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Unearthing the Ancient ‘Texas Serengeti’

Long-buried fossils collected before World War II are leading UT researchers to think the Texas coast once resembled the African Serengeti.

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By Joe Hanson | Photographs by Matt Wright-Steele

An 11–12 million-year-old skull of Blancotherium buckneri, one of the thousands of fossils housed in UT archives

A squat rhinoceros lumbers through the grass on the banks of the Blanco Creek, near Beeville. Nearby, a prehensile trunk shovels a bundle of vegetation into the maw of an elephant-like behemoth. There’s the yip-yip of a coyote, as peculiar horses graze and gallop in the distance. The alligator lurking near the shore is familiar, as are the turtles basking in the sun, but the giant tortoise and the camels seem out of place on the Texas coastal plains.
Of course, this isn’t yet Texas. There is no Beeville, and the creek here has no name, because this

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Texas in the Miocene epoch. It’s a world that more closely resembles the diverse expanse of the African Serengeti than any landscape or ecosystem we find in the state today.

Between 1939 and 1941, as part of a New Deal-era work program run by the university’s Bureau of Economic Geology, dozens of unemployed Americans, none of them trained in geology or paleontology, excavated and prepared fossil bones from four sites near present-day Beeville and Goliad. In 1941, the project was superseded by World War II and its thirst for more strategically exploitable mineral resources and able-bodied men. But in that time, thousands of mineralized bones and teeth representing dozens of ancient species were plucked from a handful of South Texas ranches.

In the decades since, most of the fossils have laid buried in the archives of UT’s Vertebrate Paleontology Library at the J.J. Pickle Research Campus — many still untouched, frozen in the plaster casings applied by the Works Progress Administration excavators. More is known about many of the fossils themselves than the men who worked these sites. (According to records, the WPA only employed men on these projects.) Often they are each remembered only in adjacent lines on a sample preparation card. Description: Horse, ankle bone. Collector: McWhirter.

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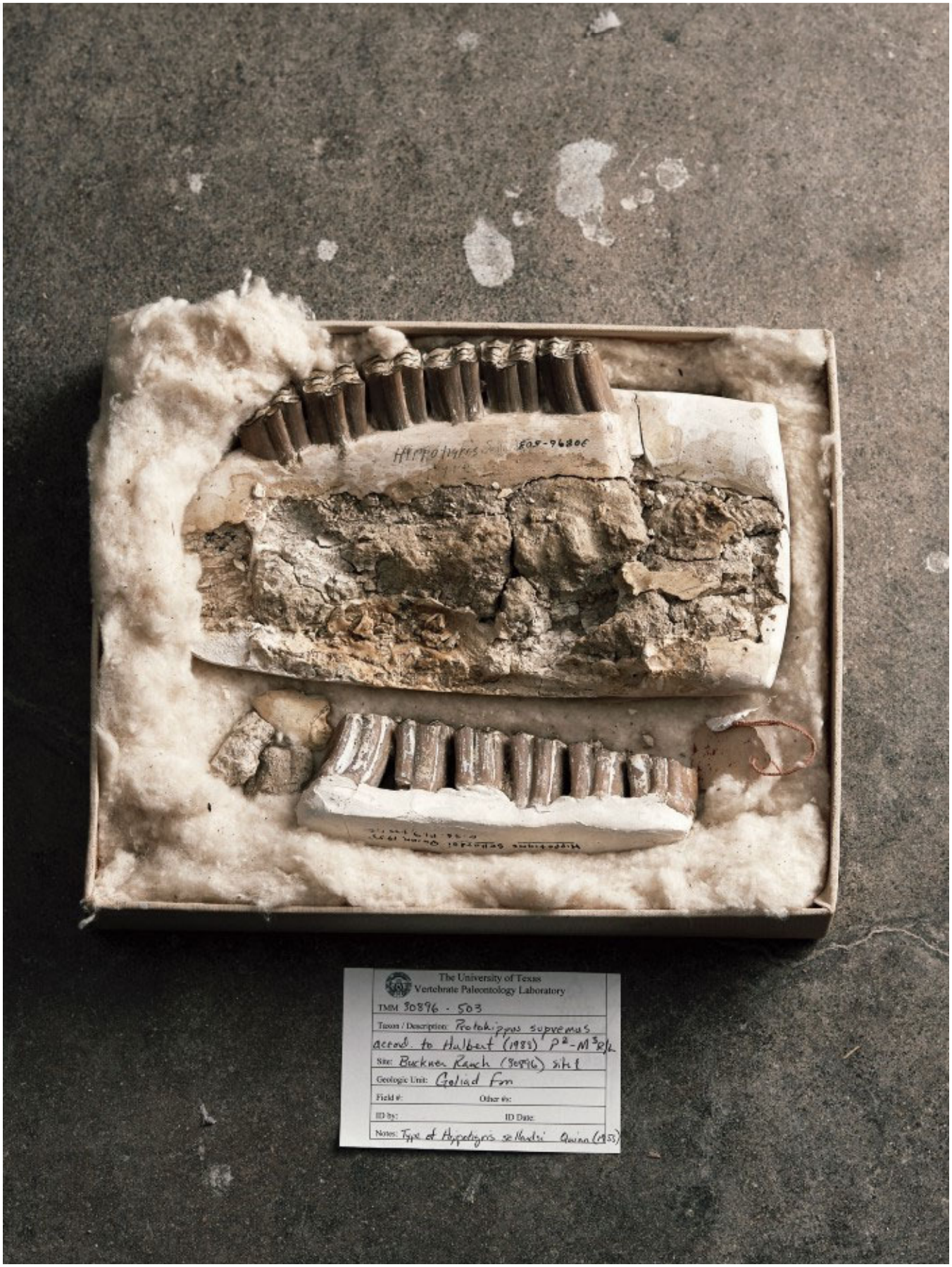

