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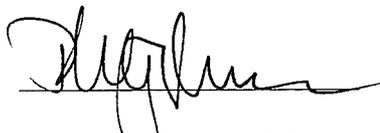
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The One That Carries You Away
Essays

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May 6, 2011

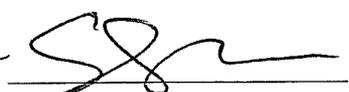
A thesis submitted to the faculty of the Environmental Studies Program
in partial fulfillment of the graduation requirements for the Degree
of Bachelor of Arts with honors in Environmental Studies



Philip J. Nyhus, Advisor



Gail Carlson, Reader



Elisabeth Stokes, Reader

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INTRODUCTION

What is environmental writing? Phil Condon, author and professor at the University of Montana's Environmental Writing Institute, defines it as any piece of writing in which an important factor is nonhuman—be it animal, place, weather, et cetera. At the same time, he acknowledges that the primary limitation of this definition is its *lack* of limitations; because humans are constantly interacting with—and affected by—the nonhuman, virtually any piece of writing could be considered environmental. The Association for the Study of Literature and the Environment (ASLE), the nation's predominant organization for the academic study of environmental writing, defines itself through its focus on “the natural world and its meanings and representations in language and culture.” *Nature Writing: The Tradition in English* by Robert Finch notes that the most common form for the genre is the first-person narrative essay; but most of the pieces in *The Best American Science and Nature Writing 2010* are third-person profiles, generally of an individual or a specific discovery, with no mention of the writer at all. Annie Dillard's work is heavily lyrical, guided not just by the meanings of words but by their poetry, while Bill McKibben's writing is straightforward and journalistic, a call to arms.

Although there is no standard definition, I have interpreted “environmental writing” as writing that communicates the emotions and ideas of the environmental movement, and/or depicts places that are worth protecting. Most of the pieces included here are first-person, and several (“Rangefinder Girl” and “Reindeer Boots”) could be described as place-based memoir. In other pieces, like “Wasteland,” I have tried to combine journalistic inquiry with personal narrative, while the three op/eds in this collection are more fact- than emotion-based, more indignant than reflective.

The first piece that I wrote specifically for inclusion in my thesis was “Useless Bay,” which I composed in the middle of a very jet-lagged night in my grandmother's apartment in New York City. I had just spent the week traveling with my parents, and was struck—as I had been many times before—by how strongly my mother's mood comes as a result of her surroundings; something that I have inherited from her. (My father, on the other hand, couldn't care less where he is—as long as he has access to

coffee and an Internet connection.) In fact, my mother wrote her own version of the same story about a decade ago—under the title “Dogfish”—and because I’ve never read her version, I’m only loosely familiar with the details of the piece. When I showed this essay to my parents, my mother, sobbing, told me it was the truest thing she had ever read. My father said, “Now just wait a moment—it didn’t happen anything like this!”

I mention this in order to bring up an important concern in nonfiction writing, which is the difficulty of adhering to an absolutely “true” version of events. In my own writing, I value honesty above all else—readers can easily sense when writing is not emotionally accurate, and a reader’s trust is not just precarious, but the most valuable thing that a writer has. This does not mean, however, that I haven’t taken some liberties in describing past events, always in the interest of making for a more streamlined and compelling piece of writing. I sometimes prune people from stories in which introducing each character would be more unwieldy than beneficial, and have omitted many scenes for the same reason.

I often imagine an essay’s job is to take a tangle of memories and ideas—people, places, events—and pull from it a single strand, a narrative that is able to draw connections that would otherwise have been hidden. This requires that some adjustments be made to the past, but always in the interest of better serving the reader while retaining a truthful integrity. That said, please know that all people and places in this thesis are real, and I have done my best to ensure that all scientific and political information is correct.

Although many of these essays deal with similar topics, they are each meant to stand alone. “Life and Ice” and “Ice and Ashes,” for instance, both start by introducing an unusual location—a dogsled camp atop Alaska’s Norris glacier. Since both of these essays have been or will be published individually, each one must establish the location anew. For this reason, I hope that the reader will be patient in tolerating a small amount of repetition between pieces.

Lastly, I want to emphasize that these essays are meant to be entertaining. I think that the best environmental writing is, first and foremost, good writing—writing that takes the reader somewhere he or she has never considered, and that, without

browbeating or guilt-tripping, leaves him or her with a slightly different understanding of both the natural and human worlds. More than anything else, this is my goal.

A NOTE ABOUT THE TITLE

While I was studying abroad in Namibia, I lived near the dry, boulder-lined bed of the Uniab river, empty except for a thin line of white salt that ran down the center of the bed like a stripe on a snake's back, left over from when the rainy season's last trickle of water had evaporated. I and the other students spent time in the riverbed, resting in the shade of the trees on its bank and counting zebra prints that wound between the boulders. The rocks stayed warm until after sunset, and we would sit there on the plains, watching the sky turn from orange to blue as the first stars appeared and the jackals began to call.

It wasn't until later that I learned what the river's name, *Uniab*, meant in Damara: *The One That Carries You Away*, so called because of the flash floods that poured down it during the rainy season, sweeping up anything—debris, animals, people—that rested on the banks. The villagers weren't afraid of the river, but they had a great respect for it, and warned us to take caution. The next night I sat by the riverbed again, watching a flock of guinea hens scuttle in the grass and talking with my friends about the river's name. The one that carries you away—the thing was, we decided, it already had.

The best writing, too, can carry a person off, lift her up and leave her somewhere unknown, blinking and astonished. Aldo Leopold does this for me; so do Barbara Kingsolver, Terry Tempest Williams, and Kathleen Dean Moore. It is with respect to these writers—and so many others—that I've chosen the title for this collection.

USELESS BAY

Useless Bay, Washington—ten minutes across by motorboat, and shallow enough that when the tide sweeps low you can walk out a mile on dry sand and wade another half before you wet your shorts. There's Mount Rainier shining like a ghost across the water and the lights of Seattle a solid line beneath it, and here in the bay—what matters to the fishermen—there's dungeness crab and good halibut, salmon, dogfish, flounder. My mom saw a humpback once, while peering through the kitchen window as a kid. She wondered, did it scratch its belly on the sand?

