



## **Texas Horned Lizard Study in Oklahoma** **2021 Grant Recipient Summary**

*By Sam Eliades*



Texas Horned Lizard (*Phrynosoma cornutum*) with tracking tag.

We made considerable progress on the development of a successful headstart program for Texas horned lizards (*Phrynosoma cornutum*) in Oklahoma since the program's inception in 2019. Most notably in 2021, we released 34 juvenile and subadult lizards onto Tinker Air Force Base in Oklahoma City, Oklahoma. There are an additional 20 horned lizards hatched or collected in 2021 at the Oklahoma City Zoo and Botanical Garden's "Lizard Lab" in preparation for another release in the near future. Our husbandry adjustments since the project's onset have resulted in a net doubling of survival rates for lizards in human care in 2021 compared to 2019. In 2021 we also collected ~250 microbiome samples from Texas horned lizards in the Lizard Lab and from those released on Tinker to add to the 100+ samples collected from captive animals between 2019 and 2020.

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Throughout the project we shifted feeding and watering protocols as needed in the Lizard Lab to maximize animal growth and survival. These changes appear well-suited for horned lizards in human care as survival rates have improved substantially year over year. Only 49% of lizards hatched or collected in 2019 survived past their first year of life whereas 73% of animals from the 2020 cohort did. We had an 87% survival rate for lizards in the 2021 group and now have a strong, established protocol for rearing Texas horned lizards in human care at the Lizard Lab.

The summer of 2021 marked the first implementation of a headstart reintroduction for this program where we relocated all 34 animals from the Lizard Lab back onto Tinker Air Force Base. The release consisted of 15 animals from the 2019 cohort and 19 from the 2020 cohort. Lizards were placed in four soft-release pens on Tinker Air Force Base's Wildlife Reserve 3 (WR3) on 1 June 2021. On 8 July, we removed 20 headstart

lizards from their pens, affixed sub-adults (2019 lizards) with solar-powered CTT LifeTags and harmonic radar diodes and juveniles (2020 lizards) with harmonic radar diodes only to track individuals weekly after their full release on WR3.



Although we experienced severe mortalities for animals in soft-release pens, we now know that a five-week soft-release duration is likely unnecessary for lizard acclimation. Lizards were observed exhibiting natural behaviors immediately upon placement in soft-release pens and one lizard was even seen consuming native ant species right as it was placed in its pen for the first time. We recorded significant lizard die-offs after the third and fourth weeks of acclimation in pens. As such, we will shift to a two-week acclimation for headstart animals in the next release iteration in 2023. Additionally, desiccation appeared to be fatal for both headstart and even wild lizards during the month of June in 2021. As such, we plan to move the initial translocation of individuals to a cooler month to avoid extreme heat and desiccation events in the next release.

Lizards shed or removed their tracking tags/diodes with surprising efficiency over the summer making it difficult to assess survivorship and growth for headstarted,

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released individuals. From the 20 animals released completely in July 2021, we only refound 18 individuals throughout the remainder of the month. Four of those individuals were deceased when located, leaving at most 16 headstart individuals alive for the remainder of the season. Throughout August, we found only eight individuals (most of these were found more than once though). Similarly, only six individuals were encountered in September and just three in October. Fortunately, however, no mortalities have been confirmed since July, suggesting all 16 lizards may still be alive on WR3 as of the end of the active season in 2021. Furthermore, of the three lizards identified in October, we located two that had buried themselves in preparation for winter hibernation that year. These lizards had been kept at stable temperatures and light cycles year-round in the Lizard Lab so we did not actually know if the lizards would emulate this critical behavior to survive the cold winters of Oklahoma.



Because lizards were so capable of shedding or removing tracking technologies during this headstart iteration, it is difficult to compare growth rates between cohorts statistically. Lessons learned from this first successful release of Texas horned lizards will allow for even better survivorship and tracking data in future releases and more significant comparisons on growth rates and survivorship will be made in 2023.

