Please Read

Hello!
This is the application I sent to the Sloan Book Grant. They accepted, and suggested I add some more for a science reviewer and for some research into Native American perspectives.

Some of the feedback said my DEI statement was pretty lacking, so when you do yours, consider adding more than I did.

Look at the next application deadline but just apply ASAP, and remember you need to send a letter of inquiry before sending the complete application. For the latter, you need a publisher. I've actually applied for quite a few funding sources and I usually don't get them, so...you should really jump on this one if you're writing a science book.

Enjoy this for free and I hope you get tons of money! If you want to pay me back for sharing this, just 1) pay it forward with transparency and specific numbers the next time someone asks you about your career/writing/money situation, and/or 2) donate $5 to the rescue where I'm fostering kittens. Maybe put "Thanks for the Sloan help Kristin!" in the memo so I can see if anyone did. Just if you want.



Feel free to ask any questions once you've gone through this and the Sloan page!

ALFRED P. SLOAN FOUNDATION

sloan.org | proposal guidelines

PROPOSAL COVER SHEET

PROJECT TITLE: Carcass: On the Afterlives of Animal Bodies

Principal Investigator	**Grantee Organization:**	Kristin Hugo
[address removed] KristinHugo@Gmail.com	**Amount Requested:**	$50,000
	Requested Start Date:	May 1, 2023
	Requested End Date:	December 31, 2023
	Project URL:	kristinhugo.com/book

Co-Project Directors/Co-Principal Investigators

MIT Press, Jane Dystel (agent)

Project Goal

To investigate, research, write, and publish a book called *Carcass: On the Afterlives of Animal Bodies.* This is a general audience book about dead animals and their importance to nature, science, humanity, and the world.

Objectives

I have been gathering threads for this project for over a decade. I found, studied, collected, and cleaned dead animals, engaged with the community, read research, and wrote articles about nature, biology, animals, and death for many science news outlets.

I plan to continue this research and writing with in-person interviews and experiences such as seeing animal slaughters, a fur farm, rendering, cremation, etc. I'll write the book to include on-the-ground reporting as well as established research. This book will help people understand something that affects just about every part of their lives, even though it is normally hidden from view.

Proposed Activities

I will use the funds to travel, interview experts and stakeholders, attend a conference, and focus on writing the book.

Expected Products

I expect to finish writing the book sometime around December 31, 2023, and I expect the book to be published in 2024. MIT Press is the publisher.

Expected Outcomes

Carcass is a book that will offer a unique understanding of a topic that is both forbidden and critically important. All sorts of people are curious about dead animals, whether they find them repulsive or engaging, a source of artistic

inspiration, anger at tragedy, or a source of scientific fascination. This book can be especially useful for biologists, ecologists, veterinarians, meat-eaters, animal lovers, outdoor enthusiasts, and more.

While producing this book, I will continue to create free social media content on TikTok, Instagram etc. documenting what I've learned.

Why This Book?

Three huge, dark birds were wafting about 30 feet off the ground, silently making circles around a spot off the trail. I slowed to a walk, sweating from my run, trying to see what they were circling around. There was something below that had caught their eye.

I thought of old cartoons of buzzards scoping out carcasses before they land to feast. Vultures above, dead animal below. I couldn't see from the trail because the spot above which they were hovering was in a ravine, but something told me I had to see.

Macedo Ranch, in the foothills of Mount Diablo in Northern California, was my go-to running spot every time I visited my hometown of Danville. The grass, often golden, and the sounds of winds and stirring of wildlife had captured my heart. It was April 8, 2010 when I ran up the first, muddy hill, then continued right at the remains of a gnarled, fallen oak. This time of year, the grass was lush and green. Through two cattle gates, over a bridge, and past the wary eyes of Angus-Hereford crosses, I continued for about three miles before I saw the circling turkey vultures. Then I made my decision to follow them. I eased down the muddy bank, and that's where I saw my first fresh carcass in the wild.

I hardly knew it then, but this experience would inspire a lifelong passion for dead animals. For years following, I spent more time in ravines and gullies than on trails, gathering bones and carrying them home for cleaning. I learned what chemicals to use, and which to avoid, to produce a white skull without rendering it brittle. I would discover a community of dead-animal enthusiasts, report on ethical and legal controversies in the wildlife trade, and learn to recognize the skulls of different species the same way I could recognize faces of different humans. One day I would look up to sixteen cow skulls lining the entire top of my walls, with just about every other Californian mammal on my shelves.

At some point, dead animals would replace running as a pivotal aspect of my identity, as well as my favorite topic to write about in my journalism career. But on that April afternoon, the obsession was

yet to come, and it was just me and Bessie in the ravine. There were no sounds but gentle wind and bird calls. There was no one to judge and no timer to beat on the run.

My instinct whenever I see an animal is to pet them. However, most animals don't want to be pet. Bessie, being dead, wouldn't complain. Mom had said not to touch dead animals ("they have diseases"), but I wouldn't be a good 20-year-old if I listened to Mom. Plus, I had *eaten* plenty of dead cattle; touching one shouldn't be that much of a problem.

I took off my headphones, draped the cord around my neck, and then approached the body slowly, carefully. Ankle deep in the green grass, I kept one eye on the turkey vultures overhead and one on the cow, and inched forward as though any sudden movement might startle the animal. But she made no move to get up or bellow, and I kneeled beside her. I didn't register a smell, and I didn't see any maggots or organs or any of the nasty stuff I would eventually encounter when I became bold enough to process fresh carcasses in the heat. Instead, I reached out with my right hand and carefully grazed my knuckles against the hard bridge of her white nose.

Contact. It wasn't anything like petting the family cats, who I loved and who loved me back. There was no soul there, no reciprocal interaction or warmth. The most important part of the animal was gone. But that's what made it so easy, and I realized that I could get as close as I wanted to any animal I found without bothering them. As long as they were dead first.

Your first thought upon seeing an animal carcass might be "trash" or "biohazard." Yet, dead animals and their parts can be converted into everyday objects that are so unobtrusive that you may not even know that they're just as dead as the opossum on the side of the road. That souvenir conch shell? Dead animal. Most of the items at natural history museums are dead animals. Horn-rimmed glasses: dead animal. Hamburger, leather boots, pearl necklace, gel pill capsules, ingredients in cosmetics,

pharmaceuticals, and lubricants? All dead animals. Dead animals already impact your life in innumerable ways.

There are plenty of less obviously utilitarian uses for animal remains, such as in art, science, or simply for their nutritional value to the environment. The destinations of animal remains vary greatly based on the species, the person in charge of its remains, potential needs and opportunities, and cultural practices. In *Carcass: On the Afterlives of Animal Bodies,* readers will follow animal remains from death to their actual final destinations, answering the question that is often shoved aside as morbid or impolite: *What happens to an animal's body after it dies?*

There is no single consistent answer. Readers of *Carcass* will learn about the numerous potential fates for roadkill, including compost, cremation, and even consumption. Then we'll how farm animals get to their plate—and medicine, and clothing, and cosmetics, and pet food. This book will dip into the controversial world of wildlife regulation, the killing of animals by government agents and the destination of those animals' bodies. We'll also go into a slaughterhouse and rendering facility to get up close and gritty with industrial carcass processing. Scientists as well use dead animals, and kill them to be either disposed of or further used by other scientists, rescues, and more.

Readers will get a glimpse inside the odd world of "Vulture Culture," the internet subculture of people who make art from animal remains. The book will also include insights into the highly controversial field of animal rights activism and animal testing, following lab animals as they are gassed en masse at the end of an experiment. (And, hopefully, we'll find a happy home for a beagle after their time in experimentation.)

Carcass isn't for everyone, but there are more than enough people who *do* want to know the gory details. The surge in popularity of true crime podcasts and documentaries has listeners and viewers coming out of the woodwork to admit that they've always been fascinated with death, they just didn't know it was ok to talk about it.

"Especially these days...more and more people are going 'yes, I am interested in [true crime],'" Karen Kilgarriff said in an episode of the wildly popular podcast *My Favorite Murder*. "'...I felt like I was a ghoul before, when nobody seemed to be interested in it. And now I can say it, now that it's like, quote-unquote a 'trend.'"

This sentiment is common in true crime as well as among oddity collectors and bone artists: people are starting to express their love for the macabre, now that they know it's a normal and common feeling. Among millennials, Halloween is even the most popular holiday.

There is also a trend in the book world in writing about death: *Smoke Gets in Your Eyes* by Caitlin Doughty was a *New York Times* bestseller. Some recent books about death and weird biology published in the last decade include:

- *The Red Market: On the Trail of the World's Organ Brokers, Bone Thieves, Blood Farmers, and Child Traffickers*
- *From Here to Eternity: Traveling the World to Find the Good Death*
- *Dr. Mutter's Marvels: A True Tale of Intrigue and Innovation at the Dawn of Modern Medicine*
- *Cannibalism: A Perfectly Natural History*
- *Poached: Inside the Dark World of Wildlife Trafficking*

Equally important is the practical and moral impact that a book on carcasses can have. How can we possibly regulate animal welfare standards at slaughterhouses if we simply refuse to look at them? How can we know what's best to do with our dead pets if we won't consider the environmental impacts of our options? How can we ethically purchase carved bone tchotchkes, down jackets, and gummy bears if we turn a blind eye to the process behind them? Animal ethics are complicated, emotional, and practical. As we learn to talk about animal death, we can make more informed ethical decisions.

For example, when I learned about the environmental impact of cremation, as well as the fact that many crematoriums simply give pet owners a mix of ashes from all the animals processed that day, I knew I didn't want that for my cats. Instead, we buried them at Macedo Ranch.

With the cultural taboo of talking about death being slowly lifted, now is the time to find out the answers. To peel back the curtain, and the flesh.

The touch I shared with the white-faced Bessie in the ravine was brief. I continued on my run, leaving the body to decay. There was unused potential there. Presumably, the farmer had bred her for meat, but she never became steaks. Her pelt could have become leather, but it dried and mummified in the California sun. I could have salvaged her skull, but I didn't know how to process bones at that point. Most tragically, her death meant unused potential for her to continue on with her life.

But she was not a complete waste. I would return to the spot years later, in the heat of the summer, when the grass was gold, to find her sun-bleached bones scattered widely. Her meat went to scavengers, like coyotes and the circling turkey vultures. Beetle larvae stripped the remaining flesh from the bones. Rodents chewed on them for calcium, and all the nutrients, in one way or another, returned to the earth.

Significantly, to me, Bessie allowed me to understand for the first time that there is beauty in dead animals. I could touch them, understand them, and learn about their histories and their potential.

By reading *Carcass,* you too will better understand and appreciate the value of a dead animal, and its potential.

Budget Proposal

Principle Investigator:	Organization	Project Start Date	Project End Date
Kristin Hugo	MIT Press	January 1, 2023	December 31, 2023

Project Expenses	Sloan Foundation Request	Notes
Salaries and wages:		
Kristin Hugo	$34,450.00	
Consultant / Contract Services		These estimates will depend on market rates.
Fact-checking	$4,000.00	
Transcription	$400.00	
Travel		Travel locations may change, depending on funding, timing, etc
North America	$4,650.00	
Norway	$3,000.00	
Indonesia	$3,000.00	
Equipment		This is variable, depending on what might need fixing, replacing, or buying.
Camera equipment, SD cards, chargers, computer repair	$500.00	
TOTAL:	$50,000.00	

Budget Justification

Salary:

A salary will allow me to focus on the book rather than freelancing gigs. The advance from MIT Press will cover January, February, March, and April. $36,100 from the Sloan Foundation would cover a salary of $4,512/month for the rest of the year.

