas horned lizard (*P. cornutum*) or the round-tailed horned lizard (*P. modestum*) that occur in lowland Chihuahua today. Could it be a very warty toad effigy, reflecting a southern influence? Maya Indians in the Yucatan Peninsula were using bufotoxins from the warty marine toad (*Bufo marinus*) as hallucinogenic drugs in the 16th century.





Texas horned lizard from Chihuahua. Round-tailed horned lizard from Brewster County, Texas.
Photos by Thomas R. Van Devender.



Marine toad from southern Sonora, Mexico.
Photo by James C. Rorabaugh.

***HLCS is looking to fill a Secretary Position**

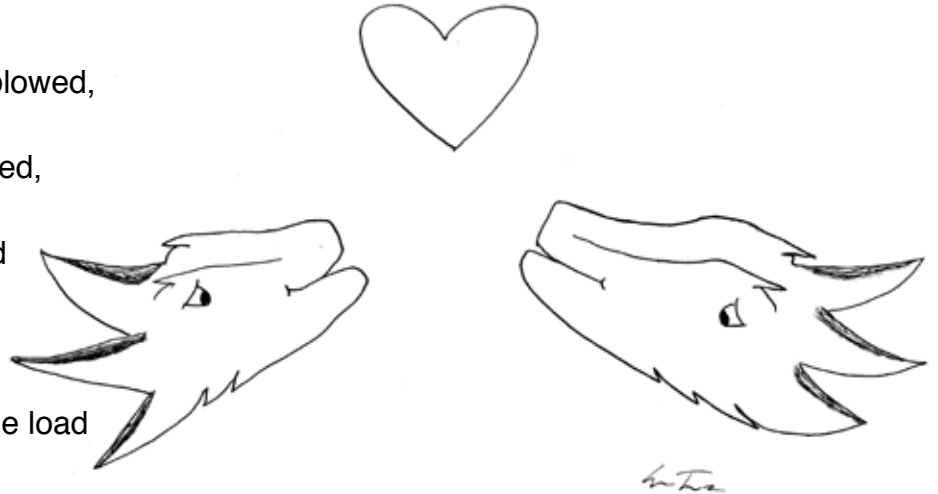
By Leslie Nossaman

The HLCS is looking for a new person to fill the Secretary position on our Board of Directors. This position is responsible for corporate records, keeping minutes of all general membership and BOD meetings, and, in general, performing all duties incident to the office of Secretary or assigned by the President. This is a very important position and we would like to fill it soon. If you are interested or have questions about the position, please contact HLCS President, Tim Tristan at exoticvet@yahoo.com.


Neither Wind Nor Rain...

By Allan W. Eckert

Hey, looky there! A horney toad
Jus' clum up from his dim abode
An' crawled acrost a field unsowed
Whar only prickly cactus grewed.
He come a-waddlin' down th' road
An' tho' the wind done howled an' blowed,
It shore din't stop that horney toad.
The sun was hot, it shined an' glowed,
But heat don't slow no horney toad!
An' purty soon a dark cloud showed
An hid the sun from on the road;
Unfazed, that little critter strode
Along the wind-blown dusty road.
Then rain come hard an' washed the load
Of grit an' grime clear off the road,
An' tho' that water splushed an' flowed,
It couldn't stop ol' horney toad.
Th' air turned cold an' then it snowed,
An' tho' his pace was slightly slowed,
Still on he trudged with head unbowed.
The thought within me bloomed an' grewed,
Warn't nuthin' now could change his mode.
By jinks, Ah'm wrong! Wal Ah'll be throwed!
He's stopped hissself along the road.
Ah see it now - shucks, should'a knowed!
He's found hissself a lady toad!



Drawing by Eva Thomas

Reprinted with permission from author, Allan W. Eckert, August 23, 2006. 

Please renew your annual HLCS membership!!!

HLCS depends on its membership for its conservation and educational presence in the community.

Categories for *annual* memberships include:

Regular	\$25		
Student or Senior	\$10		
Family	\$25	Each additional family member	\$10
Contributing	\$50		
Corporate	\$250		
<i>Lifetime</i> membership	\$300		

The HLCS welcomes contributions in any amount you wish to submit and is a 501(c)3 nonprofit organization.

