

The **D**inosaur **Co**

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Phipps on his ranch
in Montana



Cowboy's Long Ride

Permissive laws have created a booming market for fossils. Paleontologists aren't thrilled, but for Clayton Phipps and his peers, it's a living

**By Andrew Zaleski
Photographs by Ian Allen**



On a sunny, 99-degree day in northern Montana, Clayton Phipps grabs a backpack and heads for a small trench, maybe a foot deep. He drops to his knees, his auburn hair flared out beneath his black Stetson, then opens his pack, removes a knife that looks best suited to cutting steak, and gets to work.

He picks through gray sand, then red sand, then dark, damp sand that smells like wet socks doused in talcum powder. When he looks up, a tiny, chocolate-colored block is between his fingers. “A little triceratops tooth,” he says. “I’ll get probably 50 of these on an average day. They’re only worth maybe five bucks, but 50 of them adds up.”

We’re standing on a flattened sandstone hill that’s Phipps’s to dig, on pastureland he owns. Surrounding us is a panorama of dirt and dust and stone and shale. In the distance are Angus cattle, black like fresh charcoal, grazing lazily. Phipps has valiantly hobbled along on crutches to bring me here. He’s been a cattle rancher for going on 30 of his 48 years. Branding season finished up just days ago, and the horse he was riding over the weekend got rambunctious, bucking and slamming him down hard on the saddle. He hasn’t seen the doctor, but he’s sure his pelvis is cracked.

The hill where we’re standing lies atop the Hell Creek Formation, a 300-foot-thick rock bed snaking from the Dakotas to Montana and down into Wyoming. It dates back some 67 million years, to the Cretaceous Period, when *Tyrannosaurus rex* had the run of the place, and it’s by far the best record we have of what Earth was like just before the mass-extinction event that ended the age of dinosaurs. This particular corner of Hell Creek is so rich in fossilized reptilian material that Phipps has dubbed it Old Faithful.

Despite having no formal training and no academic background, Phipps is one of America’s leading commercial fossil

hunters. His nickname is the Dinosaur Cowboy. If you’ve heard of him, it’s probably because he’s one of the stars of *Dino Hunters*, a show that started its second season on the Discovery Channel



Phipps with the partially excavated Dueling Dinosaurs in 2006

this summer. Phipps is also famous for finding the Dueling Dinosaurs, a specimen containing the complete fossils of a 22-foot-long *T. rex* and a 28-foot-long triceratops that may have been locked in combat. It’s only the second set of fossils that has been found depicting a carnivore and a herbivore together. Phipps unearthed it in 2006, just 10 miles from Old Faithful. Tyler Lyson, a paleontologist with the Denver Museum of Nature & Science who’s seen the bones up close, calls it “one of the most remarkable finds in the last 50 years.”

Last fall, Phipps sold the Dueling Dinosaurs for \$6 million to a nonprofit affiliated with the North Carolina Museum of Natural Sciences in Raleigh, which then donated the find to the museum. Lindsay Zanno, the museum’s head of paleontology, who will lead research on the fossils, still recalls the moment she saw them in person, during a meeting with Phipps in 2016. “They look as if they could climb right out of the rock,” she says. “You’re almost transported back to that day they died.” Scientists hope the specimens

will answer questions about dinosaur behavior, including whether or not the pair was actually fighting.

Yet the sale reopened a controversy that divides some fossil researchers from fossil hunters like Phipps. Many paleontologists, leery of amateurs’ methods and commitment to science, contend that fossils should be part of the public trust, not a profit vehicle for individual diggers. And right now, the market for dinosaurs is red-hot. Not long before the Dueling Dinosaurs were purchased, the bones of Stan—a 40-foot-long *T. rex* dug up by Peter and Neal Larson in South Dakota—were auctioned by Christie’s to an anonymous buyer for \$31.8 million, the most ever paid for a single fossil.

Phipps occupies a unique position in this world. He tries to sell his finds to museums but admits that sales to private collectors have bailed out his ranch several times. The two approaches, he maintains, can complement each other, especially since fossil hunters are out there seeking bones that might otherwise be lost forever. “More fossils are being destroyed by Mother Nature than are collected,” Phipps says. “There’s no reason we can’t all work together.”