Consultant/Contract Services:

It's important to use independent readers, such as fact-checkers and sometimes sensitive readers. I may need to hire a transcriptionist as well, and potentially other services. The rates of these services are highly variable.

Travel:

A book about animal carcasses needs in-person reporting to be accurate. Animal remains can be highly controversial and emotional for people, and while there is information online, I find that much of it is biased from being funded by industry or think-tanks. It's important for me to report from the field, to see the real guts of a slaughterhouse, medical research facility, fur farm, taxidermy studio, hunting grounds, pet crematorium, fossil quarry, etc.

North America

I hope to have a budget to travel for first-person reporting in California, Utah, Wyoming, Montana, and Colorado. I've chosen these locations because they are driving distance (but in some cases, a long drive) from where I plan to live in Wyoming, which saves money. Still, those will incur costs for gas, hotels, food, etc.

There are some other destinations in the US that would require a bit higher budget, including Alberta, Florida and New York City.

Greely, Colorado

Home of one of the four big slaughterhouses in the US

Gas: $200 round trip

Lodging: $500

Boulder, Colorado

For the National Association of Science Writers conference, to network and improve my writing

Gas: $200 round trip

Lodging: $500

Salt Lake City, Utah

Nearby there are a dozen or so fur farms

Gas: $50 round trip

Lodging and food: $200

Montana

University of Montana Zoological Museum, and “Carcass Club”

Gas: $200 round trip

Lodging and food: $300

New York City

Wunderkammer the Taxidermy Art Show, a Studio of Human bones etc

Flight: $500 round trip

Lodging and food: $300

Florida

Seashell distribution centers like Atlantic Coral Enterprise

Flight: $500 round trip

Lodging and food: $300

Alberta

World capital of dinosaur fossils, Head Smashed In Buffalo Jump

Flight: $600 round trip

Lodging and food: $300

To prevent the book from becoming overly North America-centric, I have listed two other international destinations. After compiling a large list of potential destinations that would improve the perspective of my book, I have whittled the itinerary down to two particularly interesting, and fairly affordable, options.

Norway

Norway holds an annual festival, a public ceremony celebrating the slaughter of the reindeer that the Sami people herd. Norway also has fur farms that I can compare to American ones.

Flight: $2,000 round trip

Lodging and food: $1,000

Indonesia

Many of the bone, horn, and shell tchotchkes of the world originate in Indonesia. There is also a thriving industry selling animals, dead and alive, illegally. Many of the seashells harvested in Indonesia end up imported to Florida, and then distributed to beachside gift shops around the country. I hope to see an importer or two in Florida.

Flight: $2,000 round trip

Lodging and food: $1,000

Equipment

As far as I know, I have all the equipment that I need. However, there are always unexpected needs, such as SD cards, broken chargers, and vehicle issues.

Outline

I. Introduction

While most of the book focuses on narratives regarding exactly what happens to animal remains, the introduction will include some personal history as to why dead animals are interesting to me and important to everyone.

II. History

There is no particular day that humans started our dependence on other animals, dead or alive, any more than there is a day when humanity first came to be. But looking back through prehistory, we can see that animal remains were integral to our evolution.

For example, one of the most important known pieces of early art is called “Swimming Reindeer,” which not only depicts animals but is carved from mammoth bone. The earliest known spears date back 400,000 years, indicating that humans were hunting with tools at least that long. Clothing, tools, and food were made from dead animals, and archaeologists have even found a house made mostly of mammoth bones. Almost all cave art depicts animals, showcasing how important other creatures were too early humans’ thoughts, feelings, culture, and practice.

Traditional Chinese Medicine, which uses animal products like donkey pelts and rhino horn, dates back thousands of years. This chapter explains how integral dead animals are to our evolution as humans and explores some of the key animal artifacts that archaeologists have uncovered. I would interview paleoanthropologist, Dr. Rick Potts, at the Smithsonian Institution for this chapter.

III. Pets

When sleeping, Mew was entirely unperturbed by the world, looking more like spilled ice cream melting

into the carpet than a living mammal. This earned her the title “Blob Monster,” despite being the least monstrous and most unassuming creature I had ever met.

After sixteen years of lying in the California sun and passively accepting pets, I found myself frequently jostling Mew, unsure if her motionlessness was relaxation or illness. “Why do you always have to look like you’re dead?”

One morning at 1 AM, only a day after her last vet visit, I heard her wailing. She didn’t move or blink, even when I picked her up to take her to the emergency vet.

Pet death is one of the most intimate and common experiences people have with dead animals. According to a survey of the Pet Loss Professionals Alliance, 99% of pet deaths end with cremation. The process is similar to that of humans: the staff puts the bodies in an incinerator and they are reduced to brittle bones. Then the staff crushes the bones into a pulp. In this chapter, I would visit a crematorium to explain the process in more detail, and to interview an operator on the various aspects, including emotional, of the job.

However, cremation can be contentious. In 2013, Freakonomics Radio published a podcast episode called “The Troubled Cremation of Stevie the Cat.” In it, the hosts attempted to explain why some pet crematoriums are able to offer services so cheaply. They created several fake cats with no bones (rabbit fur, beef, and Crisco) and found that the crematoriums still returned a scoop of cremains to them. The conclusion they came to was that the crematoriums may have simply processed all the pets together and given each customer a scoop or two of the mix.

In this chapter, I’ll visit a veterinarian, and explain the contentious and confusing definitions of “euthanasia.” Then I’ll go to both a burial and a crematorium to see the end of the process.

In New York City, the official policy for what to do with dead pets is to put them in a trash bag labeled “dead dog” or “dead cat” and wait for trash collectors to take it. There’s nothing technically wrong with that policy, but it doesn’t play out well emotionally for people. The symbolism of putting your best friend in a trash bag is unpleasant. Another option is to do what Whiskey’s owner did.

When one of my roommates told her friend that I processed carcasses, he reached out to me and asked me to skeletonize his beloved tabby Whiskey. Despite living in Brooklyn, I accepted, using my rare access to a yard to skin, deflesh, bury, and macerate the cat. I hoped no one would see this process under the protection of a mulberry tree, and returned to the human friend some clean, white bones of his beloved cat.

I wouldn't have been able to do this to Mew's body, despite having done it to other animals and having no moral qualms with it. It would simply go against my instinct to protect Mew, even though I knew in my brain that cutting open her lifeless body wouldn't actually hurt her at all. In fact, many people who process animals won't process the ones they knew and loved. For those, you can hire a professional pet processor, such as Jana Miller, who we will meet later in the "Art" Chapter.

The emergency vet in California gave Mew her final injection, and I held her in a blanket as it took effect. She had been far enough gone that it was hard to tell when she died. But I was eventually sure it was over.

The vet staff suggested sending her off for cremation, but due to the podcast I had heard about Stevie the Cat, I refused. Instead, they gave the body back in a white box. A few hours later, I climbed a hill at Macedo Ranch, found a spot under a tree with a view, and buried her there in the golden grass.

IV. Roadkill (included)

Roads are a major source of animal deaths, one that is largely unpredictable and unwanted. Each city, county, and state has different protocols regarding how they clean up roadkill. Those standards hardly follow a consistent logic: some cleanup efforts are costly to the city's budget and the environment, while others involve repurposing the animals for compost, science, food for humans, or food for animals.

Roadkill would happen whether or not anyone made use of the body, but how can we make the most out of the opportunities that roadkill offers? For this chapter, I have interviewed someone who eats roadkill regularly, someone who uses it for fashion, and several who use it for science.

V. Livestock

The first fresh cow I found, courtesy of circling turkey vultures, was livestock. When I explore the ravines and gullies of California, the most common skeletons I find are livestock. They live and die in the hills. People wear their skin in the form of leather, and their flesh fills butchers and delis. Of all the carcasses we encounter, livestock is the most ubiquitous.

In this chapter, we will explore the slaughter and process of farm animals. I'll describe my visit to a small, red-floored slaughterhouse, where the butcher skinned and removed the meat from a steaming cow carcass almost entirely with a knife. The different parts of the body went to different places, including to meat markets, leather processors, for Chinese medicine, and the trash. I plan to also visit a much larger slaughterhouse to see how they do things differently.

We will explore why people kill animals in a certain way for health and welfare reasons. For instance, you can't kill any animal destined for meat with a lethal injection of sodium pentobarbital, the way you do with pets, because that would poison the flesh. But you can't shoot a meat cow in the brain, the way you do with pigs, because then potentially mad-cow-laden brain matter could get in the meat.

We'll also see where the animal bodies go—and it's not just to lunchmeat. Sixty percent of a cow or steer goes to beef, but the other forty percent goes elsewhere. If an animal dies before they get to a slaughterhouse, they might be left in the field or sent to a "rendering facility" in which they are made into other products like pet food.

This chapter will give a complete picture of the afterlife of a farmed animal. If possible, I would like to observe a high-volume slaughterhouse and follow the meat to the store. If that's not possible—large slaughterhouse directors are understandably cagey—I have contacts with small farmers and community butchers who will show me firsthand.

VI. Wildlife

The hunter I met on Facebook took me to his dumping spot. There, in a secluded area behind a copse of trees in Suffolk, Virginia, dozens of rib cages stuck up from the ground.

The hunter said he had been coming there for years, killing deer, field dressing them for their meat, and leaving the bones. None of the skulls had particularly big antlers, at least not anymore, as he would take the heads or saw off the craniums of the ones with impressive racks.

I walked around the area throwing skulls in my backpack and taking photos as he talked about deer hunting and how it's a controversial hobby. Another deer hunter I met said that he himself used to criticize people for doing it before he started.

Killing wildlife is oddly controversial, considering that 96.6% of Americans eat meat. However, the process of seeking, killing, dressing, and eating wild animals is in many ways different from doing the same for domestic ones. In this chapter, we'll follow a hunter on the ground as they stalk, shoot, process and eat their prey. We'll compare that with the previous chapter on livestock, documenting both the practice, regulations and philosophies regarding killing the animal and using the remains.

We will also examine the different places that hunted and trapped animals go: to feed hunters, to charities like "Hunters for the Hungry," to the trims of Canada Goose coats, and to labs to be tested for diseases. Chronic Wasting Disease, similar to mad cow disease, is a terrifying illness that could potentially wipe out millions of deer, and may or may not be able to affect people.

The science of wildlife management is labyrinthine and highly controversial. While there are several agencies that support and fund wildlife management research, policies often don't represent that research. In a 2014 edition of the journal *Science,* conservationists penned a letter titled "When Science-Based Management Isn't," in which they argued that "purported scientific management often proceeds without the hallmarks of science — transparency, intelligibility, and rigorous evidence." For example, Canadian bear hunting quotas were increased one year in spite of evidence that the quotas were already too high, but then they were decreased as the government shifted.

Wild animal remains are also a critical part of the cycles of nature, in the same way you need sunlight, water, and minerals for any ecosystem to thrive. For this chapter, I will interview Elke Wenting, who is currently doing a PhD thesis on the importance of carcasses to nature. In her research, she describes how the ecosystem of animals and microbes compete to consume nutrients from carrion when left to decay in nature, what nutrients are stored in the body, and how they help the ecosystem.

VII. Decor and Trinkets

It's no secret that working with animal remains can be stinky. But I was surprised to learn that, by far, the stinkiest experience with dead animals I ever had involved carving bone.

Bones, pelts, and taxidermy are beautiful in and of themselves, as memories of animals. Fancy art made by hipsters and witches is beautiful too. But not all animal remains announce themselves as such; all sorts of trinkets, from sculptures to boxes and glasses frames are made from bone, horn, and shell. Naturally, as an explorer of all things bone-related and artistic, I one day decide to carve bones in my yard.

