WHATEVER HAPPENED TO THE HORNY TOAD?

BY **CHAD LOVE**

WALK OUTSIDE AND find some open space, maybe an undeveloped commercial lot or the still semi-wild periphery of the neighborhood. What's there? Bugs, weeds, various and sundry creepy crawlies—the usual scrum of little-noticed life scratching out an existence on the very margins of human activity. But one thing even the most astute observer may not see is a small, slow, curious-looking creature resembling something out of another epoch.

It's been called a lizard, a frog, or a toad. Horned, horn, or horny. But by any name, the Texas horned lizard—better known around these parts as the horny toad—is the stuff of folk tales, regional pride, school mascots, and the memorable menagerie of countless Okie childhoods. And it is slowly disappearing from both the historic range it once occupied and the environmental conscience of a culture.

Whatever happened to the horny toad? It's a question Oklahomans have been asking as they look around and notice they seem to see less and less of the state's popular little dinosaur.

JJ RITCHEY

THE HORNY TOAD IS CONSIDERED RARE AND LOCALIZED IN OKLAHOMA.

THE HORNY TOAD is, of course, not a dinosaur. Nor is it a toad, a frog, or any other type of amphibian—despite the squat, stout shape that gives it its popular name. Its proper name is *Phrynosoma cornutum*—the Texas horned lizard—and it bears a remarkable resemblance to a miniature Triceratops, with numerous horns poking out of its Jurassic-looking head and along its body.

Historically, the horny toad ranged from the south-central United States—primarily parts of Texas, Oklahoma, Kansas, Colorado, and New Mexico—and down into northern Mexico. It is a creature of the flat, open, semi-arid southern plains and Southwest. To thrive in this habitat, it needs two things: unfragmented habitat and ants. Lots of ants. The bulk of the horned lizard's diet consists of seed-eating ants, and therein lies a big piece of the puzzle of its decline.

Mark Howery is a biologist with the Oklahoma Department of Wildlife Conservation's Wildlife Diversity Program. He's also a big fan of the horned lizard. According to him, the horny toad's decline largely can be traced to the continued loss of the prairie that once covered most of central and western Oklahoma, which has declined by at least 60 percent over seventy years.

"Especially in central Oklahoma, a lot of our native grasslands have either been developed or converted to cropland or non-native pasture like Bermuda grass or fescue," says Howery. "So we have very little true prairie with native warm-season bunch grasses and broadleaf forbs in central Oklahoma."

But habitat loss isn't the only culprit. Seed-producing native grasses and plants are the primary food base for the ants so vital to the horned lizard's diet, and these grasses have declined across the state. The once-ubiquitous red harvester ant—fabled ruiner of many an Okie picnic—is the primary species that horned lizards feed on, and the widespread use of herbicide has greatly reduced its number, impacting horny toads' ability to find food.

So how bad is it for this unusual-looking reptile? There's good news and bad.

"In Oklahoma, the Texas horned lizard is officially considered a species of special concern," says Howery. "Currently, it's not threatened, and it's not endangered in Oklahoma. But it has a year-round closed season, which means it is unlawful for a person to kill, capture, or possess horned lizards without prior authorization—mostly for research."

In all, the horny toad has disappeared from around seven or eight counties on the eastern periphery of its range and now is considered rare and localized in Oklahoma.

"We have very little true prairie left in central Oklahoma, and what remains tends to be concentrated in sandy soils and stabilized sand dunes along rivers," says Howery. "And that's where we tend to find most of our remnant lizard populations in central Oklahoma: pockets here and there along railroads and in empty lots. But this area is becoming more heavily developed every day, so their long-term prognosis in the Oklahoma City metro area is not very good."

The good news is that in the western third of the state, the Texas horned lizard is doing okay.

"It's still fairly widespread and common," says Howery. "Where there's habitat, you tend to find lizards, but as you move eastward across the state, it's been extirpated from a lot of its range primarily due to habitat loss."