Since October 2020 we have collected nearly 200 fecal samples from Texas horned lizards in the Lizard Lab for future analysis of gut microbial communities in lizards while in human care. These samples are in addition to the 100+ fecal deposits retrieved between 2019 and 2020. Further, we were able to procure another 50 samples from lizards post-release on WR3 between July and September 2021 which will provide invaluable information on gut microbial community shifts associated with host release into native habitat.

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To accompany this dataset, we also collected fecal samples from roughly 15 wild Texas horned lizards of various ages classes (hatchlings to adults) on WR3 for use as a comparative dataset against headstart samples. Data from these microbial analyses are currently summarized in a manuscript that is under review for publication in the very near future.



## HLCS 2024 Grant Program

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/>.

HLCS will be offering grants again in 2024. 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. Also include a preliminary budget with as much detail as possible and with any other funding sources available, received for your project, and other grants you are applying for. Word format documents are preferred.

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 Dalton Neuharth: [dneuharth15@gmail.com](mailto:dneuharth15@gmail.com). All three documents should be in separate digital files. Check the website for more information. The deadline is January 15, 2024. The decision will be announced by March 1, 2024.



# Official HLCS Facebook Group Member Page

HLCS has created a cool method for communicating between members. This page will also allow the HLCS Board to keep you updated with the latest news and activities and allow you a forum to post your photos and stories and ask others questions and make comments.

This page is for the dues paying members and the objective is to provide more value to you!

If you are on Facebook and are dues paying member, look for the official page to be a part of this group.

Go to this page and ask to become a group member: <https://www.facebook.com/groups/HLC-Smembers/> It is easy to sign up and it is fun! Hope to see you there!



## NEW Sales Item - HLCS Collectible Coins!



Our new products are these two beautiful 2-inch diameter die struck coins that were designed by HLCS members. These coins are a part of a collectable series which will be released annually. The idea and the funding of these coins are through a major donation and in memoriam of Alexander Cochran. Proceeds from these coins will help fund the HLCS grant program.

Shown are the two different colors: antique-silver and gold. The Desert Horned Lizard (*Phrynosoma platyrhinos*) is on this collectible selection.

Start your collection today before these selections run out! And they make great gifts! Go to the HLCS Online Store website to purchase. Each coin is \$22 and two are \$40.



# President's Message

by Cheryl Jenkins

Autumn is a time for winding down before the holidays ramp up and enjoying the cooler temperatures and changing colors. Of course, where I am in southern California and for much of the arid southwest, we don't get much of a cool down and hardly a changing leaf in sight. It is still my favorite time of year and a time for reflection and preparation for the winter months. Many species of horned lizards and other reptiles are preparing for brumation at this time, so you might not see as many when you're out and about. Still do keep an eye out though because there could still be some lizards out, especially if the weather is warm.

Enjoy the cooler temps and changing leaves and send us any ethically taken photos of horned lizards you find on your adventures. You can document horned lizard sightings on our iNaturalist project: <https://www.inaturalist.org/projects/hlcs-horned-lizard-documentation-project>. Please don't provide exact locations of your sightings, just a general vicinity.

I want to take a moment to sincerely thank all of those who donate their time and money to HLCS. We are 100% run by volunteers and donations and couldn't function without your contributions! Monetary donations go towards our grant and educational programs to support our mission of spreading the importance of horned lizard conservation. I also want to give a shout out to our wonderful board members and volunteers who helped at recent HLCS events including horned lizard habitat seed ball distribution, educational booths at RipFest and the Texas Master Naturalist annual meeting, and even a horned lizard conservation fundraiser in Miami, Florida. Thank you all!

If you know of any events that might benefit from having an HLCS educational booth or sponsored field trip and/or you are interested in volunteering at any events, please let us know. Enjoy the rest of your fall and upcoming holidays!



Blainville's horned lizard (*Phrynosoma blainvillii*) on dry vernal pool substrate.

San Diego County, California.

Photo credit: Cheryl Jenkins 2023.





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Families: \$25 for the first person and \$10 for each additional member

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*Cheryl Jenkins*

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