I selected one of the many cow bones I had from the fields and did some research. I learned that it's mandatory to always carve in a well-ventilated area and wear a mask. Otherwise, the bone particles that fill the air can get in your lungs and give you cancer or other disorders. One Toronto artist who works with dead animals developed neurological and metabolic symptoms which make her quality of life poor, and from which she will never recover, because she had breathed in her ground-up oyster shells.

I bought a drill bit that was recommended for bone, plugged it in outside in my yard, put the mask on, and started.

As soon as the bit met the bone I was reminded of the smell of a dentist's office. But it was about a thousand times worse. My sister came outside and asked what the horrible smell was. In the end, I made one line on a femur.

While my attempt failed, buying hand-carved bone is exceptionally easy and accessible. All over the world, artisans practice bone, horn, and ivory carving. They produce everything from cheap pendants you can buy at Whole Foods to intricately carved skulls, incredibly covered in flowers, swirls, and geometric patterns.

In this chapter, we will travel to Southeast Asia to understand how and why animal remains are made into so many products. We will witness the industrial bone-carving process and describe the multi-thousand-year history of this art form. We will examine the financial, cultural, environmental, and ethical impacts of art forms and carvings involving dead animals.

Indonesia also has controversial trades in human skulls, and for *Newsweek,* I once investigated the likely legal but unsustainable harvesting of bats. Javan rhinoceroses are also under threat, and the plight of charismatic megafauna for aesthetic and faux medicinal purposes is of major concern to individuals and organizations alike. A little-known topic that I plan to cover as well is the industry of seashells, which includes industrial farming as well as legal and illegal harvesting of live animals. For this, readers will see the processing facilities for seashells as well as a major distribution center in Florida called Atlantic Coral Enterprises.

VIII. Science

We all benefit from animals in science, whether scientists are testing medical treatments, studying how animals react to different stimuli, or examining their bodies to determine what kind of threats are in the environment. Countless scientific fields would be devastated without living and dead animals, and so many products and medicines rely on them to this day that it would be impossible to exclude animal-tested products from your consumption.

There is plenty of discussion regarding if and how scientists should continue using and killing lab animals. However emotional the topic may be, the public usually knows very little about the actual details regarding the animals' deaths, the standards labs must follow, and what comes after.

In this chapter, I hope to explore Charles River, a lab mouse breeding facility, or testing centers at UC San Francisco if they are more readily available. There, I'll describe a day in the life of a lab animal, as well as their death, and what happens next. If the animal has important information inside, like a drug or altered DNA, it often must be destroyed completely by cremation.

Then I'll give some background regarding the laws, standards, and regulations that govern lab animal use. I'll also discuss "pound seizure laws" in which some states allow labs to take death-row animals from pounds and others don't. I'll include perspectives from scientists who test on animals, scientists who argue that we should move away from animal models, and animal rights activists. I'll also follow the process of killing lab animals and uncover where the bodies go and why.

Helen Kairo lives in the San Francisco Bay Area and has received hundreds of former lab animals for her work in animal preservation, study, art, and education. She preserves mice, donated reptiles, and other animals from zoos and breeders, in various ways: cleaning their bones, preserving them in fluid, and even using a technique called "diaphonization" which makes their skin clear and their bones pink. She does educational classes and sells the animal remains on Etsy. In many cases, control mice in experiments (the ones who didn't receive the treatment, used to compare to the treated mice) become something of a "currency," she says. After lab technicians kill the mice, they sometimes donate them as food to reptile rescues or to others who can make use of them. Kairo makes them into artful and educational anatomical products.

Still, some animals survive the lab. For a happy ending, I'll interview someone at the Beagle Freedom Project, an organization that takes retired lab animals and gets them to homes.

IX. Art

One of my primary reasons for collecting animal remains, especially skulls, is their aesthetic value. The curve of the horns, the symmetry of a set of antlers, and the intricate paths between skull plates as they fuse together. A skeleton is like highly detailed porcelain perfected by nature. Naturally, after I process

and whiten a skull I found in a field, I display it proudly on my wall, forever remembering the carcass, how I found it, and whatever mistakes I made while processing it. Photos I've taken of animal remains, collected from a hunter dump in Virginia and lovingly posed in my Brooklyn backyard, show the beauty of these natural items, and have gained hundreds of thousands of views on Tumblr and TikTok.

Traditional taxidermy is male-dominated and takes place largely in rural areas. However, rogue taxidermy and "vulture culture" is female-dominated, urban, and artistic. Artists dye taxidermy mounts pink, add crystals to skulls, and turn preserved bodies into odd items like hats and dollhouses. This is a community of people who make a hobby (and a hustle) out of art and jewelry with animal remains, selling them in both brick-and-mortar stores and on sites like Etsy. Like the true crime community, the vulture culture community is filled with strange characters who embrace death.

"Vultures" work with "wet specimens" (in jars of fluid), articulated skeletons, taxidermy, and more. For this chapter, there are many vultures who I can interview, such as the taxidermists Divya Ananthraram and Katie Innamorato in New York City, with beautiful and bizarre facilities steeped in preserved animal remains of all sorts. I can also attend the World Taxidermy Championships in Springfield, Missouri.

What makes taxidermists interested in animal remains? Why the sudden surge in popularity over the last several years? As dead animals become more popular in art, where will people get their materials? Will more animals be killed to fill the demand for art supplies, or will people prioritize using remains that would otherwise be discarded, like livestock leftovers, dead pets, and roadkill?

X. FOSSILS

Kemmerer Wyoming is home to fewer than 3,000 people, one lone grocery store, three fossil shops, and "America's Aquarium in Stone."

After three years in New York City, including sweating out the worst of the coronavirus pandemic there, I took an opportunity to move to a rural town in Southwestern Wyoming. Many of my friends in the

city had also left to get away from the high rent and the closed-down opportunities of city life, and I longed to be closer to nature. So I packed my bags and moved into a townhouse surrounded by public land.

Incidentally, the area I moved to is part of the Green River Formation, which has some of the most well-preserved and abundant fish fossils in the world. In fact, fish fossils are so common and cheap there, you can buy them at the hardware store and at gas stations for miles around.

In the Eocene, modern-day Kemmerer was entirely underwater. Due to the unique makeup of the soil and the sediments that wafted through the water, billions of animals were preserved in exquisite detail when they hit the ground and were buried. Paleontologists can even see the contents of an animal's stomach and the details of its feathers. Luckily, as the water receded from the area millions of years ago, we don't need scuba gear to find these animals.

These fossils are a draw for tourists eager to learn a part of earth's history—or simply feel like a paleontologist for a day. On fossil digs, customers can find, exhume, process, and collect fish fossils, coming home with a whole bag full of ancient souvenirs.

In this chapter, I'll go on one of these trips and dig into the industry of commercial fossil hunting. Having tourists at a fossil site is controversial among paleontologists: they could inadvertently damage important artifacts, and the industry could encourage illegal pilfering.

However, the industry also is an efficient and profitable way to get a lot of quarries explored. Paleontologists don't always need to see a millionth *Knightia* fish, and when something exceptionally rare and interesting is discovered, the hosts of the dig will take them to sell, give back to the landowner as part of an agreement, or donate them.

This chapter will take us back millions of years, to the Green River Formation when it teemed with aquatic life, and explain the relatively rare process of how an animal becomes fossilized. In an interview with a local paleontologist, I'll explain what we can learn from each detail of these fossils, from their location to size to position. Then I'll follow some of the fossils in distribution to fossil shops and

into the hands of the consumer, and illustrate the value and issues with fossils becoming available to the general public.

XI. Conclusion

The conclusion will depend on how the rest of the book unfolds, but I plan to wrap up some of the stories and describe how they relate in the end. Finally, I hope to leave readers with questions about their own relationship to animal remains, how it may affect their habits, and how it can change their perception of death, art, science, animal welfare, morality, and mortality.

Sample Chapter: Roadkill

The sound of hooves crunching on pebbles traveled through my open, screenless window on the second floor of the dark green house, and I knew I had a visitor. I walked over to the window and stuck my head out to look down to the narrow side yard. There, below, a thin grey Columbian black-tailed deer lowered himself onto the ground.

I took my camera downstairs to get a better look, and sat in front of the dining room window, a transparent barrier between myself and the wild animal in the yard. Inside, I was nearly invisible, my sounds and smells were contained to the dining room, so I could watch his subtle movements without interrupting them. He was looking forward, left flank to me, mouth open, and ears twitching, unaware of my presence. I watched in silence.

He wasn't exactly a trophy buck, nothing a hunter would write home about, sporting only two points on one antler and a single spike on the other, but I quietly snapped a picture anyway. I was hoping to watch him for a long time, but I had accidentally left my camera flash on, and when he saw it he turned his head and saw me through the glass, dark eyes quizzical, breath heavy. Upon detection, I got up and left him alone, so he could rest peacefully.

A half-hour passed, and I assumed he had forgotten about me. I snuck back into the dining room and looked out the window again. This time, he was lying on his side, one antler partially submerged in the pebbles that made up the path below him. A tiny stripe of blood marked his exposed side. My best guess was that he had been struck by a car on the other side of the fence, then jumped to my house to safety. But the damage had been done. His dark brown eyes were wide open, unblinking. At some point in the last half-hour, the deer had actually left our yard, but he had left his body behind.

This was odd even to me. Usually, I have to travel deep into the hills seeking carcasses from dry creek beds. Suddenly, this dead animal simply appeared in my yard, and I had to figure out what to do with it.

Now I knew I wasn't going to upset the buck, so I went out the door to see the body more closely. With no barrier between us, I knelt down in the pebbles to carefully touch his cheek and stroke his ears. They were soft and warm, and eerily unresponsive.

The most important, valuable part of the deer was gone, there was no more soul or mind or brain activity going on behind his dark eyes. But there was still value in the body he left behind. I considered how to get the most from the remains of the three-point buck.

What were the potential paths for this roadkill to follow? I thought about the different things that could happen to the body, and what benefit or cost it would have. Over the next several years as I moved across the country with carcasses on my mind, I found that there is no consistent destination for all roadkill. There are countless fascinating things that people do with the bodies produced by speeding cars.

The line between roadkill and not-roadkill separates further what someone can do with the body. At the time of this writing, there is no legal way to collect roadkill in California. However, in October of 2019, Governor Gavin Newsom signed SB 395 into law, which requires the state to set up a system for people to request tags to collect roadkill deer, elk, pronghorns, and boars by 2022.

I was curious as to what would happen to this deer, and by extension, what happens to the millions of other animals hit on the roads every year. It turns out there is no uniformly consistent answer; it depends on a variety of factors, including who you call to pick it up.

Food

The most acceptable use of carcasses I know of is procuring its meat. While eating roadkill sounds socially unacceptable, why shouldn't you? I posted on Facebook asking my friends if anyone knew how to dress or cook a deer, to make use of the three-point buck. No response. Perhaps I should have researched how to do it myself. However, to do this, I would have to tie him by his back legs to the rafters of our white pergola, to dangle nose-down with the wisteria, and cut him up with a hunting knife. I had skinned a raccoon this way before, after watching Youtube videos for technique, so I figured I could try

this on a deer. However, this was actually my family's house, with big windows and glass doors, and frankly I had some family members who wouldn't have wanted to see something so gross. When I skinned the raccoon, I distinctly remember the intestines flopping out onto the ground, grey and pink and green, full of liquids and digested foods, immediately attracting swarms of flies. A bigger animal like a deer would fill a large bucket with obscene organs and spill blood all over the patio. So, eating this carcass was not an option for me, with this animal, at this time.

But it can be an option.