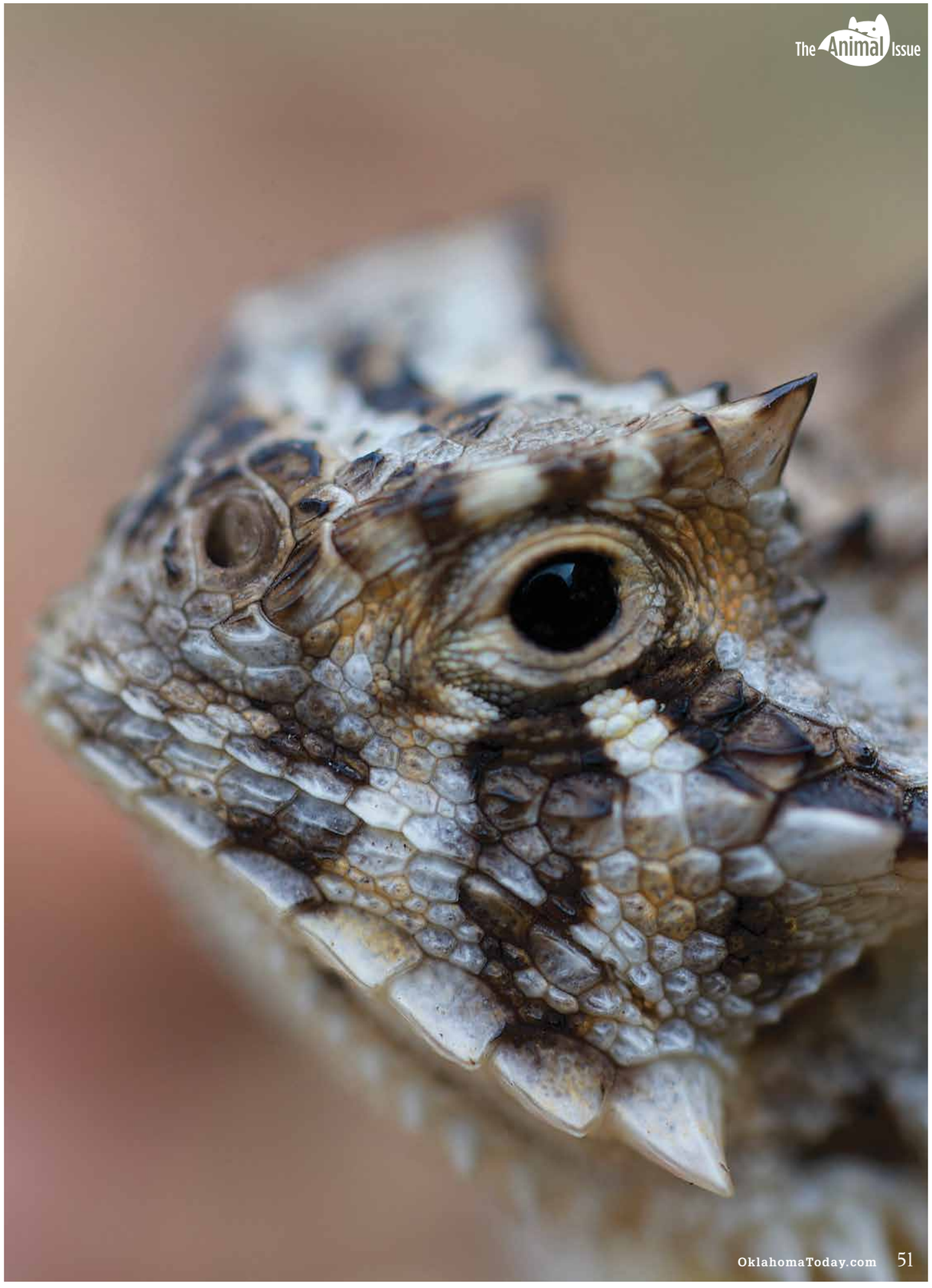
Horned lizards, it turns out, are not good dispersers. They can't travel long distances to establish new populations, so if they aren't in a location to begin with, or they've disappeared, chances

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

HOW TO HELP

Donate to Research and Conservation

Since the bulk of the funding and focus of the Oklahoma Department of Wildlife Conservation is on game species, there's not much funding for non-game species research and conservation efforts. One way residents can help is by donating through the wildlife license plate program. Funding from all nine ODWC wildlife plates supports the Wildlife Diversity Fund.



Horny toads' spines serve a defensive purpose, as they make it difficult for predators to see and swallow them. The lizards also are famous for shooting blood from sinuses behind their eyes.