For a dinosaur, dying was the easy part of becoming a fossil. To be preserved, the creature’s body needed to lie in a spot where it could be buried quickly by soft sedimentary rock. Then its bones had to remain more or less undisturbed across tens of millions of years, through countless rainstorms, shifting glaciers, and collapsing cliffsides. That’s why there aren’t that many fossils of dinosaurs even though they roamed the Earth for almost 165 million years. The few relative hotbeds for finding them include the Dinosaur Park Formation in Alberta, Mongolia’s Flaming Cliffs, areas in China and Patagonia, and the Isle of Wight in England.

Much of the land in the Dakotas, Montana, New Mexico, Utah, and Wyoming also meets the environmental conditions for discovery. Rock layers that formed there around the end

of the Cretaceous Period have been eroding ever since, bringing dinosaur bones—which are much harder than the shale, clay, and sand in which they’re buried—to the surface. Once a fossil begins weathering out of the ground, it’s only a matter of time before freeze, thaw, wind, rain, or animals destroy it forever. Phipps calls much of what he discovers “chunkosaurus,” broken fragments of bone worth no more than a plug nickel. Sometimes, though, rare treasures lie in wait.

In many countries, including Canada and Mongolia, dinosaur fossils belong to the state. But in the U.S., private property reigns supreme, and bones excavated on private lands are beholden only to the law of finders, keepers. So long as they’re digging with the landowner’s permission, commercial hunters can do whatever they want with fossils. Federal lands are handled differently: Scientists secure permits to excavate but must ensure any fossils they recover make their way to an approved repository, such as an accredited museum, for the purposes of education and research. Native American lands are handled differently still, requiring permission from the tribes to dig.

Phipps’s interest in fossil-hunting traces to 1998. He was working as a hand on a neighbor’s ranch, and a man came along asking the landowners if he could scour the property for fossils. A couple of days later, he showed Phipps a bit of triceratops frill—the shieldlike plate that adorned the creatures’ heads—and told him it was worth about \$500. An obsession took hold.

Commercial hunting of dinosaur bones dates to at least the 1800s, but for a long time it wasn’t necessarily a fortune-making enterprise, even as private collectors often contributed to the fossil-gathering efforts of museums. But in 1997, a virtually complete T. rex skeleton—named Sue, after its discoverer, Sue Hendrickson—was auctioned off by Sotheby’s to the Field Museum in Chicago for \$8.36 million, a record for a dinosaur fossil. Sue’s excavation had been handled by the Larson brothers’ company, which later exhumed Stan.

They’d dug her up in 1990, at the Cheyenne River Indian Reservation in South Dakota, on the land of a Sioux rancher whose deed was held in trust by the Bureau of Indian Affairs. Multiple parties, including the U.S. Department of the Interior, staked a claim, but the fossil ultimately became the property of the rancher, whose land had reverted to private ownership shortly after Sue was unearthed. The rancher then sold the fossil off.

The purchase was almost \$7.5 million more than anyone had spent on a dinosaur fossil, and it upended paleontology’s assumed order. “Scientists used to be able to go out and look for fossils on landowners’ private property basically for free. You’d go out, you’d form a relationship, and that’s the way it worked,” says the Denver Museum’s Lyson. “That really changed when Sue was sold. That’s when the landowners started wanting pieces.”

Phipps’s spread in Montana is a Bob Ross painting. Blue sky blends into mud-colored steppes, every band of rock pooling outward onto a seemingly never-ending bed of grass. Miles of pasture are roped in with barbed wire and dotted with patches of sagebrush. And there’s no cell service.

By the garage of Phipps’s simple ranch house is a pile of chunkosaurus he’s kept as souvenirs of his fossil treks. The real spectacle is his basement workshop, where he stores resin copies of previous finds. Inside a display case are various tooth and claw replicas.

When he started fossil-hunting, Phipps thought it could mean financial stability for his wife and three kids.

“The dinosaurs made it feasible to live here and do the cattle. Between the two, I’ve managed to survive this country”

He recalls having just \$72 in the bank when he married in 1994. “The dinosaurs made it feasible to live here and do the cattle,” he says. “Between the two, I’ve managed to survive this country.” He lives on land he inherited from his father, the grandson of homesteading pioneers, and manages a herd of about 80 cattle. (Phipps takes slight offense when I ask for the acreage. “To a cowboy, it’s rude to ask how much land they own,” he says.)