Jeff Eberbaugh likes eating roadkill so much that he wrote a whole cookbook for it: *Gourmet Style Roadkill Cooking and Other Fine Recipes.* His book became so popular that it inspired one of West Virginia's oddest annual festivals: The West Virginia Roadkill Cook-Off. In Pocahontas County, deeply wedged between two national forests, amateur chefs serve alternative game dishes like "Bear Butt Appy Tizers" and "Busted Tailgate BBQ Macaroni and Cheese." In 2018, the winning dish was "Predator Prey Chili w/ Fixin's," featuring bear and deer meat.

Eberbaugh originally got started collecting roadkill during his long commutes to work at a hospital. Driving on such a long, rural highway meant that he often found carcasses, which he didn't want to go to waste. So, he scooped them up, cooked them up, and ate them like any other meat.

In all the years that Eberbaugh has been eating deer, dealing with thousands of carcasses through roadways and hunting, he has never become sick from it. It helps that he knows a lot about meat, how to dress it, and what sights and smells to avoid.

"You know, if the guts got run over, and the urine and fecal material are through it, it's not gonna be too good," Eberbaugh described nonchalantly. "You might get neck meat off it, maybe the back straps if you're lucky. But the rest of it's gonna taste like crap, if it's laid there very long, you know, marinated." Eberbaugh used to use a device to test lactic acid buildup in carcasses, to determine if it's safe to eat, but he says that now that he's been handling deer so long, he can tell just by looking at and smelling a skinned carcass whether it's good or not.

I didn't have any of these tools or knowledge to safely process the roadkill three-point buck in my yard. And as a science journalist, I would want to know if anyone has ever done a study on roadkill safety. Because roadkill isn't a traditional, standardized meal, there isn't a lot of scientific research regarding the safety of eating it, and Eberbaugh has to trust his gut and experience. In an article published in *Food Safety News* in 2011, researchers suggested that safety concerns regarding eating roadkill would be similar to eating from an animal that had been hunted in the wild. Without human supervision (and even with it, really) there's little guarantee that the animal didn't have parasites, disease, or an improper diet.

Furthermore, it can be tough to tell exactly how long a roadkill animal has been sitting on the side of the road, unless you were there when it died. Hunted flesh, on the other hand, is fresh by default. Either way, it's primarily important that you look over your meat properly before cooking and eating it.

Meat from farms may not be any better, anyway. Vets monitor the animals for health issues, but they also give them medicines that can end up in human meals and lead to antibiotic resistance. In fact, the Center for Disease Control says that "[r]aw foods of animal origin are the most likely to be contaminated," and chicken, most of which comes from factory farms, is the worst offender.

Legally speaking, Eberbaugh is lucky to live in West Virginia; it's one of only 27 U.S. states where individuals can legally collect roadkill, depending on the circumstances. In some states like Massachusetts, Maryland, Indiana, Michigan, and Arizona, you can harvest roadkill with a permit, but even in those cases you may be restricted to "game" animals (ones you can hunt) and non-protected species. In many states, roadkill collection is completely illegal. In West Virginia, you're technically supposed to report the carcass within 12 hours of collection. But if you're Jeff Eberbaugh, you just pick it up and go.

"I don't even call the authorities when I get something," said Eberbaugh. "I just throw it in the back of the truck, you know? To heck with 'em. Next thing you know they'd be up at my house looking at it or something."

Technically, no U.S. states have a free-for-all--after all, federal laws like the Endangered Species Act and Migratory Bird Treaty Act would limit what you can collect regardless of state laws. Some rules are more strict than others, and many are similar to hunting laws. For example, in Illinois, you can take animals that are legal to hunt in that season with the appropriate permits, as though you're a hunter or trapper.

Eberbaugh's books inspired a West Virginia annual festival called the Roadkill Cookoff, drawing roughly 16,000 people a year to a town with two stop lights. There's a bit of West Virginian tongue-in-cheek humor to the theme, but it also reflects a reality--it's not that weird to eat roadkill in West Virginia.

"It's very common, if a driver hits a deer," says Bill Jordan, president of the Pocahontas County Chamber of Commerce. "Take him home and clean him up and use the meat instead of letting him go to waste."

Science

Option number two for the three point buck: use him for science. I could cut him open to learn about his insides personally, or document the process for the internet. A lot of platforms wouldn't necessarily allow something as graphic as skinning an animal, though; TikTok has removed my content many times and other platforms I simply don't post to.

Could I have donated the body to a more formal science organization? When I called Contra Costa County Animal Services, the operator said that they sometimes donate fresh deer to the Bay Area Puma Project. While the operator said the organization feeds mountain lions to prevent them from coming into suburbs to "eat your poodle," I later found that wasn't the case. Instead, they sometimes use roadkill deer to attract pumas to traps, where the animals are given tracking collars, which assist with researching their behaviors.

Even just counting carcasses on the side of the road can yield important results. There are several academic initiatives to quantify roadkill. One, called Project Splatter, is a crowd-sourced, Twitter-based initiative to round up roadkill reports from the public to a database at Cardiff University in Wales. Another, the Road Ecology Center, based out of University of California, Davis, collects similar types of data in the golden state.

The Road Ecology Center set up an online resource called the California Roadkill Observation System, hosted by wildlifecrossing.net. Wildlife Crossing also hosts a similar system in Maine and links to HerpMapper, a global initiative to document reptiles and amphibians found dead on and near roads. Collecting data about when, where, and how much roadkill is discovered is in part a question of preliminary research--we just have to understand the problem of roadkill before we can address it.

Policy makers and public servants have made strides to address the issue of roadkill. The Road Ecology Center has published research about wildlife hotspots, with practical implications. The California Department of Transportation, or CalTrans, sometimes asks for their data sets when building new projects so that they can minimize their impact.

However, CalTrans doesn't want to collect *too much* data, says Fraser Shilling, co-director of the Road Ecology Center.

CalTrans employs people around the state to pick up roadkill on highways, but they don't have an official policy to keep tabs on how much they pick up. If they have that data, Shilling explains, that means they know if and when there is a problem, and they may be required to address that problem from a safety or environmental standpoint. If they fail to address something of which they have knowledge, and people get hurt or their cars get damaged, they could potentially sue the state. "The potential liability for the state is massive," Shilling says.

Still, some people who work at CalTrans want the data to make changes from the inside, and they request the data from the Road Ecology Center. By identifying roadkill hotspots, CalTrans projects can

include wildlife crossings, which are like natural bridges or highways specifically for animals to cross over or below roads without the threat of cars.

However, both Shilling and representatives from Project Splatter, Sarah Perkins and Amy Schwartz, acknowledge that costly infrastructure changes aren't the only way to prevent roadkill. Driving slower is actually more effective at reducing road mortalities, "but people are hesitant to do that," Shilling says.

Still, information from Project Splatter has helped some public awareness campaigns. For example, the UK's Department for Transport has unveiled "hedgehog crossing" signs in order to support the iconic, but dwindling species. The department used data about roadkill hotspots to determine where to put the signs.

Now, let's get a little closer to the animal body. There is science within. A variety of researchers benefit from collecting samples from deceased wildlife, whether that is to analyze their chemical makeup or their DNA. For example, a team of researchers at McGill University in Montreal, Canada, collect livers from dead birds of prey to measure the pollutants, like DDT, that build up in them from the prey that they eat. The data that they collected showed that, even decades after certain chemicals were banned, they continue to affect the ecosystem.

Roadkill can continue to contribute to science in its afterlife as well. Dr. Tom French, Assistant Director of the Massachusetts Division of Fisheries and Wildlife (DFW), collects deceased animals and distributes them to research and educational institutions. The Museum of Comparative Zoology at Harvard University and Tufts Veterinary School are both local beneficiaries. If someone from a school requests an owl for taxidermy, for example, French said, he'd save an owl for them. If a researcher wants to study pesticides in the carcasses of sharp-shinned hawks, French would make an effort to supply it. Birds, in fact, are otherwise notoriously difficult to obtain, due to legislation like the Migratory Bird Treaty Act that protects most of them from collection. ("Collection" means taking an animal, dead or alive, fatally or non fatally, intentionally or unintentionally, from its environment.) "What we try to be

most careful to save are rare species," said French. "You can't deliberately go out and kill them...so we try to give those to organizations that can make the most use out of them." One of those organizations is the Outdoor Research Facility, owned by Boston University, which you can read about in the "science" chapter.

Fashion

Option number three for how to make the most use of the deer who died in my yard: take the pelt. However, doing so would have incurred the same challenges as taking the meat. Skinning a fresh animal, especially at your own place, is gross. But I found someone who does exactly that, using roadkill pelts, and even making them into high fashion.

Nestled in a bucolic New England town, where residents have large plots of green, hilly land and everyone knows their neighbors, Pamela Paquin lives with her daughter, horses, dog, and chickens. Other animals, living and dead, come and go too often to keep track.

Pamela has a lot of dead animals around her house because she works with pelts, but she's not a traditional furrier. Instead of trapping wildlife or raising foxes or minks in cages, Paquin's company, "Peace Fur," exclusively sells fur made from animals that died accidentally. That means, mostly, roadkill. With her trapping license, she's allowed to collect and receive gifts of dead raccoons, foxes, otters, and other furbearers, as long as they're in the legal harvesting season. Farmers also give her fawns, which naturally hide in tall grass, where they are sometimes accidentally hit and killed by tractor drivers.

Paquin's friends and neighbors know her work, and they will often contact her to tell her about dead animals on local roads. Depending on how fresh the animal is, and whether it's a desirable, legal pelt for her to collect, she'll drive out to pick it up, freeze it, skin it, and turn it into a stole, scarf, or hat.

One Friday in the frigid January of 2018, I drove to her town to see the roadkill fashion process up close. I took the silver rental Jeep up her driveway, past horse pastures, and into the mud outside her countryside quarters.

Paquin greeted me at the door of her neat, large-windowed house just as the evening was flooding the property with a soft, blue light. Paquin is a middle-aged woman with long, light brown hair and blue eyes, and her voice is confident and intent. This winter, she was dressed practically for working on a cold farm, with a vest, boots, and thick pants in neutral tones.

Paquin led me upstairs to the guest room, where I unpacked. When I returned to the main floor, Paquin had retrieved something from the basement that she had been saving for this visit.

"I took this out of the freezer this morning," she explained as she held up a black trash bag. "And it's a good thing, too, because it's still not even thawed."

She reached inside and took hold of its contents, pulling the bag down as she revealed our project. It looked at first glance like a mass of grey hair, but it was a fat, dead raccoon, curled up in stiff repose, eyes closed peacefully. I reached forward and tapped its soft fur, but beneath my fingertips I could feel that the raccoon's flesh was as solid as a brick.

"If we tried to skin this, we'd break the knife," I said.

"We'll leave it out in the solarium," Paquin replied. She took the body and descended a spiral staircase by her dining room into a tall-windowed space stocked with farm equipment and animal feed. She set the carcass on a small table in the middle of the room. When the sun rose in the morning, we hoped, it would fill the solarium and melt away the ice crystals, leaving a more pliant subject.

The next day, we busied ourselves with activities while waiting for the raccoon to be ready. We carried hay to the horses and collected eggs from the chickens. Paquin drove me and her nine-year-old Naia to visit a road near which a beaver lived, and Paquin discussed with vigor her political efforts to save the buck-toothed creature. Some locals wanted to "remove" it because they believed its dam was flooding the road.

"Remove" means, of course, "kill." Paquin has learned many times the importance of using the right words over the course of her potentially upsetting business model. For instance, Paquin's company was originally called "Petite Mort Fur," which literally translates to "Little Death." The real meaning in

French, though, is meant to describe post-orgasmic bliss. This was intentional; “the little death” is both a pun and attention-grabbing as a title. But Paquin found too many people focused on this name and changed it to “Peace Fur.” She also doesn’t want to call her products “roadkill” because that word “cheapens the brand,” but it is mostly roadkill.