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

JAMES PRATT

About 20 acres of Tinker Air Force Base in Midwest City are set aside as a preserve for wildlife—including the horny toad population.

are they're gone for good in that area. Which makes the very existence of central Oklahoma's most unlikely yet most well-known population of horny toads all the more remarkable.

FOURTEEN YEARS AGO, Williams Natural Gas employees working on a gas pipeline at Tinker Air Force Base in Midwest City came across a population of Texas horned lizards happily carrying on amid the roar of the airplanes, blissfully unaware that they weren't at all supposed to be there. The disruption of the lizards' habitat was an inauspicious beginning for what, over the years, has turned into one of the most comprehensive and long-lived studies of the Texas horned lizard ever conducted.

"We thought we had a few horned lizards out there," says Ray Moody, a natural resource scientist at the base who has coordinated the study from the beginning. "But we didn't know much beyond that, so Williams provided a mitigation fund to assist with the first year of research. We ended up buying some little backpacks and transmitters so we could track them to see what they were doing here and how we could help them."

When the study began in 2003, the twenty-acre core research area had a population of fifty-two horny toads. When a housing development on base led to a loss of habitat nearly a decade later, the number dropped to seventeen, but today, there are about fifty-four adult horny toads living at Tinker.

Some of the findings from the Tinker study are shedding new light on how the lizards react to habitat loss and relocation and how best to protect and conserve them. One new finding: Horny toads are homebodies who don't do well when moved to another range.

"We took seventeen lizards from one habitat area on base into another," says Moody. "We moved them in July, and by fall, when they went into hibernation, we only had three left."

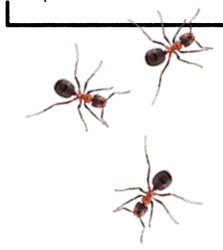
Researchers found that the lizards had to move around a lot more to find food and cover, which made them more vulnerable to predators. Now, says Moody, one of the study's objectives is to find ways to make sure horny toads can survive relocation. To that end, the base is partnering with the Oklahoma City Zoo to create ways to move hatchling horned lizards into new areas to see if they'd do better than adults.

"They're about the size of your thumbnail, so you can't put a heavy transmitter on them," says Moody. "So for the last three years, we've mounted electronic diodes with harmonic radar technology that uses a tiny reflective patch on the young to relay their location. Last year, we tracked more than seventy of the little guys."

A female horned lizard will have an average of seventeen to nineteen young in one clutch, and since the Tinker researchers have been able

HOW TO HELP

Lose the Herbicide:
"Broadleaf plants and forbs are the food base for the harvester ant," says Mark Howery. "Horned lizards can survive without red harvester ants, but they do have to have ants of some kind. If people have horned lizards, doing things like leaving red harvester ants alone, not applying blanket herbicides for broadleaf plants, and leaving in place those broadleaf plants to the greatest extent possible will help the lizards a lot."



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HOW TO HELP

Take a picture; it'll last longer

"Horned lizards make terrible pets," says Howery. "They need a diversity of insects, including ants. They will not thrive just eating mealworms and crickets. They don't live long under the best of circumstances—maybe five years. And it's illegal in every state in which the horned lizard lives to keep one as a pet. There should be no Texas horned lizards anywhere in captivity unless it's being done for research and is properly permitted." Bottom line? If you see a horned lizard in the wild, enjoy the experience, take a picture, marvel at its uniqueness, and then leave it alone.