There were stories about the place: Indian legends of animals with the power to heal, and pioneer tales of wild storms and treasures washed ashore. These the kids circulated amongst themselves, told so many times that the stories wore thin and ratty as an old magazine and began to resemble something else entirely. There were newer stories, too, about Sally Mitchell finding an Indian skull in the slough-off from the bluff, and about how Arne Dahl had reached his hand into the water to rinse off fish blood and pulled it out again a finger short, courtesy of a quick-jawed dogfish. My grandfather—young, then—would tell of a salmon big as the devil that he'd reeled in some time last year, a salmon with more fight than a mama bear and close to the same strength he'd guess, and just as he hauled that thing from the water a seal leapt up after it and stole the back half in one bite, right there in midair. He's got a picture, framed, of that fish roasted and set on the table, nothing but shreds behind the dorsal fin and God help him if it didn't still fill his wife's biggest platter.

The seals ate fish sometimes, sure, but the dogfish were the real problems, gray-skinned sharks four feet long that scared away everything good and ate the rest. The fishermen were always getting together, talking about how to get rid of them. Each time he caught one my grandfather would bring it in and lay it flat on the sand, and all the kids would get sticks and beat it dead, and just like that there'd be one less trouble in a world with too much already.

The kids grew up and left after a while, and the whole neighborhood started to get old. The fishermen were pulling in less but no one talked about it. Pretty soon crab traps went two weeks without being checked, and the buoys started thinning,

flickering out one by one like lit windows on a dark street. But whenever she came home my mom found fresh dungeness on the table, or buttered halibut cheeks, and she helped like she always had, cleaning fish and cleaning house and doing away with the occasional dogfish that got hauled up, though she took no joy in this anymore, figured that was one of many things she'd left behind and lost.

When she was pregnant for the third time and the doctor told her she might never bring a child to term, she packed up and drove home. She sat on the front steps looking out over the bay, but the sky was overcast and she couldn't see Rainier—couldn't see any farther than the closest buoys, shining bright and barnacle-scabbed against the gray water.

A few days later my grandfather brought home another dogfish and laid it out on the sand, told my mom to deal with it. She whacked its head with a rock and left it there, came back a few hours later at low tide to drag the body out onto the tide flats, let the eagles have a go at it before the water came back. But when she bent down she noticed something—instead of lying still, the gray skin quivered, pulsed. It was a fat shark, she thought suddenly; fatter than she'd ever seen one. She got a knife and sliced open that swollen gut, and onto the sand spilled a dozen tiny sharks, slippery with blood and entrails. They twitched against each other.

My mother looked at those sharks and at that dead mama, and she thought about the fishermen and Arne Dahl's missing finger, about those old Indian stories and how nobody knows what's true anymore, but mostly about that split-open belly full of life. She gathered the front of her shirt into a bowl and picked up each shark by its tail and dropped them all in, then started walking that long mile to the sea, felt the movement in her shirt pressed against her own skin.

When she reached the water she walked straight in, let her shirt fall open so the sharks spilled out and splashed down around her. And it was then, she says—there at Useless Bay with her shirt stained red and a dozen sharks at her feet, spreading out into the world—it was then that she first felt me kick.

LIFE ON ICE

I spent the summers of '07 and '08 on a glacier in southeast Alaska, with twelve people and two hundred huskies. I was working as a dogsled guide, and each morning would pull myself from my sleeping bag, slip on my raincoat and boots, and step from my tent into the pale light of the northern summer, the glacier luminous beneath me in the rising sun. Eight times a day, a distant purr would echo over the mountains, and a line of helicopters grew in the sky until they were right above us, whipping our hair and filling our ears with the sound of engines. I waited by my sled as the passengers disembarked, then led them on a tour, skimming across the icefield in gentle silence before returning to the waiting choppers and preparing for the next run. At night, when the last round of helicopters had disappeared, my co-workers and I would feed the dogs and return to our tents to sleep.

In its vast presence, stretching beneath us and curving around the bases of neighboring mountains, the glacier was simple, and it was home.

Glaciers, it seems, are a hot subject these days. Some say the glaciers are melting: sea levels will rise, coastlines will erode, drinking water will be salinated. Or, alternately, the glaciers are growing: climate change is a hoax, mass hysteria, scientifically bogus. Like the polar bear, their fragility has come to symbolize a world on the brink of disaster, a dying fragment of a cooler past. "We've got to save the glaciers," I've heard people say, as if this were on their to-do list for the afternoon, somewhere between Fight Poverty and End World Hunger. As if they and the glaciers were old friends.

Here is the truth: yes, some glaciers are growing. Norris Glacier, the one I think of as *mine*, has grown for the past three years. In the short term, however, a glacier's growth has more to do with precipitation than temperature. Winter snow builds up and insulates the underlying ice layers; if any snow remains by autumn, it will have compacted enough to become part of the glacier itself. Summer rain has the opposite effect, melting the snow as it trickles through, widening crevasses and flowing beneath the ice in mineral-rich streams.

Last July and August it rained virtually every day in Juneau, so much that some of my fellow guides wore neoprene wetsuits to keep warm. In the mornings we had to rearrange the doghouses, and in the evenings we would gather for tent-moving parties, pushing the tents around on wooden skis so that the camp's overall arrangement was constantly fluctuating. If we forgot, the doghouses and tents formed pedestals as the surrounding snow melted away with the rain. Often, on particularly wet mornings, I would awake to discover my entire tent tilted sideways; it had "risen" to such a degree during the night that it began to slide on its own.

Despite this, a record layer of snow remained at the end of summer, and so the glacier grew.

Here, then, is a second truth, puzzling in its seeming contradiction: some glaciers grow, temporarily, because of global warming. Increased evaporation in one part of the world can lead to greater snowfall elsewhere, which, in the short term, thickens glaciers and icefields. Any argument that cites growing glaciers as evidence against climate change is scientifically unsound; eventually, glacial retreat due to higher temperatures will negate the effects of a few years' heavier snowpack.

From an ecological standpoint, I find melting glaciers to be one of the least worrisome impacts of climate change—far more alarming are the shrinking polar ice caps, the rise in severe weather events, and the human health effects. From a personal standpoint, however, I feel differently. I think of my memories on the Norris, of clumsy poker nights in the community tent, the cards sticky from humidity; of riding the sled on a smooth trail, my dogs bounding just ahead; of sitting cross-legged in the snow at sunset, the orange sky reflected in the gentle slope of the icefield. And I wonder, when the glaciers are gone, will these things, too, melt away?