Even using seemingly positive phrasing can backfire. Paquin used to call her fur products “ethical,” which is a useful shorthand more quickly dispensed than “don’t judge me for wearing this fur product, no one killed a fox to make this shawl; it was dead already.” However, she no longer uses this term as often, as it implies that regular furriers are *un*ethical, and she doesn’t want to insult the rest of the fur industry, or to set her business aside from them. Instead, she wants to integrate herself into the industry, using the same channels, methods, tools, and relationships as everyone else.

“The fact that the fur industry is willing to talk to me and willing to work with me is huge, because if they decided they didn’t like me, I wouldn’t be able to get my furs tanned,” she explained. “I couldn’t buy needles for my sewing machine. If they blackballed me, it would be so much harder, so much harder.”

Luckily, the fur industry has accepted her, and the pro-fur blog Truth About Fur even published an interview with her, titled “In Praise of ‘Accidental Fur.” By integrating herself into the market seamlessly, Paquin’s goal is that, one day, accidental fur will be just another fashion option. It could be available from Rodeo Drive to Amazon, and just as popular and affordable.

That day is not today. A traditional fox ruff goes from $70-$275 online. Paquin’s “accidental death” fox ruff goes for $1,000 and a fawn-skin scarf is $2,500. As it stands, roadkill fur is a niche interest, and not Paquin’s only source of income.

But Paquin argues that if accidental fur--not only from her company, but as a standard--goes mainstream, it could save millions of lives. Globally, at least 50 million animals are killed annually for their fur: some are trapped in the wild, and most are raised in cages or on ranches at fur farms. Animal rights organizations and, in fact, most Americans, consider fur farms cruel and unnecessary. The animals at these farms are kept in small wire cages their whole lives, and then killed as soon as they reach

adulthood, with the exception of those kept for breeding. Still, pro-fur groups such as Fur Commission USA argue that their trade is totally ethical. They say it's heavily regulated, and the animals are killed "humanely"-- usually by carbon monoxide poisoning or through electric shock.

It's hard to say whether there is enough salvageable roadkill in the US to completely overhaul the fur industry. HSUS estimates that a million animals are killed on U.S. roads every day, but it doesn't say how many of those are fur-bearing animals like foxes and raccoons, or if they include bugs in that statement. There are no official federal estimates of US roadkill production, but there are academic initiatives to keep track (see the science section of this chapter.)

Furthermore, clothing manufacturers enjoy the consistency and unmarred quality of animals that come out of fur farms, with factory-like reliability. At fur farms, you can choose which foxes have the plushest coats, and you can choose black, white, red, cream, spotted, and blueish morphs to breed. The roadside doesn't take requests; you get what you get. We would have to change laws and alter infrastructure to accommodate roadkill pelts on a national scale. Only a considerable increase in demand from roadkill-loving consumers would make that change financially viable.

As an animal-loving consumer myself, I had thought carefully about what kind of coat to buy when I moved from California to the East Coast. There was really no chance that I was going to wear a full-fur mink coat; hardly anyone on the coasts would be caught dead in something as contentious, dated, and expensive as that, to say nothing of its ethical implications. But should I get a fur-trimmed jacket, rimmed with a coyote that had died with its paw in a metal trap, or a roadkill design?

Well, I wouldn't be able to afford any ethically-sourced silk-lined fox fur neck muff at $1,850, that's for sure. Instead, I got an American Eagle forest-green coat that I had bought on sale for $75. On its trim was faux fur.

I figured that bringing faux fur into a furrier's home would inspire a conversation or two, and I was right. That Saturday, Pamela was driving me and Naia home from Paquin's studio space while we left

the raccoon, still frozen solid, in the sunlight. Surprisingly, it was not Paquin herself who started the conversation.

"Is that faux fur?" the cherubic Naia asked from the seat behind me, pointing at the tan, fuzzy trim that ran around the hood and the inside front of my jacket.

"Yes."

"That's made of plastic and kills animals," she pointed out.

I was familiar with this argument among pro-fur advocates. Critics of synthetic fur explain that it is made of petroleum, which indirectly supports an industry that spills oil into the ocean, which in turn kills birds and marine life. Petroleum-based textiles ultimately break down and become microplastics, which are so small they can't be filtered out of the water, so people and animals around the world accidentally drink them. Nature is so infiltrated with the synthetic that plastic has polluted even our own bodies. How much does the trim of one coat contribute to petroleum spills and plastic pollution? It's impossible to say.

At least dead animals are natural. But real fur takes an environmental toll too. Animal agriculture is one of the world's leading contributors to climate change, as the animals emit methane and carbon dioxide. Feces, urine and tanning chemicals run off into groundwater and rivers, potentially poisoning all who depend on that water. Raising carnivores like minks and foxes is excessively resource-intensive, as you have to farm, harvest, or use by-products from *other* animals just to feed them, multiplying their impact several times over. Real fur products may last longer, or less long, than synthetic, depending on how they are stored. Lasting long can be good if it means the consumer doesn't go through a lot of products, but it can be bad because that means it will continue to exist in the environment for a long time.

So which is worse, intentionally killing animals for fur, or making synthetic products? There have been two studies comparing the environmental impact of real and faux fur. One was funded by the fur industry, and one was funded by animal rights groups. One study determined real fur was better, and the other determined faux was better. You can probably guess which funding source produced which result.

From an outside perspective, it seems that there are too many confounding factors to quantitatively determine which is worse.

I thought about this dilemma as I looked out the window of Paquin's car, to the rolling hills and sparse farmhouses. I needed a simple answer for Naia. I settled on a futilistic phrase I figured could sum up the impossibility of quantifying environmental impacts.

"There is no ethical consumption under capitalism."

We returned to the farmhouse, where it got dark a few hours later. As we retired to our rooms for the night, the outside temperature dipped to 8 degrees Fahrenheit. The raccoon, still hard, waited patiently.

When the sun rose and the birds began their morning chatter, I descended the spiral staircase to check on the carcass. Again, I pressed on it with my fingertips. Again, the flesh was entirely unyielding, like a flocked stone. We would not be able to skin it in this condition.

Time to help it along.

Paquin got a bucket and filled it with warm water, then walked carefully down to the solarium, and put the bath beside the skinning table. I awkwardly took the raccoon by his forepaws, one in each of my hands, and hoisted him off the table. His arms remained curled to his chest, refusing to bend even as his weight pulled his body down. I lowered the creature into the bucket, but his head and arms stuck out.

We washed our hands and returned upstairs for breakfast. Two hours later, we tested the body again. It was still mostly hard in the middle, but an inch or so down was soft enough to pierce. I lifted the dripping body out of the water, which was now dark red, and placed the soaking animal on the skinning table in the light of the morning.

Finally, we could begin. The dog, horses, chickens, and Naia were occupied elsewhere as we prepped reverently to skin the animal. It was quiet and cold. Paquin lit a sprig of sage and gave me a pair of surgical gloves and a scalpel with a fresh blade. I took off my green jacket so I wouldn't get blood on the sleeves, keeping on a black zip-up hoodie, as it was still freezing.

We were both mostly silent as I began the process. I took the animal's ears in one hand and pulled them so the skin behind his head would be taught, and sliced horizontally across his nape. I pressed hard in quick, repetitive motions. As my blade inched across the back of his neck and down his shoulder, I could see red inside, but it was too cold for blood to flow. Cuts revealed pink muscles and chunky, white fat. This raccoon had a lot more fat to get through than other creatures I had skinned before, and Paquin and I remarked on how he was a strange individual among his species for getting so big.

I continued cutting down the side of the back, stopping short of the tail, turning in a J, then continuing up the other side. Eventually, I came to the end, behind the ears where I had started. We pulled up the rounded square of back skin and made dozens of little slices to remove the fat keeping the skin tethered to the carcass. The pelt was freed, and we held it up in the light: dark grey and fuzzy on one side, white and red on the other. It was ready to move onto the next step in becoming a garment. To be worn for years to come.

Pamela agreed to give me the head, which I would later process for the skull in the yard of my Brooklyn apartment. I cut as much flesh around the neck as I could, drawing a little blood, then twisted the neck several times to try to break its connection with the spine. Wedging the blade between vertebrae, I cracked and sliced at the connection until I held a free, fuzzy head in my hand.

Pamela watched and listened, shifting uncomfortably, at the bloody, fleshy removal, but didn't complain. "I have to get used to this," she said. Still, her reaction to the removal discouraged me from asking to remove the baculum, or penis bone, too.

Paquin put the body--minus the parts we were saving--in a bin, which she would supply with more bodies until it was full. Eventually she would call a rendering facility to pick up the bin and make the bodies into new products.

A year later, I called Paquin back. I asked about the beaver, wondering if she would claim the body if it was killed. However, Paquin had succeeded in saving its life; PETA had worked with her to do a

letter-writing campaign, and they convinced the local government to leave the beaver alone. To address the flooding of the road, they would instead enforce rules against dumping electronics in the water.

The raccoon pelt, I learned, was not so lucky.

After I left, Paquin returned the back fur to the freezer, and continued on with her business skinning animals until she had around 35 pelts. She put the pelts in five boxes, she told me, and shipped them to a tannery called USA Foxx. Typically, the tannery would process the skins into soft, usable fur, and ship them back for a fee.

"And four boxes, including the one with that raccoon," she recalled, "were lost in the mail for four days. The frozen pelts were unfrozen by the time they arrived, so they were all rotten. They were all lost."

The pelts were insured, but untanned pelts are hardly worth anything except potential. Paquin suspects that all those ruined pelts most likely went to a rendering facility as well, if not a landfill, and that she now uses dry ice and special temperature-resistant packaging to ship. It's more expensive, but it's worth it to prevent this kind of waste of perfectly good animal pelts.

"It was brutal, it was such a loss," she said, and I'm not sure if she was referring to the financial loss. It was as though that raccoon, and all those other animals, had never even been rescued from the side of the road.

At least I still have the skull.

Dumped

The last thing that I wanted to happen to the three point buck was for it to go to waste. However, when there is a dead animal in a city, it's usually considered more of an upsetting nuisance than an opportunity for food, science, and clothing. So it's natural that urban sanitation organizations focus on getting rid of animals rather than using them.

I left California months later to move to Boston for a Master's in science journalism. There, you can call the Boston Department of Public Works (DPW) to pick up roadkill. Michael Glennon, who works a variety of jobs at DPW, is the one who will drive out in his truck to get the carcass.

Like many urban areas, the DPW in Boston mostly gets calls about squirrels and rats, with the occasional raccoon or deer, Glennon said. If the animal is a domestic animal like a cat or dog with identifying tags, Glennon will try to contact the owner with the information listed. If the owner had their pet implanted with an identifying microchip, they're out of luck—DPW doesn't have a chip scanner. (Contra Costa County Animal Services in California does.)

I asked Glennon if anyone has ever asked to have the bodies, to make use out of them. He said that DPW used to allow "someone" to take roadkill from the freezer for "experiments," but the department decided that cremation was "the more humane thing to do." I asked him if he thought it was a waste to throw away dead animals that could be used for art, food, research, or fashion.

"No, no, these are people's pets," Glennon said, taken aback at the thought. "I have a dog myself, and I wouldn't want him to go that way. And I certainly wouldn't want to see him made into a pair of gloves." To be fair, he never would have had to see it.

Instead, the bodies get incinerated, burned to an unrecognizable pile of ash and noxious fumes. After Glennon makes a pickup, he brings the bodies to the DPW campus and stores them in a shed-sized freezer, filled with amorphous black garbage bags, each with an individual carcass resting inside. Once the freezer is full, about two or three times a year, Glennon says, the operator of "Final Journey Animal Aftercare," a pet crematorium, comes to retrieve them, at a cost of $9,000 a year. According to the operator of Final Journey, he then takes the ashes to a landfill, and that is their final resting place.