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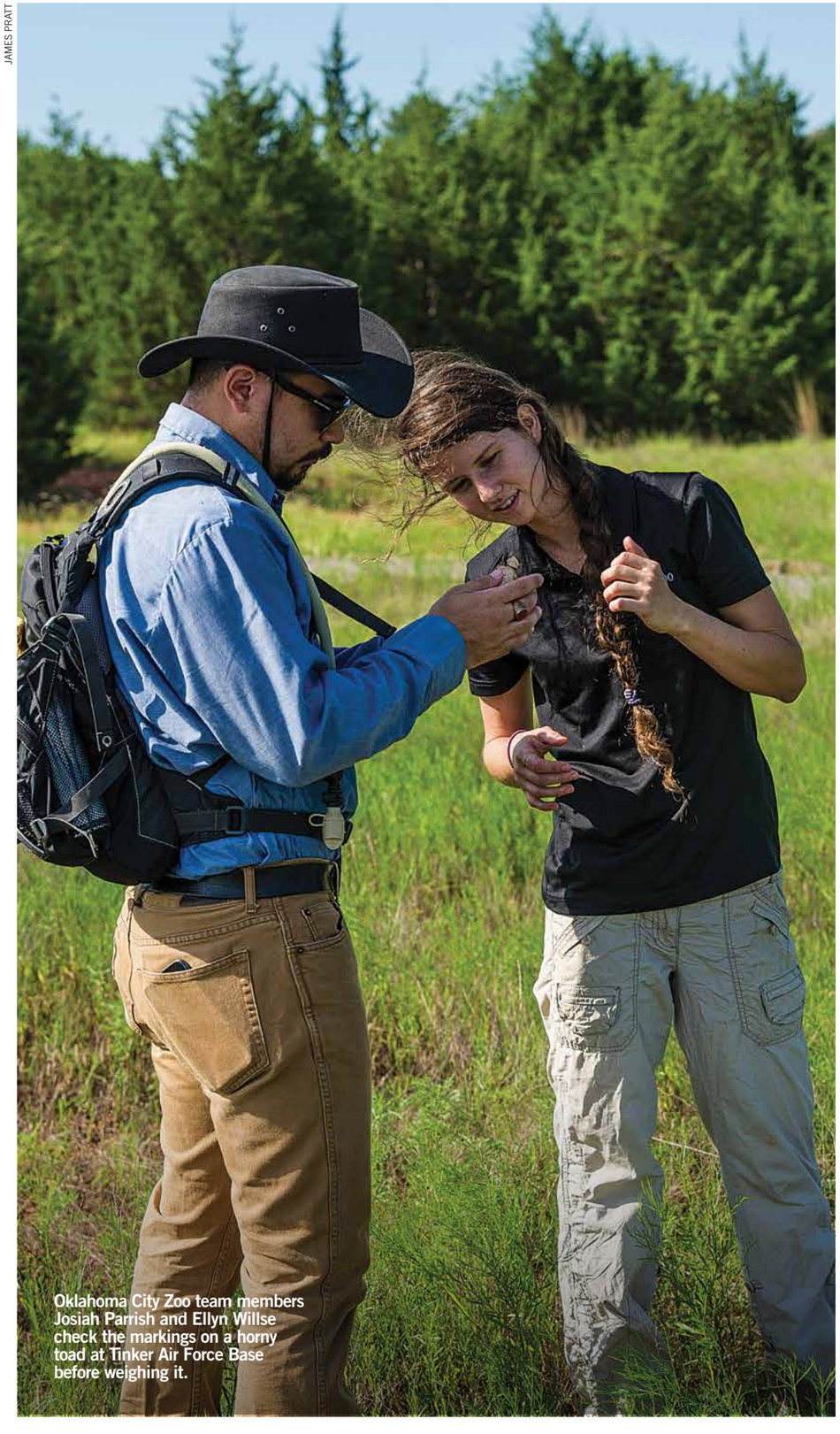

Oklahoma City Zoo team members Josiah Parrish and Ellyn Willse check the markings on a horny toad at Tinker Air Force Base before weighing it.

JAMES PRATT

Researchers use silicon and elastic collars with transmitters to track Tinker Air Force Base's horny toad population. The technology they employ was developed in Sweden to locate avalanche victims.

to tag them, they've been learning some new and interesting things.

"We've found that when it gets really hot, hatchlings will use cracks in the clay soil to get out of the heat and escape predators," says Moody. "We also observed them clustering together in late fall and winter. Adults will burrow into the ground, but we found that hatchlings won't. They'll lie right on the surface, clustered together and sometimes stacked on top of each other, and on warm days, they might actually move around a bit."

Moody says the implications of these observations go well beyond how to conserve the Tinker lizards. Some of the new discoveries are directly applicable to larger conservation efforts.

"If you're doing a prescribed burn, it might be better to do it in warmer months when the lizards are active and can move or go underground to escape the fire," Moody says.

The next step for the Tinker study is to learn more about horny toad re-introduction efforts.