ICE AND ASHES

The summer I turned eighteen, I lived on a glacier. It was a broad, slanted finger of snow, a home I shared with two hundred huskies and a dozen people. From above, our camp was smudges on the white, pressed against the base of a black mountain: canvas tents, ordered doghouses, trails that stretched into the fields beyond. I was working as a dogsled guide in Alaska, leading tourists through a wilderness nicknamed “the moon”: Juneau’s icefield, which covers an area the size of Connecticut with ice up to a mile deep. Each morning I would pull myself from my sleeping bag, slip on my raincoat and boots, and step from my tent into the pale light of the northern summer, the glacier luminous beneath me in the rising sun.

After chores—feeding the dogs, cleaning trails—a distant purr would echo over the mountains, and a line of helicopters would grow in the sky until they were right above us, the air throbbing with the beat of their rotors. I waited by the sled while the birds landed, the handlebar jerking under my hand as the dogs jumped in excitement, and for one hour I would escort passengers on a tour, skimming across the icefield in gentle silence. Over the course of the summer I gave close to seven hundred tours, so that the season’s runs melt into a single memory; of these, one alone stands out.

On that tour I had a single passenger, an older woman with a southern accent and a creased face. As we left the kennel she told me her story: how she and her husband had always longed to visit Alaska’s glaciers; how they had finally made it up, last year, only to be forced down in a sudden storm; how he had fallen ill—cancer—and passed away that winter. I listened, kicking snow with one foot as we slid along the trail, and when she finished talking she twisted in her seat and lifted one hand towards me, as if to touch my face.

“I’m sorry to hear that,” I said.

She smiled. “Don’t be. I’m glad to be here today.”

Two miles in I paused to give my dogs a rest, a chance to bite snow and cool down. When the sled stopped, the woman pulled something from the folds of her coat: a sandwich bag filled with earthy powder. She pressed it to her chest for a

moment, then leaned over the side of the sled basket, scooping at the snow with her free hand. Hurriedly, she emptied the ashes into the hole, patted a handful of snow on top, and returned both hands to her lap like an attentive child. Her papery skin stretched tight across the knuckles of her clasped hands.

“Are the dogs ready yet?” she asked. “Let’s keep going.”

For the rest of the run, neither of us spoke. I doubt I could have. When the tour ended, I touched the woman’s hand, then watched as she climbed into a helicopter and lifted into the sky. I wondered if I wasn’t the only one watching her go.

Throughout the evening I was troubled. I realized that the next morning, when we cleaned the trails, the ashes would be collected with the other dirt, then packed into a barrel and flown to Juneau sewage treatment center. This, after the woman had come such a long way. I went to my boss and told him of a plan I was forming, but he only shook his head. “This isn’t your responsibility,” he said. “It would be much too dangerous. One dead body is enough for today—we don’t want you hurt, too.”

That night I couldn’t sleep. He’s right, I told myself. It’s not my responsibility. But the longer I lay awake, the more I was certain of what had to be done. And so in the young hours of the morning, deeply uneasy, I stepped from my tent. It was overcast, and the mountains were contours, dark and still. In the kennel, a few dogs paced in the faint moonlight, collar tags jingling softly.

We kept three snowmobiles in camp and I started the smallest, wincing as its engine cut the night’s silence. After a few minutes’ driving I found the ashes, a gray-brown patch that seemed to pulse against the white trail. What had seemed so simple in the tent—to dig up the ashes and move them—seemed, suddenly, very difficult. And no one was allowed beyond the outermost path, which was where I planned to go; it was the only place where the ashes wouldn’t be disturbed.

I closed my eyes and took a slow breath, feeling my lungs expand and cool with the night air, and as I exhaled I reached down and dug my naked hands into the snow. The ashes were buried more deeply than I had expected, and I pulled them up in handfuls, gathering a dirty mound. My fingers stiffened with the cold and I breathed on them, trying to ignore the dark crescents jammed under the nails, trying to forget that they were part of a human body.

When I could move my hands again I began packing the pile together, carefully pressing the growing snowball into a perfect sphere, stained gray like frozen smoke. Then, lifting the ball to my chest, I stepped off the trail. Out here, crevasses waited blue and veiled under the surface, plunging like cracks to the center of the earth, and I walked cautiously, expecting to fall through with every step. When the burn of the snow in my palms forced me to stop, I looked back. I could no longer see the trail or the snowmobile; only my footprints broke the billowing expanse, a dotted line shrinking into the horizon.

I crouched down and placed the ball on the snow, wondering, reflecting. A man lives his life, falls in love and marries and dies, only to be carried by a stranger across a barren glacier in the Alaskan wilderness. His ashes would melt into the ice with the next rainfall, then creep downhill for a decade or more before calving into the sea in great white boulders. It struck me that I had never before felt this alone, here on an empty icefield under dark mountains, with the burden of leaving a man behind. It was as if I were packing part of myself into the snowball, as if I would emerge less than whole.

It seemed disrespectful not to provide some sort of ceremony, and I felt a sudden anger at the man's wife, his nameless loved ones, for leaving me—a stranger!—with the tremendous responsibility of the final goodbye. What could I possibly say that could do justice to an entire life lived, that could show compassion, kindness, understanding? I knew nothing at all about the man in my hands. I bit my lip until it stung, trying to think clearly. And then, cautiously, I began to speak.

“I never met you,” I said, “but I think you were probably a good man. You were probably just like any of us, good sometimes but not always, just trying to be a better person. I bet you did things you were proud of and things you regretted, and you learned from your mistakes. There are people today whose lives are better because you were part of them. If you have kids, I'm sure they love you very much. I know your wife does.” I swallowed. “She's probably in Juneau right now, thinking you're where she left you, and maybe that brings her peace.”

I stood long in the clouded moonlight, thinking. I thought about what makes us human, our shared truths, our deepest hopes, the peace that comes from

understanding that we are not alone. In the distance a soft howl rose and fell, trailing off so gradually that I couldn't tell when it ended, and after a moment I turned. As I walked towards the trail I felt the weight of tears on my cheeks, but when I reached up to brush them away, it was only snowflakes.

Op/Ed: THAT'S A KILLER LOOK

I am 21 years old, and I hope to have children someday. I should not have to worry that ingredients in my shampoo will put me at risk for infertility, or that my sunscreen is linked to increased rates of birth defects. But I, like all Americans, am serving as an involuntary lab rat in a reckless chemical experiment that puts our health and our future at risk.