What Phipps learned about dinosaur fossils was picked up over years of trial and error. In the beginning, he searched for fossils on his home ranch, a portion of which lies right on top of the Hell Creek Formation. He eventually branched out to the properties of neighbors and acquaintances, who would get a cut of any proceeds. “There’s no map saying X marks the spot, here’s a dinosaur,” he says. “If I had a dollar for every step I’ve taken looking for a dinosaur, I’d be doing a lot better than I am right now.”

In 2003, he made his first big discovery: the intact skull of a stygimoloch, a bipedal dinosaur whose head resembled that of a dragon. He sold it for almost \$100,000 to a private collector, who subsequently put the specimen in a museum on Long Island. The sale proceeds were split, after brokerage fees, among the landowners, the fossil preparer, and Phipps, whose end of the deal equaled a year’s salary as a ranch hand.

A few years later, in summer 2006, came the Dueling Dinosaurs. Phipps was prospecting on ranchland in the Hell Creek Formation with his cousin, Chad O’Connor, and a friend, Mark Eatman, who spotted a hulking bone sticking out from a sandstone embankment. It took about two weeks for Phipps and a crew to uncover the triceratops, which was fully articulated from beak to tail—its bones arranged as they would have been when the dinosaur was alive. “That never happens,” he says. “I mean, if you get half a dinosaur bone, you’re in good shape.”

Then, while using a borrowed backhoe to remove layers of sandstone around the triceratops, Phipps went to dump the bucket and saw bits of bone protruding from the sand. He ►

◀ dismantled from the backhoe and began brushing away the grains until he found a claw. After some more digging, to everyone's shock, the fully articulated bones of a carnivore emerged, barely inches from the triceratops.

Peter Larson, who helped unearth Sue and Stan, says such a find takes skill, not just luck. "He's one of the best," Larson says of Phipps. "Not only the best finders of fossils, but he's also one of the most talented excavators."

With the bones exposed, Phipps and his team made some deductions. That the dinosaurs were found in Hell Creek determined their age. And because they were buried side by side, Phipps concluded that they'd been entombed by the same event. Teeth discovered in the herbivore's neck and hip matched up

"The problem is that this private auction stuff jacks the price up to where museums can't afford them"

to missing teeth in the carnivore, which inspired him to come up with the name *Dueling Dinosaurs*.

The crew finished the dig in three months, much faster than professional paleontologists might have worked. They placed railroad ties underneath the fossils to hold them intact, then wrapped them in plaster as paleontologists typically do. Because the bones weighed almost 20 tons, all told, they moved them in parts, with four large sections containing most of the fossils. "I put every little bit of money I had into getting them out of the ground," Phipps says.

From the excavation site, the two skeletons were brought to a converted pole barn in northeastern Montana, home to a fossil preparation company run by Chris Morrow and Katie Busch. There they reconstructed the exact position of the fossils—which were so heavy they left a crack in the barn's concrete floor—then dried and cleaned them for shipping and sale. Phipps helped document

many of their features in photos and videos.

Zanno, the head of paleontology at the North Carolina Museum of Natural Sciences, says the fossils are "absolutely incredible." It's extremely rare for any find to have every bone accounted for and in its natural position, and rarer still that two fossils are preserved that way.

And it isn't just that the skeletons are intact. There's evidence of preserved layers of fossilized skin on both specimens, and the *T. rex* is the first complete example of the species ever found. "It has bones that we didn't know *T. rex* had," Zanno says. And, of course, there's the possibility that the two died fighting.

Perhaps the biggest question to resolve is whether the *T. rex* is truly a *T. rex*. Some paleontologists contend, based on the skeleton's relatively small size, that it's a teenage *rex*, but Phipps has argued since its discovery that it's a nanotyrannus, a possible dwarf species whose existence is debated among paleontologists. He points to the unserrated premaxillary teeth, situated at the tip of the dinosaur's upper jaw, as evidence; in a *T. rex* they would have distinct serrations.

"The reason we're calling it a *T. rex* is that the bulk of the evidence published by the scientific community suggests that's the most likely explanation," Zanno says. "I, for one, don't know that it is a *T. rex* or a nanotyrannus. It's one of the exciting questions that we need to tackle."