"Right now, we have a female laying eggs at the Oklahoma City Zoo," says Moody. "Those hatchlings will be the first group in a trial to see if we can successfully re-introduce young horned lizards into the wild."

As part of the research, the zoo will keep hatchlings for eight to nine months before releasing them at Tinker.

"It's a challenge to keep them in captivity, even with what we're doing here," says Stacey

HOW TO HELP

Control household predators:

It's estimated that the number of songbirds killed by free-roaming cats each year is in the millions, and while this is a contentious and controversial issue, there is no denying that free-roaming cats have an impact on small animal populations. Horned lizards are not particularly fast creatures, and as such, they are easy targets for outdoor-roaming pet as well as feral cats. If you have horned lizards on your property or in your area, keep your cats inside.

ANDREY KUZMIN/SHUTTERSTOCK

JAMES PRATT

"IF WE CAN SAVE THE HORNED LIZARDS, IT'S ALMOST LIKE SAVING AN IMPORTANT PART OF OUR CHILDHOOD."

Sekscienski, the zoo's curator of herpetology. "We're going to offer about six different types of food items to these hatchlings to make sure they're getting well-rounded nutrition."

Though the Oklahoma City Zoo currently has no horny toads in any of its exhibits, zoologists there are excited to help the species while educating Oklahomans about this much-loved reptile.

"We love talking about horned lizards," says Sekscienski. "This research is a great way to connect our visitors with something they remember when they were kids. We get a great response from our visitors during events like endangered species day, when we spotlight the research we're doing with Tinker. That's when we hear a lot of people saying they don't see horned lizards anymore."

NEARLY ANYONE WHO was raised in central or western Oklahoma seems to have a memory of catching horny toads. And many people seem unable to recall the last time they actually saw one.

This disconnect between past memory and present mystery is what spurred Canute native and filmmaker Stefanie Leland to go in search of the answer. Her 2012 documentary, *Where Did the Horny Toad Go?*, began while reminiscing with friends.

"I decided to make the film because I was talking to some friends about horned lizards, and I realized I hadn't seen one since I was a child," Leland says. "People have an affection toward them because of their docile nature and their unique appearance, and it's almost as if they think, 'If we can save the horned lizards, it's almost like saving an important part of our childhood.'"

There is a term scientists use to describe the loss of collective ecological and environmental memory. The condition is called—somewhat clinically for such a heartbreaking concept—"shifting baselines syndrome," and it describes the process by which each generation defines what is normal based on its own experiences rather than historical data. Therefore, when something fairly common—an animal, a plant, an entire biome—gradually becomes scarce, the pale ghost becomes the new normal as the baseline of collective memory shifts.

It remains to be seen how the horny toad's shifting baseline will affect the species. As increased development, use of herbicide and insecticide, and invasive species continue apace in central Oklahoma, a decline in Okies' awareness is likely to follow. So perhaps the best way to combat threats both tangible and intangible is to get outside and re-engage with the curiosity and wonder that accompanies every horny toad sighting. As long as people still care about the horny toad—and plenty, it seems, still do—the scaly, spiny, unique little icon still has a chance.

If you see a Texas horned lizard in the wild, the Oklahoma Department of Wildlife Conservation wants to know about it in order to better understand the species' distribution and frequency in Oklahoma. To report a horned lizard sighting and help contribute to ongoing science, go to the Wildlife Diversity Program's Citizen Science Program page, click on the "Report Texas Horned Lizard Sightings" tab, and follow the instructions. wildlifedepartment.com. The ODWC will host a Wildlife Expo featuring a horny toad exhibit at the Lazy E Arena in Guthrie September 23–24. 9600 Lazy E Drive, (405) 282-3004 or lazye.com.

CHRUPKA/SHUTTERSTOCK

HOW TO HELP

Restore pasture to native grasses:
If you are a landowner wanting to help out horned lizards, converting Bermuda and fescue pasture back to warm-season grasses, as well as converting from species like old world bluestem to native grasses and forbs, will help.

During the first year of the Tinker study, horny toads wore tiny backpacks carrying their tracking diodes. The backpacks were made from lightweight burlap by OSU graduate student Joe Hackler's grandmother. Now, tracking diodes are glued to horny toads' backs and are helpful when researchers weigh the lizards.