There is currently no law mandating safety testing for chemicals in personal care products, such as shampoos and lotions, despite the fact that we spread these items on our skin, rub them into our hair, and inhale their fumes. A recent study by the Campaign for Safe Cosmetics found lead in 75% of lipsticks, and formaldehyde, a toxic chemical linked to cancer and hormone disruption, in 82% of top-selling baby shampoo—and these are only two of many hazardous ingredients. Most of us are exposed to over a hundred chemicals from cosmetics every day, including substances that are known to cause cancer, early puberty, impaired fertility or infertility, developmental and learning disabilities, and hormone disruption. Because the effects of toxic substances can surface generations after initial exposure, the repercussions of this problem may be far greater than we can even imagine.

This year, I have been working with a group of concerned young women to push for safer personal care products and greater accountability by the cosmetics industry. In February, we gathered twelve common, everyday products—by companies such as Aveeno, L’Oreal, Secret, Maybelline, and Axe—and sent them to an analytical testing laboratory, where they were examined for toxic ingredients. The results of these tests were striking. Of the twelve products, ten contained one or more chemicals that have been banned or restricted elsewhere in the world, are known carcinogens, or are linked to reproductive problems. We found formaldehyde in three of the products, including one that was specifically labeled “formaldehyde-free,” and two of the products contained detectable levels of phthalates.

Phthalates are particularly concerning. These substances are used frequently in personal care products, especially in products like nail polish and hair spray that are marketed to teenagers and young women. Phthalates are known to threaten both

female and male reproductive functions—for instance, according to the National Healthy Nail Salon Alliance, pregnant women who work in nail salons have higher rates of miscarriage due to the many chemicals to which they are exposed. The European Union, Canada, Japan, and Mexico have banned or restricted phthalate use in the interest of protecting public health, but these highly toxic substances remain completely unregulated in the United States. Furthermore, phthalates in personal care products are hard or impossible to avoid—on ingredient lists, they are often listed as the innocuous-sounding “fragrance.”

Apart from certain colorants, cosmetics are completely unregulated, which means that consumers do not have the tools to make informed decisions about their own safety. Because there are no standards for testing and labeling, products marketed as “natural” or “organic” may be just as toxic as their mainstream competitors. Currently, the best method I know of to determine the safety of a product and its ingredients is through the Environmental Working Group’s “Skin Deep” website. But we shouldn’t have to rely on this type of independent, after-market approach that not everyone can know about or access. We should be able to buy any personal care product off the shelf and trust that it will not cause harm to our bodies.

Maine has shown itself to be a leader in responsible chemical reform, with groundbreaking laws such as the Kid-Safe Products Act that emphasize the protection of human health. Right now, the Maine Department of Environmental Protection is compiling a list of priority chemicals that manufacturers will be required to disclose the use of. It’s extremely important that substances used in personal care products be included on that list.

There is a potential for change on the national level as well. Last week, Senator Frank Lautenberg of New Jersey introduced a bill called the Safe Chemicals Act of 2010, which is an invaluable opportunity for reform to ensure consumer products are safe for human health. I urge all concerned Mainers to call Senators Collins and Snow and express their support for this bill. Our health, and the health of our families, is the most important thing we have. It needs to be protected.

Op/Ed: TAKING THE NEXT STEP TO KEEP KIDS SAFE

In 2008, the state of Maine became a leader in safe chemicals legislation when it passed the Maine Kid-Safe Products Act, a law that aimed to protect children and babies from toxic chemicals in consumer products. As part of this law, the state pledged to identify two hazardous substances each year—called priority chemicals—and phase them out of products intended for children.

On August 19, a public hearing will be held before the Department of Environmental Protection to debate whether Bisphenol A, also known as BPA, will become the state's first priority chemical.

BPA was invented over a century ago, and by the 1930s its hormone-disrupting effects were so well-known that scientists considered using it as an artificial estrogen. Instead, this chemical—whose impacts on the human body mimic those of pharmaceutical-grade hormones—became a component of hard plastics, and was put into the lining of food cans: a use that practically guaranteed it would find its way into human bodies.

This is exactly what has happened. Most of us are exposed to BPA in a myriad of ways every day. It is present in packaged food and bottled water, pizza boxes, water coolers, baby bottles, printer inks, and even grocery store receipts. Medical studies have found that 93% of Americans carry discernible levels of BPA in our bodies. Even newborn babies carry a burden of pollution: In a recent study by the Environmental Working Group, 90% of umbilical cord blood tested positive for the presence of BPA.

Just as BPA has countless commercial applications, it is equally versatile in its ability to cause harm. Hundreds of human and animal studies by government and academic researchers have linked BPA to cancer, diabetes, heart disease, infertility, developmental and reproductive harm, early puberty, and obesity—and it may show its effects at the same low levels to which we, Maine residents, are exposed.

Furthermore, male factory workers who are exposed to BPA have rates of sexual dysfunction seven times higher than that of the general population. And the

ubiquitous chemical interferes with the function of chemotherapy drugs—so that in addition to giving people cancer, it can prevent them from healing.

A single serving of canned food a day, for an adult, provides the same dose of BPA that has been shown to cause harm in lab rats. Imagine, then, the degree to which our children are exposed—children who, with their small, fragile bodies and still-developing systems, are especially vulnerable to the effects of toxic chemicals.

The good news is that in the case of BPA, bans work. In Japan, efforts to reduce the use of BPA have resulted in significantly lower body levels of the chemical. It has now been restricted in seven states—including Washington, New York, and Connecticut—as well as banned throughout Canada. Safer alternatives exist, and are already viable and in use elsewhere in the world; Canada has reported that its ban imposed minimal cost and impact on industry. Now is our chance for Maine to follow this lead.

We cannot trust that manufacturers will discontinue the use of BPA on their own, even when presented with safer alternatives; after all, a century has passed in which they have failed to do so. Instead, in order to end this chronic, low-level poisoning of Maine's people—as well as reduce health-care costs now and in the future—the BPA ban must be passed aggressively. This decision is a chance for the state government not only to build upon its previous accomplishments, but to take vital steps in securing the health of its citizens.

Op/Ed: REPEAL OF KID-SAFE PRODUCTS ACT A DANGEROUS STEP BACKWARDS

As a young woman, I am very concerned about the fact that toxic chemicals in everyday products have the potential to impact my health, and the health of my future children. Here in Maine, toxic chemicals cost the state over \$380 million in health care every year, and contribute to rising rates of conditions like cancer, asthma, learning disabilities, and infertility—but although we may all be affected, it is children, with their small bodies and developing organ systems, who are most vulnerable.