There is no universal agreement regarding what should be done with roadkill, nor is there consistency regarding whose responsibility it is to pick it up. Sometimes the dirty work will fall to city or county services like Animal Control or the Department of Sanitation, or something with a similar title. They may store and burn the carcasses, as is the case with the Department of Public Works in Boston, but sometimes they get more creative. In more rural areas, it's a common decency to simply push dead animals into the ditch by the side of the road, where nature can reclaim them and scavengers can

munch on them in safety. In some counties, municipalities will compost their roadkill, making a nice, rich fertilizer for the plants on the street and on verges.

Home

The traditional route for the area I was in when the buck died in my yard was to call the Contra Costa County's Animal Services department for pickup. This department only accepts roadkill in certain conditions, according to Steve Burdo, community and media relations manager. They have to be on a public roadway, he says, although the three-point buck was not. If it's on a highway, the California Highway Patrol or the California Department of Transportation, or CalTrans, collects them. Animal Services would not take livestock if they could identify the owner; it would be on them to take care of it. They aren't governed by any state or federal regulations regarding how to deal with roadkill--no such regulations exist, unless there was a risk of the animal carrying rabies.

There were 16 people ahead of me on the phone line when I called about the buck. After about 15 minutes I got through to the county's animal services and requested that someone come to pick up the body. I'm not sure if the three-point buck was struck by a car, but the wound on his side suggested he was, so I reported him to roadkill collection. Anyway, there's no public service in that county for collecting wild animals who suffered spontaneous mystery deaths. Burdo said that I would have had to call a private carcass removal company if Animal Services didn't take it.

About four hours after I had called animal services to pick up the three-point buck in California, the doorbell rang. A man named Fernando wearing a bright yellow traffic vest was there for the carcass. Carrying a long stick with a loop at the end, he walked through the skinny redwood trees in my side yard, stepping over the small pond out of which I had hastily taken the large deer head just before he arrived. He wrapped the loop around the recently-dead buck's head and antlers and dragged it over the rocks, footsteps producing a sound just like when the deer had first walked onto the pebbles. Fernando continued to pull the pliant carcass through the trees, out the front lawn and onto the road right behind his truck. He

attached the buck to a cord on a winch at the back of the truck and flipped a switch. Together, we watched as the winch automatically rotated, pulling Old Three-Point up by the neck.

Soon the remains of my new friend were wedged between a dead boar and a pile of black trash bags. He confirmed that the body could potentially go to the Bay Area Puma Project, unless they have too many deer already, he explained, the animals go into freezers, and a cremation service picks up the barrels for fiery disposal a few times per week. The buck wouldn't live on as food, fashion, science, or even nutrients to feed the soil. Ashes to ashes.

"It gets depressing," Fernando pointed out as he closed the back of the truck. "It's a little morbid, you know? Seeing all this death."

As the white truck drove away, I wished I would have asked to follow it. I thought about the wasted potential that his body held, for clothing, food, or even to be returned to the earth as nutrients for predators, insects, bacteria, and soil. But I was there in the suburbs, surrounded by normal people, who don't see carcasses as beautiful or full of resources and potential. Understandable, and in fact a lot of the things I wanted to do with the deer would have been illegal. So, a government service had to whisk him away to be destroyed, as though he never existed. As though the body was a bad thing.

Thinking back on the people I have met who make use out of roadkill, it makes sense that so little of it goes to those creative endeavors. These ultimate recyclers are one-offs. Oddities and hobbyists. Their processing of animal remains was hardly efficient, because it wasn't part of a consistent and predictable system. There are no roadkill factories, no quotas to fill with supermarkets and brands that want a certain amount of product at a certain time.

But, maybe there could be a world where roadkill makes it into the mainstream of production, displacing some of the animals we kill for these reasons. Perhaps it could happen that enough hobbyists integrate their roadkill processing with efficient systems, like Paquin does when she uses commercial tanning companies.

I couldn't have saved the deer. But I would have liked to have saved some of him.

KRISTIN HUGO

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Education

Boston University	California State University, Northridge
MS in Science Journalism	**BA in Journalism**

Work Experience

PolitiFact, Remote

Contributing Writer, Climate Change | July 2022-January 2022

- Identify, research, confirm or debunk, and explain climate-change related claims.

Bay Nature, Berkeley, California

Editorial Fellow | July 2021-July 2022

- Researched, wrote, and produced news focused on animals and nature, including outdoor recreation, flowers, salamander pathogens, and animal remains;
- Managed social media accounts, including Facebook, Twitter, and Instagram;
- Created a BayNature TikTok account and made 14 videos promoting our articles;
- Secured full funding and completed training provided by the Poynter-Koch Emerging Journalist Fellowship.

Freelance

Journalist/media professional | July 2018-June 2021

- Produced long and short articles about scientific topics, including fox rescue, betta fish as pets, the history of cattle and their bones in the East Bay, and the impact of discarded fishing gear on whales;
- Found and secured the rights to video assets or filmed my own, then used them to edit and produce videos, including Ripley's Believe it or Not!'s most-viewed video ever;
- Managed social media and search engine optimization strategy for Vox;
- Clients include *National Geographic, SFGate, The Daily Beast, The Independent, Ripley's Believe it or Not!, Vox,* and *Medium*.

Newsweek, New York, New York

Science Writer | September 2017-July 2018

- Wrote more than 250 short articles about science for a lay audience;
- Spearheaded a social media initiative for the science team, including establishing a Tumblr;
- Created a science stylebook to improve clarity and accuracy in our science content.

PBS Newshour, Arlington, VA

Science and Social Media News Assistant | December 2016 – May 2017

- Created videos, illustrations, animated gifs, and social media content to promote science-related articles on Instagram, Tumblr, Twitter, Snapchat, and Facebook.
- Designed story ideas inspired by press releases, networking, following the news, and social media, and pitched them weekly.
- Wrote about upcoming research and relevant science stories, such as the March for Science and the ethics of wildlife photography.

National Geographic, Washington, DC

Science writing Intern, Freelancer | June 2016-September 2017

- Wrote about topics focused on animal behavior, conservation and biology;
- At least four books have cited one of my National Geographic articles, titled "Human Skulls are Being Sold Online, but is it Legal?

Memberships

Group	Position	Since	Description
Authors of Nonfiction Books in Progress	Host / Founder	2022	Monthly Google Meeting to discuss book progress among authors of nonfiction, general audience research books.
Odd Salon	Fellow	2019	Nonprofit educational salon in which people give presentations on strange aspects of science, art, and history. I've given 7 talks.
National Association of Science Writers	Member	2015	Organization for science writers with annual meetings.

Social Media

- **TikTok:** @RollBones, 185,000 followers
- **Tumblr:** @StrangeBiology, 65,000 followers
- **Instagram:** @CarcassAfterlives, 1,000 followers

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617 253 5646
https://mitpress.mit.edu

Massachusetts
Institute of
Technology

Dear Sloan Foundation,

The MIT Press is excited to publish *Carcass: On the Afterlives of Animal Bodies* by Kristin Hugo. *Carcass* promises to entice readers with its macabre subject matter and move beyond titillation to inspire empathy, creativity, and pragmatism in the way we conceive of—and make use of—animal death. Animal death is taboo. It's meat. It's boots. It's roadkill. It's ignored. It's an *it.* In this book, Hugo, a woman science journalist, insists that we pay attention; she pays homage to the little explored relationship between humans and animals *after* their lives have ended.

Kristin is a talented science writer and rigorous researcher. A Sloan Foundation grant would empower her to immerse herself in the science, business, craft, and culture of animal death, and to spend time writing about how animals become our food, clothing, art, science, practical items, decor, soil, nutrients, and more. The MIT Press insists on solid scientific underpinnings to even our most popular science books. Good science storytelling takes work. It's work well worthwhile as popular science books have a way of hooking readers, and in the case of *Carcass* would introduce memorable trivia tidbits, recast the gross as the useful and the beautiful, and promote understanding of animals role in science, all with an undercurrent that would inspire readers to think more about the control humans have over animals during life and during death, and think about how minding the macabre can make the world a better place.

Hugo's book project contributes to the goals shared by the Sloan Foundation and the MIT Press: elucidating science, technology, art, and culture. I very much hope you share MITP's vision for *Carcass* will support its author in endeavoring to write the most scientifically sound and engaging book possible.

Sincerely,

Beth Clevenger
Senior Acquisitions Editor
The MIT Press
eclev@mit.edu

Previous Work

When an Animal Dies in a National Park, What Does the Park Service Do With it? - *Bay Nature*

Human Skulls Are Being Sold Online, but is it Legal? - *National Geographic*

Everything You Were Afraid to Ask about Roadkill - *National Geographic*

The East Bay is Full of Cattle Skeletons. Here's Why. - *SF Gate*

Soap Mummies: Why Some Bodies Turn into Soap Once They're Buried - *Ripley's Believe it or Not!*

These Flesh-Eating Bugs Create Museum Exhibits - *Ripley's Believe it or Not!*

The Morbid Remains of a Harpy Eagle Home - *Ripley's Believe it or Not!*

Fertilizing Crops with Ancient Cat Mummies - *Ripley's Believe it or Not!*

She Took her Amputated Leg Home, and You Can Too - *PBS Newshour*

'Amazing' Two-headed White-tailed Deer Fawn Found, Studied, Turned Into Taxidermy - *Newsweek*

Funeral Homes Selling Body Parts From Dead People Could Be Banned in Colorado - *Newsweek*

What is the Migratory Bird Treaty Act? The Bird Law Weakened by the Fish and Wildlife Department - *Newsweek*

Scientists Are Studying Rotting Animal Carcasses to Understand Why Complete Dinosaur Fossils Are So Rare - *Newsweek*

Exclusive: Whatever happened to the mouse with the ear on its back? - *Newsweek*

Dog Stuck in Tree for 60 Years Doesn't Rot - ***Newsweek***

Don't Call it a Body Farm - ***Boston University News Service***

Ancient Bond Between Human and Animals Revealed in 14,000-Year-Old Diseased Dog Teeth - ***Newsweek***

Previous Work Example

Human Skulls Are Being Sold Online, But Is It Legal?

(Read this article with photos and infographics here)

Last month, eBay banned human bone sales. But it's still happening on other websites, and lawyers and academics are starting to take notice.

By Kristin Hugo



In 2011, an archaeologist in the United Kingdom picked out one of the many human skulls sitting on his shelf. The 17th-century European male was missing most of his teeth and mandible, but the skull was clean and generally in decent condition. The archaeologist photographed it, described it, and listed it on eBay.

At the time, the popular online auction site allowed anyone to trade in human bones as long as the remains were clean, articulated, and for medical purposes. The 17th-century skull was neither articulated nor did it go to a doctor, but it did fetch the archaeologist $750, minus the usual fees from eBay and PayPal.

This was the skull that started Zane Wylie's obsession. Wylie was studying facial expressions, and he wanted an authentic skull to study how muscles attached to the bone.

"I looked online to see if I could get a real skull, and to my surprise, there were several dozen available," says Wylie, who asked to go by the pseudonym he now uses for business purposes.

Skulls for Sale

He named his acquisition "Yorick," the first of many skulls he'd eventually purchase online. By late 2011, he had started carving designs into them and selling them on his website and at conferences, eventually making a living primarily through his boney art.

Wylie was hardly alone: Communities of people who collect oddities and bones were well aware of how easy it was to list something on eBay when no one had to prove provenance or medical affiliation.

But now, academic and legal professionals are starting to take notice.