Horned Lizard Surveys Planned for 2016


By Carolyn Todd

There are multiple surveys being discussed and planned for 2016. Three have been scheduled and are listed below:

1. Private ranch, 500 + acres, Bosque County, Texas* – April 23
2. Tres Agaves Ranch near Terlingua, Texas* – May 27-30
(see article inset below)
3. Mason Mt. WMA, lead: Texas Parks and Wildlife Department*– June 25
This survey will assist TPWD in collecting data regarding their horned lizard release sites on the property.

If you are interested in participating in the Bosque County ranch and/or Mason Mountain survey, please indicate your contact information including name, cell/home phone in an email to Carolyn (carolyn@thetoddreport.com). If you are interested in the Tres Agaves Ranch survey, contact Tanya Phillips via email: (Tanya@austin.rr.com)

*All three sites will require walking in different terrains for the entire survey – please be prepared with water and appropriate dress and shoes.

We will need a list of participants one week before the planned excursions to arrange carpooling and the caravan meeting location. We ask that all participants sign the liability form available at the survey site for signature. Please note that landowners have requested that children under the age of 12 years are not included due to possible safety concerns. Look for future notices for possible additional surveys. 

Horned Lizard Survey Opportunity near Big Bend National Park, Texas

By Tanya Phillips

It is planned for May 27-30, 2016 at the private ranch home of Chuck Reburn & Tanya Phillips - <http://tresagavesranch.com/tres-agaves-ranch/>

- Limited shared lodging will be available free on a first to reserve basis with no private rooms or baths. There are two cabins with multiple beds in each room, one indoor bathroom with shower and one outdoor shower.
- Home runs on solar energy with rain water collection with gas water heater, heat, cooking, and fridge.
- There is no air conditioning.
- High clearance vehicles are recommended to get to the ranch and roads surrounding.
- Six meals are available with three breakfasts and three dinners. There is a fee of \$75 pre-paid to Tanya Phillips.
- There are no partial meal deals or lunches. Meals begin Friday night and end Monday morning.
- You can also camp or bring a self-contained RV, with NO HOOKUPS, NO ELECTRIC or WATER available.

The 2 nearest motels are 1. Terlingua Ranch Lodge or 2. Longhorn Ranch Motel.

The nearest town is Study Butte - 15-20 miles away (45 min drive).

- Email: Tanya Phillips – tanyamp@gmail.com for lodging and/or meals. 

HLCS Survey Guidelines 2016

By Carolyn Todd

The HLCS mission is to study, document and publicize the value and conservation needs of horned lizards and to promote horned lizard conservation projects and assist with horned lizard management initiatives throughout their ranges.

In terms of promoting this mission and providing educational opportunities in the field, HLCS volunteer survey coordinators conduct surveys on private property, state, and national parks periodically when requested and scheduled. Locations, times, caravan meeting spots and phone number contact will be sent to members who email the survey coordinator no later than one week before the scheduled survey (see article titled Horned Lizard Surveys Planned for 2016).


Depending on the site selected, a short discussion will be presented by the survey coordinator regarding the objectives, safety concerns (if any) and methods of the survey. Each lizard will be weighed and measured for survey data and promptly released where they were found. **No collection of any reptile or amphibian will be allowed in alignment with park and private property rules and policies.** Venomous snakes may be present; caution will be encouraged to all who participate.

Requirements:

1. The surveys are only open to current and life members. Proof of membership will be checked via HLCS or member records.
2. No children under the age of 12 are allowed for safety reasons.
3. All participants will arrive and leave as a group. Make plans to stay the entire length of the survey. People exiting at different times are not acceptable or considered safe by private property owners and most parks unless previously arranged with the survey coordinators.

Highly Recommended:

1. Participants must be prepared for heat and cactus environments by wearing appropriate protective clothing (hats, long sleeve shirts, and long pants), we highly recommend that each participant will have enough water for one day in the heat, snacks might be helpful.
2. Bring bug spray if desired, for fleas, ticks, and mosquitoes.
3. Sun tan lotion may be needed.
4. Binoculars and cameras are also recommended. Each survey will be documented in the HLCS newsletter; contributions in text/photos are welcomed.

Most sites are conducted in a natural site that can have rocky, unstable, and rapidly changing elevations. Smooth and flattened trails are rarely available. 





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