In 2008, the Maine legislature passed the Kid-Safe Products Act, a common-sense law that helps parents to keep their children safe from toxic chemicals. It aims to identify, eliminate, and find safe alternatives for the most dangerous chemicals in everyday products that children are exposed to, like baby bottles and sippy cups. When it passed, the law received overwhelming bipartisan and public support, and Maine was praised as a leader in taking the initiative to protect the public, and children especially, from toxic chemicals.

Last week, Governor LePage proposed a massive rollback of environmental and public health legislation in Maine, including a repeal of the Kid-Safe Products Act. He claimed that it would be better to revert to federal standards to protect consumers from hazardous substances. However, the current federal legislation, called the Toxic Substances Reform Act, is so weak that it has required testing for only *one third of one percent* of the 82,000 chemicals currently registered for use in the United States, despite the fact that many of them are banned in Europe and elsewhere in the world. Reverting to federal legislation would be a major step backwards for the state, and could put millions of Maine's children in harm's way.

The Kid-Safe Products Act does *not* put an onerous burden on business, and even empowers Maine businesses by helping them to know what is in the products they sell. When it was passed in 2008, not a single Maine business testified in opposition, and over 100 businesses supported its "swift and thorough" implementation. Now that the law has been threatened, Maine's Small Business

Coalition, with 2,500 members, is speaking out in favor of keeping it. Furthermore, UMaine economist Mary Davis has calculated that keeping the Kid-Safe Products Act could save the state an average of \$1,350 *per child* every year in reduced health-care and economic costs—and its implementation poses no additional costs to the state or taxpayers.

So if the Kid-Safe Products Act is good for Maine's people, businesses, and economy, why would Governor LePage want to repeal it? Primary critics of the act are chemical companies in Washington DC and New York. This means that in proposing a repeal, Governor LePage has prioritized the profits of the out-of-state chemical industry over the health of Maine's own people, and especially our children.

We don't need to let this happen. On February 14, the Maine Regulatory Fairness and Reform Committee will be holding a hearing in Augusta to discuss the proposed repeal. Before then, it's important to contact your legislators and tell them that you oppose the repeal, because you care about protecting Maine's children, businesses, and economy. We need to keep the Kid-Safe Products Act—and keep Maine a safe place to be a kid.

THE REINDEER BOOTS

Vidar, my dogsledding teacher and one of the few remaining reindeer herders in Lappland, had kept all of the feet from last season's slaughter. They were tied with twine in bundles of four, stacked like firewood against the back wall of his shed. "Really," he said, "you can take your pick. You want brown ones? Speckled ones? Go for it. Hell, you want the white ones? They're yours." The white ones—taken from reindeer who had not yet lost their winter coats—are the most valuable. Vidar leaned closer to me, almost confidentially. "*All yours,*" he whispered.

I was going to use the feet to make *skaller*, or reindeer boots—the warmest, toughest footwear for life about the Arctic circle. I was an eighteen-year-old from California, come north to attend a Norwegian folk school where I would spend the winter learning to dogsled. The other students had grown up in the area; they had knives dangling from their belts and frostbite scars on their ears, and spoke lightly of the coming *mørketida*, "The Time of Darkness." "What do you mean, you're used to seeing the sun in January?" one of them had said to me on the first day, when I said where I was from. "That's so—*weird.*"

On top of helping me with the boots, Vidar had hired me to care for his huskies in exchange for room and board; he'd taken pity on me, he said, because I was all alone when the other students went home for the weekend. This wasn't quite true. The real reason he took pity on me was because I had no idea what I was doing.

So step one, apparently, was to make *skaller*. I'd been reading about them. It took four feet to make one pair, and if the feet weren't all from the same reindeer, then the animals' spirits, angry to be forced together, would take vengeance on the wearer. "Go on," Vidar said. "It'll take a few months, so you'd better get started. I have a pair you can borrow till you're finished, but I don't know how they were made, if you catch my drift..." I caught it, all right; the last thing I needed was a pair of vengeful boots. I leaned forward and, after a moment's hesitation, chose a dirt-brown bundle and lifted it by the knot in the twine, careful not to touch the feet themselves.

My roommate was a Danish girl named Charlotte, who was a pretty good sport about being placed with the school's only American. Charlotte weighed about a hundred pounds and liked to wear a seal-fur parka that stretched down to her knees; she thought it made her look like an explorer, which it did. The parka had been her grandfather's in the War, and she'd found it in her attic before coming to Norway. Someone had dared Charlotte to spend every night of the year outside, so I didn't see her in our room much. She went to sleep after I did, and usually came in around eleven to brush her teeth; I'd wake to the twin glows of her headlamp and her headlamp's reflection in the mirror as she leaned over the sink in our room, scrubbing vehemently and humming to herself. Then she would place the toothbrush back in its cup, still humming, and step outside, closing the door behind her.

Sometimes, though, she'd pause for a moment in the doorway, just for a breath, and I imagined her glancing back at my dark form as I pretended to be asleep. I feared she thought I wasn't cut out for life in the North. I knew this wasn't fair to her—she'd certainly never said as much—but she'd never asked me to join her outside, and the truth was, I'd wondered the same thing myself.

In the late afternoon, after classes were over, I settled down to making the *skaller*. Vidar was teaching me. We would meet by the shed, where the air was sweet and dense with the smell of meat, and I would pause outside the doorway and take a deep breath, like a diver about to descend underwater; Vidar walked right in. Then, together, we spread out a blue tarp on the dirt floor and weighed the edges down with rubble from the corners of the shed—broken dogsleds, rusted ice augers, antlers with bits of skull attached. The boots would be made from the ankle fur—which, along with the forehead, was the toughest leather on the reindeer's body—so the first step was to peel the fur from the bones.

Vidar sat on his knees, holding a reindeer foot with one hand and a Sami knife—eight inches long and gleaming—in the other. Very delicately, he took the tip of the knife and inserted it into the crease where fur curled in against the hoof. With small movements, he began wedging the knife tip farther and farther in, then pulled the blade sideways, slicing an opening. I could hear a snapping, suctioning noise as

he did this; it was the only sound in the room, for Vidar seemed hardly to be breathing. After a few minutes, he handed the entwined knife and foot to me.

Almost instantly, the knife slipped in my hand, the blade pressing forwards into the underside of the skin, tenting it away from the bone. Vidar's hand shot out and steadied my arm. "Calm down," he said. "It's like peeling a potato."