On July 4, an analysis published in the Journal of Forensic Sciences described how, over the course of just seven months, sellers listed 454 human skulls on eBay, with an average opening bid of around $650. The authors, Christine Halling and Ryan Seidemann with the Louisiana Department of Justice, also noted the trade of human skulls on other websites like Yahoo! and Facebook.

Just four days after the study was published, eBay banned trade in human remains except for head hair, which is commonly used to make wigs and Victorian-style art. Sellers' items were pulled from the site, and any listing fees they had paid were refunded.

The official reasoning from eBay for the policy change was: "The sale of humans and human remains is prohibited by law, and sellers can't list them on eBay."
Perhaps shockingly, that's not exactly true, but the move may signal a drastic rethink of what is currently a largely legal trade in human bones.

In addition to the eBay decision, the state of Louisiana banned trade and even ownership of almost all human remains shortly after the study appeared. Bone traders started to get nervous. Some deleted their Instagram accounts featuring human remains. Some canceled their interviews with National Geographic. The Bone Room, a store selling bones of all types, sent a note in their August newsletter saying that they consider the eBay ban worrisome.

"I suspect a law will be passed, and I will no longer be able to sell human bones to artists, cadaver dog trainers, or people who just want to own a femur or a skull," the store owner said in the newsletter.



HISTORICAL HEADS

Right now, most human skulls in the general U.S. market come from antique medical skeletons.
In the 1700s, medical schools had to provide skeletons for their students, and the supply largely came from India. Hindered by changing laws in 1832 that put an end to unchecked grave robbing in the U.K., British doctors pressured Indian people who dealt with the disposal of human remains to sell the bones instead.

Soon, India had a thriving bone industry that supplied much of the Western world with medical specimens. The history, the opportunity for entrepreneurship, and the fact that many families were too poor to cremate their loved ones helped India dominate the human bone niche.
But in 1985, one dealer was caught selling more than 1,500 child skeletons of unknown origin. India promptly banned exporting human remains over concern that people were being murdered for them. For a while, China took over India's role as global bone merchant, but they also banned exports in 2008.

Wylie calls this piece his Jacques de Molay tribute skull. Molay was the last known grand master of the Knights Templar. He was among the Templars arrested for heresy in France on October 13, 1307, which is often erroneously tied to Friday the 13th becoming an unlucky date.

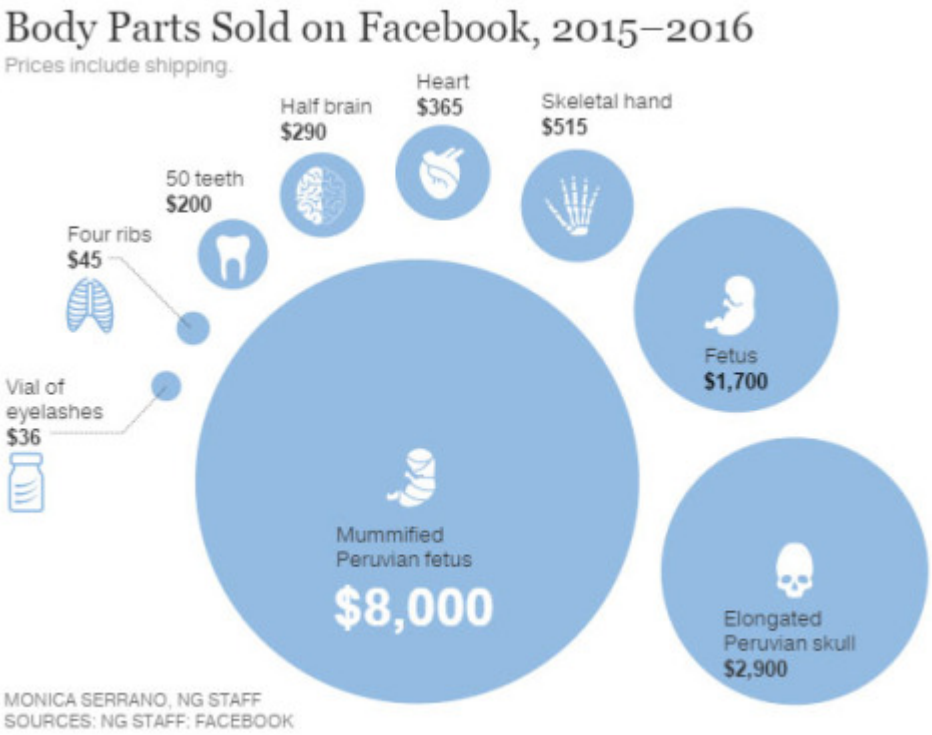
Over time, as various medical schools closed or downsized, or as professors sold off their collections at estate sales, the bones changed hands, and some ended up on the oddities market.

MODERN DONORS

People in the medical world and related fields can still get new human skulls from U.S. donors. That's because not all bodies donated for non-transplant anatomical science are studied whole. A doctor might teach her medical students elbow surgery using a dead person's arm, a chiropractor might want a cleaned spine, and a retailer might take the head for cleaning and sale.

Skulls Unlimited is the only company in the U.S. that is legally cleaning human heads that come straight from donors. When they receive a donor head, they cut off as much meat as they can, and remove the brains with a special tool. Then the cleaning crew dries the skulls for a few days before putting them in a

colony of dermestid beetles, which will eat off the rest of the fleshy bits.



The company will only sell donor skulls to bona-fide doctors, nurses, dentists, anthropologists, and people with valid scientific or medical reasons to have them. However, they sell antique skulls to anyone who wants them.

In addition to Skulls Unlimited and The Bone Room, OsteologyWarehouse.com, Skullstore.ca in Canada, and countless brick-and-mortar stores across the U.S. also specialize in selling bones of various species, including humans. You can find human remains for sale on private websites like Wylie's, plus on some big online platforms like Facebook. (Facebook declined to be interviewed for this article.)

LAW AND ORDER

For now, these bone collectors don't legally need any credentials to buy and sell human skulls that are already on the market. And in the U.S., there is no federal law prohibiting trade and ownership of human remains other than those from Native Americans.

Many collectors erroneously believe that only three states—New York, Georgia, and Tennessee—ban trade in human remains across state lines, based on a post on The Bone Room's website and reiterated in their August newsletter.

In reality, the laws are lacking in some states, unenforced in others, and nearly impossible to fully comprehend by buyers, sellers, or site administrators.

Seidemann, who is an attorney at the Louisiana Department of Justice, agrees that the laws are too protean and complicated for sellers to keep track of. “It’s a moving target,” he says. There is no comprehensive online resource to determine the legality of trade in human remains on a state-by-state basis, and neither academics nor collectors (even the ones with lawyers) were able to cite the details of each state’s laws when asked by National Geographic.

However, even if human bones are technically legal to own and trade, there is a chance that some remains were grave-robbed, stolen, or misappropriated. The recent article by Halling and Seidemann noted that 56 of the 454 skulls they analyzed from eBay were probably not medical specimens, but ones of forensic or archaeological interest.

Brian Spatola, curator of the anatomical division of the National Museum of Health and Medicine in Maryland, says that he has recovered several human skulls that had gone missing from academic collections just by watching eBay.

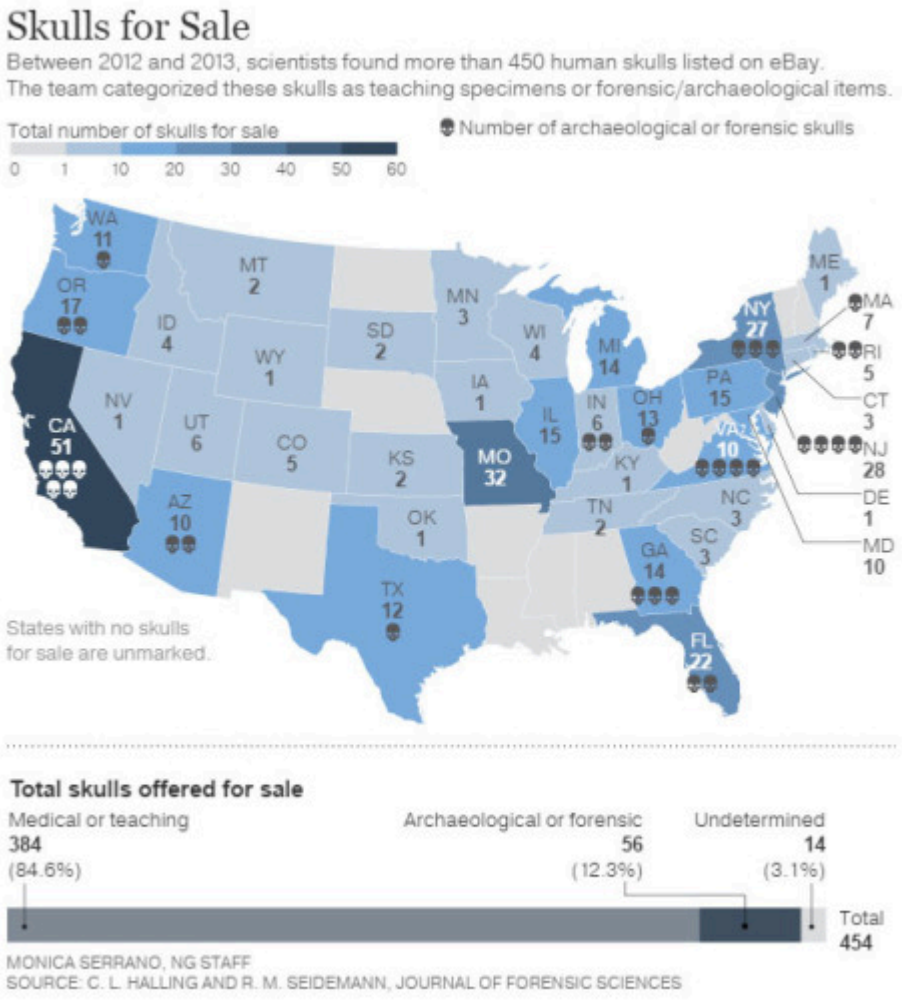
“In many of these instances, the materials were being sold by someone who claimed to have purchased them from an estate sale and professed to not know its history,” Spatola wrote in an e-mail statement on the topic. “Each of these was ultimately returned.”

SHROUD OF SECRECY

Ethical concerns are no less complicated. Damien Huffer, an anthropologist at the Smithsonian’s Museum Conservation Institute, would like to see collectors stop trading in human remains, especially archaeological and ethnographic specimens, on social media. Ownership is “legal by default,” he says, “but that doesn’t wave away all the issues.”

Huffer and his colleagues monitor website tags used by human remains traders on Instagram and other social media sites. He suggests that other users do the same and report people who sell remains to Facebook and Instagram. That way the companies are aware it is happening, even though right now neither of those websites has anything in their terms of service or community standards that restrict such sales.

Still, collectors usually have their own code of ethics, and most know what to avoid.
Skulls Unlimited co-owner Josh Villemarette is confident that the skulls they trade in come only from legitimate sources: “If it was a murder victim, there would definitely be ways for us to know that, just because the standard person’s not going to be able to get it clean,” says Villemarette, adding that he has never been offered something that he even suspects came directly from a murder victim.



“But there are times when you receive a photograph of a skull that someone’s wanting to sell that’s very clear that it’s been dug up,” he says.

“Something that’s intended for medical purposes, cleaned and sold into the scientific field, and refurbished ones—those are very clear that they’ve been intentionally cleaned for that purpose. Anything that’s been cleaned underground, there’s a very distinct look to them. That’s a red flag to us, and when we get those photographs, we straight away tell them that we’re not interested.”

And despite the recent dustup over eBay and Louisiana, Wylie says he’s not too concerned about his business. He figures that more people will instead buy directly from his website or from sellers at conventions, adding that anyone who wants to become art after they die can will their skull to him.