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which, and where. Few fossil caches in North America have portrayed an entire ecosystem as completely as this one. Collectively, they are known as the Lapara Creek Fauna, and they describe a richly populated landscape that, 10 million years ago, could have been called the Texas Serengeti.

Much of what we know about the Lapara Creek fossils is thanks to the herculean efforts of Steven May, a research associate from the Jackson School of Geosciences. May had already worked one career, spending 30-odd years as a geologist in the petroleum industry before he turned his eye to the Texas Serengeti five years ago. Browsing through the VPL, the WPA fossils caught his eye for a few reasons. Much of the material was already prepared and catalogued, saving him years' worth of work before he began his study. And these were from a different age and geography than May had studied previously, which meant there was a lot he could learn. He isn't the first scientist to examine the Lapara Creek fossils in detail, but he is the first to attempt to bring the bigger picture into focus.

May's wife, Melissa, BS '77, who studied archaeology and worked alongside him on many parts of the project, says that this passionate pursuit is simply at the core of who they are. "Our life has been a compilation of going on various digs," she says, "because we both love history and we love putting the puzzle pieces back together."

May initially focused on a few of the smaller species among UT's Miocene fossils, but he soon realized just how many unanswered questions lay on the shelves and in the drawers of the Lapara Creek collection.

"Others had looked at individual fossils, or classes of animals," he explains. From the 1950s through the '80s, researchers had studied the collection's numerous prehistoric horses. Several of the fossils have also been on display at UT's Texas Memorial Museum. But no one has ever tried to assemble a picture of the collection as a whole. "I wanted to understand what the entire environment looked like back then. I wanted to take apart the entire fauna and look at them holistically," May says.

May's research has revealed a stunning diversity of ancient wildlife roaming the South Texas plains millions of years before longhorn cattle: unfamiliar creatures like Ceratogaulus, a horned gopher; a giant elephant-like beast called Gomphotherium; a barrel-chested rhinoceros called Teleoceras; and a strange three-horned antelope-like animal called Synthetoceras. But many of the extinct species would be instantly recognizable to our eyes today, including wild dog-like canids and coyotes, a dozen species of horse, even mice and rabbits. At least one species from the Texas Serengeti, Alligator mississippiensis, still survives today, lurking in swamps and bayous.

Ultimately, May knew that in order to completely reconstruct this ancient world he had to examine more than bundles of yellowing records and drawers of teeth and bones. He needed to dig where McWhirter and other WPA workers had.

Luckily, current landowners were more than willing to help May rediscover the Miocene quarries.

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incomplete WPA records — made the original excavation sites difficult to identify. Often a single ramshackle barn or depression in the ground was the only clue tying today’s landscapes to the original sites.

“In one place I found a bottle in the earth they used to refill the hole. It helped us to identify the site,” May says. He had successfully rediscovered the sites and verified their placement in the geologic strata of time. But many of the fossils had never been touched since they were excavated in the 1930s. Getting them ready for study would require money, which arrived in the form of a $17,000 crowdfunding campaign in 2015. Now it was time to finally open these time capsules to the Miocene.

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Specimens from the Lapara Creek Fauna, some of which are prepared and some that are still in field jackets from 1939.

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giant's neck to the tip of its tusk. In the basement are shelves stocked as densely as libraries are with books, instead the paper here is replaced by bone-turned-rock.