Commercial fossil hunters have made a number of similarly impressive discoveries in recent years. In 2013, a husband-wife duo digging in the Hell Creek Formation discovered *Trix*, still the world's third-most-complete *T. rex*. The following year, a fossil company digging in the nearby Judith River



A dino claw from Phipps's collection

Formation excavated a specimen it dubbed *Zuul*, which turned out to be a previously unidentified species of ankylosaurid (the tank-looking dinosaur with the club-tail). The Naturalis Biodiversity Center in the Netherlands acquired *Trix* for almost \$6 million, and the Royal Ontario Museum in Toronto purchased *Zuul* for an

undisclosed sum.

Prices have only gone up since, according to Jared Hudson, a full-time fossil broker who helped Phipps arrange the sale of another nanotyrannus candidate he unearthed in the first season of *Dino Hunters*. Hudson also connected Neal Larson, the owner of *Stan*, with a representative at Christie's. (Even though both Larsons dug up *Stan*, a custody battle took place following a dispute over the brothers' stakes in their company. Peter got the business and its 100,000-plus fossils; Neal got *Stan*.)

Hudson uses *T. rex* teeth to illustrate how the market has changed. A good specimen has crisp enamel coloring, prominent serrations, and a length of around 4 inches. A decade or more ago, he says, one might have gone for about \$1,000 per inch. Today it could fetch almost \$4,000 per inch.

Fossils can be bought at international trade shows and online, but the best finds are featured at auction. Hudson says all the auction houses he works with require proof of legal ownership. Independent experts usually verify a fossil's authenticity, while some houses will even X-ray bones to make sure they're legitimate.

Despite their rarity, the *Dueling Dinosaurs* proved difficult for Phipps to sell. Over time, the fossils got famous, thanks to news reports and testimony from paleontologists who viewed them in person. But for seven years, Phipps tried and failed to get a museum to buy them. In 2013 he went a different route

and took them to Bonhams to be put up for auction in New York. “I needed to feed my kids,” he says. He’d also piled up debt in excavating the bones. Bonhams appraised the fossils at \$7 million to \$9 million, but the auction ended up being unsuccessful when the sole bid of \$5.5 million failed to meet the \$6 million reserve price. Lacking the money needed to ship the Dueling Dinosaurs back west, Phipps put them into storage.

Soon yet another challenge appeared, this time putting his ownership of the fossils in jeopardy. For a century, fossil-gathering deals have been based on an Interior Department ruling that dinosaur remains found on private property belong to whoever holds the surface rights. Phipps had discovered the Dueling Dinosaurs on land owned by Lige and Mary Ann Murray, ranchers he knew well. But in 2014, two of the Murrays’ previous business partners claimed they owned the fossils, because they possessed a two-thirds share of the mineral rights for the land. The legal

saga went on for years, persisting even after the Montana legislature unanimously passed a law in 2019 defining fossils separately from minerals. Finally, the following year, the state Supreme Court ruled that fossil ownership is governed by surface rights, a decision that was upheld upon appeal.