But I'd let my mind wander; the damage was done. In my head, the ankle had reared up from my hands and was galloping across the room, flighty and delicate, attached to the body of a reindeer, still alive. I had recently seen reindeer for the first time, and had been astonished to learn that they were no larger than a German shepherd. Their faces were a wash of velvet, their eyes large and dark, their bodies muscular, their feet large and light on the ground. Their *feet*. I set the foot and blade down on the tarp before me. "I'm sorry," I said. "It's hard."

He was watching me closely, frowning, and when I looked back at him he didn't meet my eyes. "Just—" he started, and then he paused. "Meet me here tomorrow."

But the next day, as we sat again on the tarp and I tried to hold the knife steady in my hand, tried to fit the point of it to the delicate groove between fur and hoof, I couldn't do it. I saw the reindeer spring up again, fully alive, and with it I saw myself—a girl, shaking, bootless; a girl who would never really be tough. I put the knife down and took a breath.

"Blair," said Vidar, "this is not a difficult task."

I picked the knife back up. There was something stringy and red on the blade. I set it down again. "I just don't think I can do it."

Vidar sighed. "Pretend like you can," he said. "No one will know the difference."

I had been at the school for about two weeks, and was beginning to have a schedule. Every morning after waking up, I pulled on my long underwear and snow suit, stepped into my rainboots, and made my way down the steep hill to the kennel, where the sled dogs waited on thick steel chains, two before each wooden house. Vidar had eighteen dogs—Vidar-dogs, the students called them—but he also boarded teams for

a few other mushers in the village. There were four Thor-dogs with blue eyes and floppy ears, who let out melodic, deep-throated wails, like opera singers, at the first smell of meat. There were six Halvor-dogs, gray and mouselike, indistinguishable from one another, weighing no more than thirty pounds each; they were terrified of everything, and no sooner would I step into the kennel than the Halvor-dogs would, as one, sink to their bellies and pee. The Vidar-dogs were enormous and splotchy, and liked, more than anything, to try to kill each other.

Every student had been given a Vidar-dog for the year, to train and care for, and I was allotted a yearling named Bingo. Bingo was black with white toes and a white patch across his chest, and because he was new to the kennel, he was an outsider from the rest of the pack. He wasn't shy, but he didn't get excited about much, either—in fact, Bingo rarely displayed any emotional response at all. While the rest of the dogs leapt up, barking and wagging their whole bodies when they thought they might get a run, Bingo would stand completely still, frozen on straight legs; while the other dogs wriggled and kicked their feet when I tried to put on booties, Bingo looked off into the distance, uninterested. He spent a remarkable portion of his waking hours being humped by one dog after another.

Eventually Vidar took pity on Bingo and put him in a separate kennel with one other dog, another low-ranking pack member called Ferguson, whom all the other dogs hated. By all standards, Ferguson was a loser. He had some sort of skin condition which resulted in bald spots like polka dots speckled throughout his fur. He was terrible at pulling a sled. He had never humped anything in his life; it was all he could do to avoid being killed by the rest of the pack, let alone attempt to show dominance. It seemed, for these reasons, that he would be a perfect companion for Bingo.

The dogs were placed together one morning as the students watched, and then we all went inside for breakfast. By the time we had taken off our coats and shoes, someone pointed out the window and hollered: there was Bingo, standing straight-legged and bored, while Ferguson, his eyes slightly manic with his good luck, gyrated with ever-increasing fervor atop Bingo's indifferent back. In the end, Vidar decided to keep the dogs together. He said it was good for Ferguson's self-esteem.

Several weeks went by before I went back to work on the boots. I spent that time trying to become less squeamish. Each evening, when I chopped frozen meat for the dogs, letting my axe fall into the creases of the organs that Vidar bought in large blocks from the market, I looked at the flesh and thought: *this*. When I cut into my reindeer steak at dinner, I reminded myself—*this*. Even my belt, as I threaded it on in the morning, and the leather-soled slippers I wore at school—they, too, were dead animals. Cutting the feet, I told myself, was not an act of exceptional cruelty; it was just a new way of using animals, a different kind of what I was already doing.

When I finally returned to the shed, the tarp was set out, though Vidar didn't mention he had been waiting for me. The Sami knives, too, were lined up and ready, and had been cleaned and polished since their last bloodying. This time, after a slow breath, I managed to slice the seam between the fur and the hoof. The skin was stretchy and thinner than I had expected; the underside was pale and sticky, almost like dough. When I had sliced all four feet, Vidar nodded; he hadn't spoken the whole time, though we'd been there almost two hours. I could hear the rise and fall of a fiddle in the distance—several of the students were musicians, with fiddles as the instrument of choice—and a few of the Thor-dogs wailed along with it. My lower legs had fallen asleep, which was fitting, I thought—perhaps they had passed out from fright, or empathy. I lined the feet carefully against a wall, beneath a pile of furs, so they'd be ready for next time. When I went to wash the blade, Vidar came up and put his hand on my shoulder. "Good," he said.

One morning I stepped out my front door to find a large plastic bucket on the front step, filled to the brim with a maroon, crystalline substance. The frozen surface was dusted with clumps of short white hairs. I went out to Charlotte's den, which was now a tunnel leading directly into a snowbank, and called her name, bouncing a little to keep warm. After a moment there was a scuffling and an unzipping sound, and then her head popped out of the snow, wrapped in several layers of wool hats and scarves: she looked like a well-bundled groundhog peering out of its hole. "*Mor'n*," she said, yawning. Her breath hung in a fuzzy cloud around her head.

“*Mor’n*,” I said. “What’s with the bucket?”

“What bucket?”

“The one on our front step,” I said. “That looks like it’s full of blood.”

“Oh,” said Charlotte. “*That* one. It’s full of blood.” She began wriggling back into her hole.

“Charlotte,” I said. “What’s going on?”

But she was already gone.

The bucket stayed on our stoop, and two days later, on a Sunday morning, I discovered Charlotte’s plans for it: pancakes. I don’t know where she got the recipe, but it involved about two cups of blood—defrosted, of course, and filtered for hair—and a half-cup of flour, one egg, and a tablespoon of sugar. The batter was crimson. She ladled it into a hot frying pan and waited until the edges turned brown and bubbles rose in the center, then flipped the cakes delicately with a wooden spatula, as if she were handling lace. The finished pancakes were chocolate brown; she ate them with a generous coating of powdered sugar. I stayed on the other side of the room, so that she wouldn’t offer me one.