The multitude of Lapara Creek fossils occupy the shelves along an entire wall. Those with their original plaster casts are stamped with serial numbers identifying the location and date of excavation, most in the original handwriting of the WPA workers.

"The thousands of specimens they were bringing in, it's just unprecedented," says Matthew Brown, director of the VPL.

Brown explains how a modern fossil dig works very differently than the WPA project did. "Today, we go out for like two weeks a year. And it's a team of between five and 15 people," he says. "The WPA had, at any one of these sites, between 50 and 100 people working at a time, collecting pretty much year-round."

When those samples were brought back to Austin, they were met by a team of 50 fossil preparators working in a lab about the size of the warehouse that currently houses the VPL. Today, Brown struggles to keep just two preparators employed full time, relying on efforts like the crowdfunding campaign to help keep the lights on for the Lapara Creek research.

"There's no place in the world today that you can find hundreds of people as part of one project going out to collect like this," Brown says. He explains that, as a rule of thumb, for every hour spent collecting fossils in the field it takes 10 to a 100 hours in the lab in order to prepare them for archiving. It's why it took 75 years for someone to study the Lapara Creek fauna in total: There were just too many fossils to sift through. "It's a scale of project we haven't seen since."

Through a modern lens, it seems odd that a federal work program would intersect with Miocene paleontology. Brown admits it's not immediately obvious why the university's traditionally oil-focused Bureau of Economic Geology petitioned the WPA to support fossil digs, but he insists the match always made sense.

"Paleontology is key in understanding geology," Brown says. "Not just the history of life, but also the history of Earth." He explains that fossils can be used as benchmarks for time in different rock layers, especially when comparing the ages of distant geologic formations.

And according to records and letters Brown has unearthed, university administrators sought many of the specimens to be on display at the Texas Memorial Museum, which opened its doors in 1939. During this time, the university and Austin residents alike were so interested in paleontology that a portion of Gregory Gymnasium was temporarily taken over to display taxidermied bison, mountain lions, and fossils.

At least a few UT Austin students are still just as interested in the paleontologic past. As an undergrad, David Ledesma, BS '17, heard a seminar about May's work and he reached out to ask if he could help.

"I wanted to be a paleontologist since I was a little kid," Ledesma says. Assisting May was the major factor that propelled him toward his current graduate studies: Looking at how ancient reptiles responded to climate changes. "That was my first experience with research. And it made me

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material is here and all the questions I can ask.”

As comprehensive as May’s study is, there are still plenty of unanswered questions lying hidden in this treasure trove of fossils.

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Brown and his small team have been working, with limited funding, to ensure that this collection survives and is available for future research. That often means repackaging massive bones and tusks so they don’t crack or crumble to dust under the weight of time. Paleontology lab manager Deborah Wagner shows me a custom-molded skull case for a gomphothere that stretches more than four feet in length and requires a chain winch to lift. It’s a remarkably aerodynamic final resting place for an elephantine head.

Much of the work Wagner and other lab preparators do is focused on preserving these fossils for future investigators, for now that they’re out of the ground, some are at risk of crumbling beyond repair.

Most of the men who exhumed these ancient beasts from the banks of Medio Creek and Blanco Creek weren’t looking for new species. They were just looking for work. These were not trained geologists and paleontologists. Some fossils they collected now lay crushed inside ill-prepared plaster jackets. Others have proven to be Frankenstein-like reconstructions, with the teeth of one animal wrongly glued into the jaw of another. But the most notable error made by these untrained collectors is in what they did not collect.

Most of the Lapara Creek collection is made up of big animals — what paleontologists call megafauna. But every ecosystem on Earth, ancient or modern, contains more small animals than large, and May found few in the archives he was able to study. Collecting or even noticing such small fossils requires a carefully trained eye and meticulous hours spent sifting dirt through screens to pick rodent teeth and fragments of hollow bird bones from gravel and sand.

And as rich in prehistoric megafauna as the Lapara Creek fossil collection is, it is equally poor in flora. Not a single plant fossil was collected, despite written reports of fossilized wood and tree trunks uncovered at the sites. It’s difficult to reconstruct an ecosystem without its plants — understanding what grows in a place can provide important clues to the local climate at the time.

So May studied the next best thing. The Lapara Creek collection contains thousands of fossilized teeth, which give solid clues as to what the herbivores were chewing on. (The carnivores, of course, were chewing on the herbivores.) Judging from this proxy, the Texas Serengeti was likely a mix of grasslands dotted by stands of shrubs and trees, perhaps not too different from the rolling, grassy landscapes that covered two-thirds of the state before Europeans arrived.

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