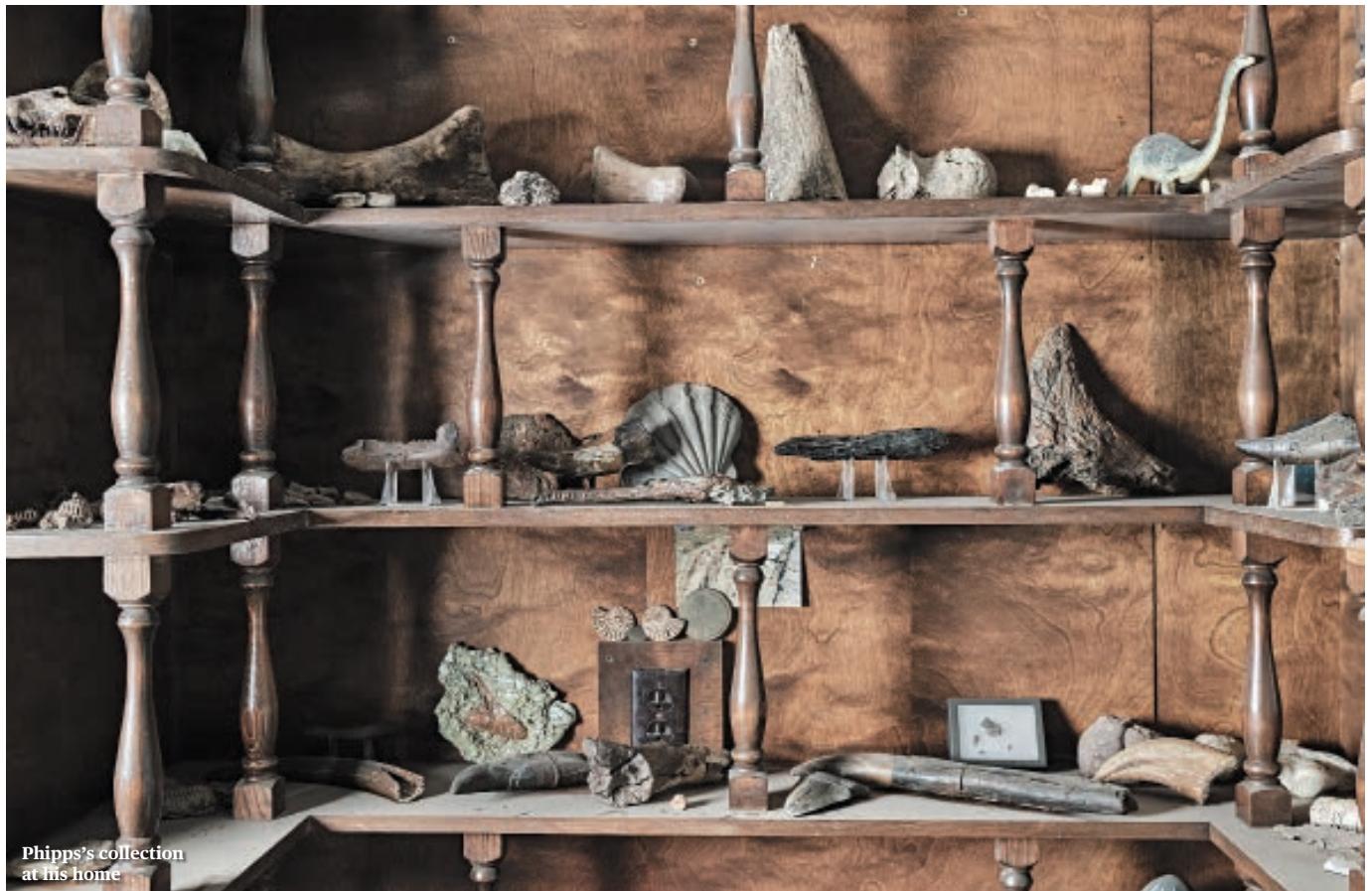
Ownership claims settled, Phipps was once again free to sell the Dueling Dinosaurs. That the fossils would end up at the North Carolina Museum of Natural Sciences was by then almost a foregone conclusion: Years before, Zanno had contacted Peter Larson to ask about the specimen. She and Phipps met up at the storage facility in New York in 2016, then waited for the legal battle to conclude and for the museum’s nonprofit wing to raise the necessary funds.

Phipps split the profits from the sale with the Murrays and a few other partners who’d helped excavate and prepare the fossil. By formal agreement, he’s not allowed to disclose how much he made. He says that after the sale, he and his

wife bought groceries. She also got a new pair of gloves.

No serious paleontologist would discount the contributions made by commercial fossil hunters. The experts’ concern is that potentially scientifically important fossils, once sold on the private market, will be unavailable for academics to study and the public to enjoy. “Museums often don’t have the resources to have staff doing excavations in a lot of places, and they will purchase material. So we need commercial collectors to be around,” says Jessica Theodor, president of the Society of Vertebrate Paleontology. “The problem is that this private auction stuff jacks the price up to where museums can’t afford them.”

The tension between concern for profit and concern for preservation plays out at times on *Dino Hunters*, whose first season aired in the summer of 2020, drawing 8 million viewers over its six episodes. Phipps and other ▶



Phipps's collection at his home



Phipps with his horse and dog on his ranch.

◀ ranchers clearly see fossils as a way to make money. But Phipps also talks about recovering them, often at great expense, before erosion takes its toll. “You have a short window of time before winter hits,” he says. “So you’ve got to save it.”

Joseph Boyle, senior vice president for production and development at Discovery Channel, argues that the show is more focused on learning about dinosaurs and the technical processes by which fossils are recovered. “I don’t think anybody would get behind the idea that random people should just go start digging around,” he says.

Still, in Theodor’s view, *Dino Hunters* encourages the profit motive. Just before the show premiered last year, her organization published a letter arguing that the show “glamorizes” the sale of fossils.