At one point Vidar walked by and, after doubling back, tore a piece from the pancake on Charlotte’s plate. He folded it twice before biting into it, and closed his eyes as he chewed. “My mom used to make these,” he said.

I spent a lot of time with Bingo. I felt bad, watching him get perpetually humped, and despite his apparent indifference to any and all interventions on my part, *I* felt better when I knew he got time away each day, a break. Every morning when I fed the teams, I fed him first. When I took the dogs sledding—which was about twice a week, when Vidar would agree to join me—I put Bingo in lead; this was successful only inasmuch as he was able to run faster than those dogs behind him, because the moment they caught up to him the humping would begin, and I would have to spend the next hour untangling the knots the dogs had made in their tuglines. But when it worked—when Bingo ran fastest—it made me happy to see him up there, ears blown back, head lifted, ahead of all the others. Sometimes his tail would even lift, just slightly. It wasn’t a wag, but it was close.

The next step, for the boots, was to remove the hides from the bone. This was not something I had considered; it seemed like the hide would slip off easily, or else could be cut open and removed, peeled like a banana. But no. For this step, we went outside. Vidar, holding a length of rope, led me to a large birch tree. He tied one end of the rope to the bottom of its trunk and the other end to one of the hooves. Then he handed the hoof to me, on-leash. “Pull,” he said. “The skin should slide right off.”

I pulled. I pulled harder. I gripped the fur and yanked, leaned my body away from it, braced my feet on the ground and heaved. After several minutes, I felt a slight crackle, a give, and the skin slipped a millimeter or so down the bone. It took several minutes of yanking to gain a full inch, and then finally—*finally*—the bone and hoof clattered naked to the ground, and I was left clenching a limp tube of fur from the deer’s ankle. The inside of the tube was pink and wet, and the dense outside fur ruffled from my grip. “One down,” said Vidar. He handed me another foot. “Three to go.”

I hardly noticed as sunrise and sunset both crept towards noon, like eyelids slowly closing. The snow was bright enough that even when the sun wasn’t up yet, or had already set, it was possible to get around. Besides, there were so many distractions, dogs to feed and run and train, meat to chop, boots to make—who could pay attention to the dwindling light?

One day Vidar invited his students to his house for lunch, where his wife had prepared *rømmegrot*, sour-cream porridge. The *grøt* was served with butter and raisins, and Vidar had prepared berry juice to serve alongside it. We sat by the window, a row of us students, sipping juice and eating slow spoonfuls of the rich porridge. Outside, the fjord lay smooth beneath us, the surface lit brilliantly by the setting sun. When the sun finally slid behind the mountains, everybody dropped their bowls and began to cheer, jumped up to hug each other, the whole room a flurry of sudden movement. What? Nobody heard my questions. Charlotte grabbed me from behind and wrapped her thin arms around me tightly, then, just as quickly, she turned

around and did the same to Vidar's wife. I waited for the excitement to die down, then asked again.

"It's *mørketida*," said Charlotte.

So it had come. The Time of Darkness—it sounded like something out of a bad science fiction movie. I had understood, of course, that this was coming, at least on a conceptual level. But now? Right now? I turned back to the fast-sinking glow on the horizon, hoping to catch another glimpse. Now that the sun was gone, it seemed an absurd thought—three months without light? Didn't we *need* light? I felt as if something had been stolen from me.

I stood there with my bowl of *grøt* congealed on the floor, my friends celebrating around me, unable to speak. The sun, really gone? I wanted to speak, but was afraid of how sentimental I might sound. *I didn't even get to say goodbye.*

For a few days, around noon, the southern sky would begin to glow, the sun's arc rising to just below the horizon and hovering for an hour, a half hour, ten minutes before sinking back down. I would watch until long after the light faded. It was hard to turn away.

I was running the dogs more; Vidar let me do it alone now. I would go to the kennel and choose my favorite sled, a lightweight birch model, then tie it up to an iron snow anchor and pick my favorite dogs to pull it. Bingo ran well for me in lead, always responding to my commands, though I heard from other students that he never ran lead for *them*; this pleased me more than I let on. Sometimes I put Ferguson in the team, because I felt bad for him, and then a few of the timid Halvor-dogs. I almost never used Vidar-dogs anymore because of their tendency to try to eat each other; once, after a particularly bad skirmish, I had found a piece of Ferguson's ear in the snow, and that was enough for me.

Preparing a dogsled is a noisy, violent, overwhelming process that sets the whole kennel wild and has, I've heard, scared quite a few would-be mushers out of the sport; doing it alone is an exercise in courage. All twenty-five dogs in the kennel would leap and scream, hoping to be chosen as I walked among them carrying

harnesses; they snapped at me and each other, tangled themselves, at times loosed their houses from the ground. But once I had lined them up—I usually only ran with six—and lifted the anchor and set off, the hubbub fell instantly silent, and the only sounds were the gentle scraping of the sled's runners, the puffing of breath, and the faint jingle of collar tags. And the landscape! The snow spread out around us, lit by moonlight, draped in thick, heavy layers across every tree branch, every fencepost, every inch of trail. It was always new, always clean. And I wanted to pass through all of it.

The best thing about the time of darkness, as I saw it, was the aurora. It was active at all times of day, great swaths of light sweeping the sky, billowing like sheets on a clothesline in the wind. Most of the lights were green and white. I heard rumors of pink and purple at other latitudes, but Malangen, located two hundred miles above the Arctic circle, was supposedly too far north for the most dramatic displays. This was hard for me to imagine—that displays anywhere else could surpass the ones above my head. It seemed I could hardly step out the door before the skies opened up, the surges of light washing over one another, casting a green glow across the mountains and the snow-covered ice of the fjord. There were long ropes of light, splitting and reforming themselves on a massive scale, drifting off in tiny swirls above the horizon before suddenly shooting out overhead, covering the great length of the sky in seconds. Sometimes they dived down with such violence that I flinched, hardly realizing what I was doing, and sometimes they drifted gently, rising and falling like foam on lapping waves. I would stand outside for hours, my head dropped back onto my shoulders, transfixed.

This concerned Vidar. Traditionally, the Sami believed that northern lights were demons trapped in the sky, and that it was unwise to stand long beneath them; children in particular could be plucked up and spirited away. Although most of the Sami I met no longer believed this, they carried a certain hesitance about the aurora, a mistrust. Once, on a warm day, I went out bare-headed to look at the sky, and Vidar hurried after. He came up behind me and pulled a wool hat down over my ears.