So at least for now, he and other bone traders continue to sell online, just with a little more secrecy and care than they had before.

“Somebody who buys skulls and somebody who sells skulls, we don’t like to trade names,” says Wylie. “All it takes is for somebody to write an article, and our business could be over.

The East Bay is full of cattle skeletons. Here's why.

by Kristin Hugo

April 7, 2021

Link: https://www.sfgate.com/local/article/The-East-Bay-is-full-of-cattle-skeletons-Here-s-16084209.php?IPID=SFGate-HP-CP-Spotlight&fbclid=IwAR3brWV9Hp0IaDLHySggd3Sq2V_-7nEN7B-QAj0eHx-aldpErqyzwnFPMdw

The first sign was four low-flying turkey vultures. The second sign was the smell.

As I traveled through the ravine, I knew I would find some dead animals.

I walk into the lush green fields near an opening to the Sycamore Valley Regional Preserve where a dozen or so cattle graze, their black and white faces side-eyeing the new visitor traipsing through the field. The hills connect at a jagged ravine, muddy with the collection of rain and pocked with hoofprints.

Ravines, in addition to collecting water and the plants that enjoy the moisture, tend to collect skeletons. Following the vultures, I come upon a lonesome cow skull, minus the jawbones, yellow with grease. A bit farther and the vultures were getting lower, and two sat on a black, unmoving mass.

The eyeless carcass of an Hereford-Angus cross lay partially hidden, but in the nearby artichoke thistle, there was something that the vultures were done with. I recognized the pattern, bars of yellow bone laid evenly in the form of a rib cage. The greasy cow skeleton

was complete, with ribs, pelvis, spine, legs and even mandibles submerged in earth. Just the skull was missing.

Over the course of the next few hours, I found two more skulls and the scattered, sun-bleached bones of maybe a dozen more cattle. After years exploring the shadows of Mount Diablo, I've found the remains of hundreds of animals, including deer, coyotes, boars, skunks, squirrels, mice and raccoons, but cow skeletons are the most prevalent.

I spend a lot of time bone hunting. Bones are plentiful in the East Bay simply because bones come from dead animals, and dead animals come from live animals, and live animals live in places with nature. The bones from cows are easy to find because they are big, and they are big because they come from big animals. Sorry these answers aren't more beguiling, but the rest of the story is.



Kristin Hugo

Simply put, there's a lot of living cattle in the East Bay. If you're wondering why so many places in the area are called "Something Ranch," it's because ranching here predates much of the area's development. Some of the very first cowboys, vaqueros, wrangled cattle in the Bay Area hills for the Spanish mission system, and today, ranchers monitor the land.

"Picture if you will the 1780s and the early 1800s," explains local history writer Amelia Sue Marshall, who wrote a book called "East Bay Hills." "[Spanish Missionaries] would force Indigenous Ohlone families into the mission system and try to indoctrinate them into Spanish, Western ways of living. The men would work as unpaid cowboys, vaqueros. They would run cattle over an enormous expanse of territory."

The beef fed the missions. Over time, ranchers sold their land to parks, but some continued grazing their cattle there by leasing it.

Today, the East Bay Regional Park District (EBRPD) maintains about 125,000 acres, 85,000 of which they lease to ranchers for livestock. With about 50 tenants grazing about 6,000 cattle on multiple use land, hikers are bound to run into some bovines. They chew cud languidly and eye you suspiciously as you pass. They're perfectly safe with a wide berth and respectful distance, but if you get too close they will stomp and grunt. If you don't heed those warnings, it could be worse.

Whether livestock grazing is good or bad for public lands is controversial, and it depends on how well managed the practice is. Cattle ranching has been described as an "environmental

partnership," but Point Reyes ranching has been said to be "incompatible with wildlife." The Center for Biological Diversity is against cattle grazing on public land generally.

The EBRPD, however, argues the benefits to the park are significant. When colonists drove bison to near-extinction, there were few grass-eaters around to mow down the plants. So the cattle, occupying a similar role to the absent bison, munch down the tall grasses, making it harder for flames to climb a "fuel ladder." "If we remove the fuel ladder, the fire can't go up from the ground into the trees," said Aileen Theile, fire chief of EBRPD.

If done correctly, that same munching can give desirable plants the opportunity to thrive and increase biodiversity, said Dina Robertson, EBRPD wildland vegetation program manager. Some wildlife prefer land after it has been cow-grazed, too, according to EBRPD.



While there are scores of bovines, dead and alive, in both regional and state park land all over the Bay Area, on most public lands, they are not for collecting. Bone collectors run into the same problems as wild plant and mushroom foragers — it's pretty hard to find a place where you can collect just about anything without violating any laws or park rules.

The EBRPD has rules against taking anything. Collecting roadkill is also illegal in California for now. There are many, many wild animals that are illegal to have in almost any case, such as even a shed feather of a migratory bird.

Most of the time, I take pictures and videos for TikTok. To find bones for photographing, it's usually necessary to go off the trail, leaving behind the paths that humans frequent and animals avoid. There are also ecological questions about going off-trail. Mount Diablo State Park and the California Department of Parks and Recreation safety tips suggest not going off-trail. The National Park Service considers going off the trail poor etiquette.

However, assuming you are careful, courteous, safe and follow signage and leave no trace practices, you could do some exploring — some outdoor experts and advocates even encourage it when done correctly.

For me, bone hunting is one of the most rewarding and realistic ways to experience nature. There is no ticket you can buy to "The Bones of The East Bay" and there is never a guarantee. Bone hunting is an adventure. There are broken and healed radii, there are piles of mouse bones under owl homes. There are red skulls that absorb the iron-rich nutrients where they lay. There are holes in noses where the shooter hit the wrong part of the skull and had to shoot

again. There are deer who died in velvet, their antlers soft and rounded at the ends. There is history, ecology, biology, mystery, nutrients, adventure and value in bone hunting.

So, I go into ravines and follow vultures.

When an Animal Dies in a National Park, What Does the Park Service Do With It?

by Kristin Hugo

June 14, 2022



I'm always excited to see an animal in nature — even when it's dead.

Not everyone feels that way, and you may wonder why the park staff doesn't remove carcasses to make a prettier and safer experience for the viewers, like a city public works department cleaning public streets.

Well, there are reasons for that. What a park decides to do with a carcass depends largely on circumstance, science, safety, and pragmatism.

Natural Deaths

Park staff might do a variety of things with a carcass that died naturally. If it's blocking a road, or close enough to the road to attract predators that might then be at risk of getting hit by a car, park staff will move it a little further into the field or brush. The USDA has a **guide** to carcass disposal, which includes options like composting, burial, sending it to a landfill, or incineration (cremation.)

Two slightly uncomfortable truths emerge, however: one, that large animals die regularly in nature; two, that large bodies are not easy to just wipe up. The U.S. Forest Service once published a document called **"Obliterating Animal Carcasses with Explosives."**

The first USDA suggestion is “above ground burial,” which is an oxymoron but ultimately means to just leave the dead animal alone. Your local carnivores will do the rest. This is the most common response of National Parks, such as Point Reyes, in the case of natural deaths.

Sometimes the animals are used for necropsies, or animal autopsies. When the Tomales Point population of tule elk declined by 152 in 2020, professionals **necropsied six of the dead animals**. All six were emaciated, **according to a Park Service FAQ**, and some suffered from other problems including parasites and infection. Veterinarians and park staff believe the elk died from starvation after drought resulted in “poor forage quality.” In response, three California residents and the Animal Legal Defense Fund **are suing the National Park Service** for allegedly causing the deaths by fencing the animals in and not letting them eat and drink outside the elk preserve boundaries.

The National Elk Refuge, which is not part of the National Park Service but is adjacent to Grand Teton National Park in Wyoming, uses samples from elk legally killed by humans to assess the risk of the cervid prion disease Chronic Wasting Disease (CWD). If they find the disease in an elk, says Frank Durbian, a project leader at the National Elk Refuge, they will incinerate the body to prevent the spread of disease. Luckily, so far all the elk have tested negative, so they have returned the CWD-free bodies to the ecosystem.

Mat Sorum, a wildlife biologist at Gates of the Arctic National Park and Preserve and Yukon-Charley Rivers Preserve, wrote that staff in those Alaskan parks have similar standards of testing animals that may have died of disease or something else they want to track, or if they are looking for information about the animals, such as when a collared wolf dies and they want to monitor causes of death in that population.



Paintings by Kristin Hugo

Intentional Deaths

Sometimes the policy changes when a park service staff member, or someone commissioned by the park service, intentionally kills an animal. Depending on the circumstances, the killing is called “management,” “culling,” “euthanasia,” or “removal,” and it’s generally done to get populations to ecologically ideal numbers, or to remove individual animals that appear sick, injured, or dangerous.

At Point Reyes, for example, the National Park Service decided recently to **extend 20-year leases to cattle ranchers, in a plan that potentially involves shooting elk to minimize competition for forage**. The plan is controversial, and also at a very preliminary phase. The idea is to reduce the herd at Drakes Beach to 140 animals. In 2022, park staff counted 151 elk in the population. Enacting the current management plan to the current population would mean killing 11, but the population — or the plan — could change.

“Lots of National Park Service units do removal of wildlife, and they do a kind of full range of options,” says Melanie Gunn, an outreach coordinator at the Point Reyes National

Seashore. “From using contractors, to internal staff, to sometimes through recreational hunting, but that would not happen at Point Reyes.”

Other times, members of local tribes or trained volunteers shoot the animals.

In 2009, the National Park Service culled 1,100 non-native fallow and axis deer in Point Reyes, part of a plan to keep the park in a more natural state. NPS commissioned a Connecticut wildlife management company called White Buffalo to kill the deer. Residents “**claimed carcasses were being left out to rot**,” the *San Francisco Chronicle* reported, while the National Park Service’s **FAQ regarding the cull** states that, “Over 75% of culled deer have been donated to food banks, soup kitchens, Native American tribes, or California Condor restoration programs throughout the state.”

Carcasses that were too hard to recover in time to safely freeze and feed to humans “were left in the field away from waterways to decompose and allow the nutrients to be recycled,” or donated to the condor project at Pinnacles National Park, according to an email from Anthony DiNicola at White Buffalo. The non-meat parts of animals can be used by the contractor however they like, though DiNicola wrote that the effort to sell the deer hides from Point Reyes wasn’t worth it. “Every effort is made to use carcasses from all ungulate culling projects,” he wrote. “However, site characteristics dictate what is logistically and/or economically feasible.”

“What we always try to do is the highest and best use” of the animal bodies, Gunn explained. In the still-hypothetical case of an elk cull, that would place donations to food banks and Native American tribes as the highest priority. Because some elk at Point Reyes have Johnne’s disease, at least some will likely go for necropsies.

There are also animals who need carcasses to reproduce, carcasses provide nitrates to the ground, and carcasses are necessary to bring healthy “**necrobiomes**” to the environment. Whether an animal death is normal, natural, intentional, tragic, or anything else, a carcass is

far from useless, even if it's "left out to rot." Just ask the bears, the coyotes, the magpies, crows, insects, and even plant life that consume the dead, continuing the circle of life.

Conflict of Interest Statement

None apply.

Diversity, Equity and Inclusion Statement

I will make every effort to ensure that my interviews are conducted with respect to the diversity of voices in that field. When I look for expert sources, I can use DiverseSources.org, 500WomenScientists.org, and other diversity databases listed by The Open Notebook.

When it comes to field reporting, I'll do my best to get diverse voices. If I'm able to get funding to travel, I'll interview members of the Sami people and Indonesian people, who represent both racial and cultural diversity.

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