“In a perfect world, the scientists would have access to all the land, like in other countries where the fossils belong to the state,” says Lyson, the Denver paleontologist. “We are trained to collect this stuff in a very specific sort of way. When you have other people out there finding fossils, some of the data may not be recorded.”

And yet, Lyson acknowledges that the *Dueling Dinosaurs* might not have been found at all were it not for Phipps—a position Peter Larson takes even further. “The *Dueling Dinosaurs* would have never, ever, ever been found or dug in the proper way had Clayton not been the one who did it,” he says. Phipps and his crew worked quickly to get the bones out of the ground before the winter months, documenting them in photographs throughout. Maybe most important, he and the landowners opened up the dig site to Zanno and several others from her team. “That is significant,” says Jack Horner, the renowned paleontologist who inspired the character Alan Grant in the *Jurassic Park* books and films. “Oftentimes the commercial collectors do not give access to original sites, and that greatly diminishes a specimen’s scientific worth.”

To academics, the environment in which a dinosaur fossil was found is just as precious as the bones themselves.

Mary Schweitzer, Zanno’s colleague and a curator from the museum, says the discovery might have played out differently had it been made by trained paleontologists. After being covered by plaster jackets, the fossils would have remained in the ground for at least a year, maybe longer, to provide time to gather as much geological context as possible. The sediment that entombed the *Dueling Dinosaurs* would have been carefully sieved in a search for the remnants of tiny mammals that might have been alive at the time of the dinosaurs’ deaths, or for fossilized pollen grains that might have yielded clues about the triceratops’s diet. The geography would have been meticulously studied to determine whether the dinosaurs were buried where they died or carried along by a river channel before reaching their resting place.

Schweitzer, a fourth-generation Montanan herself, does have some sympathy for how it all went down. “If you have a dinosaur on your property and you could sell it, I would, so that my kids could have a better life,” she says. But she adds that, as a scientist, she worries more about what’s lost if fossils aren’t preserved in museums. “That’s the frustrating thing about competing with people who want to get them out quickly and sell them.”

Phipps and his colleagues might point out that preservation is no less important to commercial collectors. Once a fossil emerges, they have to ensure a specimen is safely unearthed, prepared, and stored, long before any money changes hands. “We take great care to not only preserve the fossils, but also the information surrounding them, so they can add more to research and display,” says Chris Morrow, who helped prepare the *Dueling Dinosaurs*. “It is in our best interest to do so, because they are more attractive and more valuable to museums that way.”

Zanno acknowledges that what academics generally see as the value of fossils—a unique record of natural history, to be conserved and made available for other researchers to study—doesn’t always align with the aims of commercial

paleontologists. But she says her own thinking has evolved over the years. “Standing on two sides of a chasm screaming at each other isn’t going to get us anywhere,” she says. “Maybe Clayton is a rare example. But in my mind, Clayton has a genuine love of fossils. He’s just as passionate about them as any paleontologist I’ve met.”

On the morning Phipps takes me out to Old Faithful, he assigns me to a little pocket of sandstone adjacent to his own and hands me a brush and a knife. Most of what I find is compacted sand and fossilized black wood. Phipps, on the other hand, finds several more tiny triceratops teeth to add to the one he’s already showed me.

Then, just before noon, I spot it—a dark object no bigger than a penny. Phipps takes a look and confirms that it’s a fossil, a triceratops spitter tooth identical to the ones he’s picked out of the ground. Like sharks, triceratops were able to regrow worn or broken teeth; a spitter is a tiny tooth that was shed when it could no longer effectively grind flora.

The excitement of my first find fades quickly, as Phipps announces he’s discovered what looks to be the tooth of a *T. rex* in his own trench. “I can see the serrations on it,” he says. “It may be a heartbreaker, though.”

With thousands of dollars potentially at stake, he starts picking carefully, working the sandstone away from the fossil. After about 20 minutes, the tooth pops out from the ground. One side is in near-perfect condition; the other side has a crack down the middle. I ask him what it’s worth.

“This one? I’d hate to have to say,” Phipps says. Maybe it’ll be enough for a few tanks of gas, maybe it’ll be worth more. Phipps would tell you this is the reality: Commercial hunters invest their own money, then wait years to see any kind of return. For now, he wraps the tooth in a piece of aluminum foil and returns to digging—pushing away sand, sifting through rock, searching for the next dinosaur bone, a priceless story preserved in time. **E**