“Please, Blair,” he said, alarmed. “You don’t want them too close to your brain.” It was the first time, I realized later, that I had ever seen him nervous.

The next part of making the boots was simple, in theory: now that I had pieces of leather, I just needed to cut them to shape and sew them together. I traced the soles and sides of my feet on sheets of newsprint, working out a pattern. The boots would be mid-calf height, with toes that curled up and around; originally, these curled toes were designed to hook under leather straps as ski bindings, but now they were just for show. The boots would lace up the front with a strip of cord, and the fur on the soles would be arranged so that the grain faced two directions, to keep me from slipping on ice. The seams, crafted through an ingenious technique in which the edges of each piece hooked around each other, were fully waterproof. These, I felt, would be unstoppable boots.

And I was excited for this part of the process. I had a plank of wood as a base, a sharpened awl, and a sledgehammer. I knew how to sew. The leather was already cut into shapes. This was the fun part.

I found quickly that the hide was near impermeable—tough as leather, I thought, catching myself a moment too late. For each time the awl punched a passable hole, it slipped twice, and for each time it slipped, there were two times when I missed it with the sledgehammer completely. Because of the folded seam, each stitch required not one but four punched holes, all lined up exactly; to keep the seams waterproof, the stitches needed to be impossibly close together. By the end of the first afternoon of work, I had sewn less than an inch.

But the truth was, I didn’t mind. The flaps in my hand had lost the quality that once repelled me from them—the quality of being a living creature—and I was proud of myself for this. They were just material, and my manipulations of them were just one step after another in the transition from animal to footwear. I didn’t mind the slow process. Each punched hole reminded me how far I had come. So what if I still slept in a bed at night, still winced when I had to thaw organs for the dogs? I was tough now; after all, didn’t I drive the dogs myself? Hadn’t I cut the feet? I thought of these things as I sewed, as if to forget would dull the accomplishment.

That next Sunday, when Charlotte made her blood pancakes, I made my way to the kitchen at the first whiff of their sharp, rich smell. I looked down at the plate where they were stacked upon each other, deep brown, cooling. A lot of things could make batter this dark, I thought. They were just pancakes. “Want one?” said Charlotte, smiling a little—she didn’t think I would do it!—and in response I plucked the top pancakes from the pile and rolled it into a coil, took a big bite off the end, chewed, and swallowed. Really, it wasn’t bad. It tasted metallic, like a damp penny, and soft. It tasted sweet.

A few weeks later I pulled tight the last stitches on my boots. I tugged them over my ankles, let the leather form itself around my feet. The soles were stiff and rounded, like the bottom of a bowl, and they were hard in places, but here they were—boots. Real boots. I pressed my feet together, then spread them apart again. I went outside and shuffled through the snow, testing the seams; I stepped onto a patch of ice and admired how I did not slip on the slick surface. There were some lumps, and one of the toes was more tightly curled than the other, but still they looked official—they looked like real Sami boots, like I could walk them down the one street in the village, proud in the darkness, looking like I belonged.

It was the beginning of winter, and then it was mid-winter, and at some point I realized that winter was seeping towards its end. Time slipped by not with the passing of days, the rising and falling of light, but with a gradual rolling through the darkness, like a car driving without its lights on. Here we were—the scenery looked the same as it had a week ago, a month ago—but this was a different place, somewhere new.

Each morning I would walk Bingo through the narrow, silvery trails near school. We were pleasant companions; I didn’t think while I was walking him, not really. I stepped carefully through the snow, my feet warm and dry, nestled tightly within several layers of wool socks, tucked into the stiffened hide. There were several older women, widows, who liked to walk together in what passed for morning, their flickering headlamps bobbing in a line on the roadside, and we began to expect each others’ passing, to greet each other with a familiarity I found comforting. At first

Bingo was afraid of the women, but they always scratched his head as they walked by, and after a while he even began to wag his tail when their headlamps grew towards us.

He was, however, still the same Bingo; he spent most of his days, when not running, as the focus of Ferguson's vigorous energy. But the two dogs seemed to get along. Once, on a particularly cold day, I passed the kennel and saw Bingo and Ferguson curled tightly in the snow beside each other, with just the tips of their noses touching; puffs of breath issued from the nostrils, but it was impossible to tell whose breath was whose. I considered going in and joining the dogs, sitting beside them and stroking their frosted fur, but after watching for a moment, I decided to let them sleep.

It was shortly after this that the boots began to smell. Not the way that shoes normally smell, but rancid, stinking of meat. I found I had to leave them outside the door of my cabin at night, because a few hours of their presence in a warm room was enough to render the room uninhabitable. Even Charlotte commented; one morning, as she shuffled through the door in her usual sealskin getup, her face obscured with ski goggles and a military-issue balaclava, she pulled the heavy wool away from her mouth and announced, in thick Danish, "What reeks?"

I brought the boots to Vidar for a diagnosis. I was nervous; I was afraid he would discover that I had not scraped the leather enough, or that I'd left a layer of fat or meat to mold within the seams, or had in some other way failed to construct them properly. But after carefully examining the insides, and prodding the stitches, Vidar had a different verdict: each day, when I hacked the dog meat, small chips of frozen intestines landed in the boots' dense fur; at some point these bits had thawed and begun to rot. Soon, he said, the rotting would spread to the leather itself. The boots could not be salvaged.

It was all right, he consoled me. The winter was almost over, and he'd be happy to lend me the same boots that I'd borrowed in the fall. It was enough that I'd made them, he said. I shouldn't be disappointed; I should be proud of myself. After all, I'd just about made it through *mørketida*, hadn't I?

This, it seemed, was a flimsy consolation. Sure I'd made the boots, but what good were they now? They would have to be thrown out, or else given to the dogs to chew on. I pictured the Halvor-dogs gnawing on one of the cheerful curled toes, and winced. What a waste. I thought back to the first cut I had made, the way the point of the blade had pressed in against the hoof, tenting the hide; I thought of the way my hands had shaken, then grown steadier. Then I looked down at the boots rotting on my feet.

"You know how I did it, right?" I said. "I forgot the feet were reindeer, that they'd been alive. I made myself forget."

There was a silence. Vidar was leaning against the frame of his front door, and he squinted at me, as if suddenly seeing something new.

"That's what you do, right?" I said. "That's how you make yourself do it?"

"Blair," said Vidar, very slowly. He let out a long breath. "It's possible I've done you a great disservice."

This time it was I who was silent.

"Don't you understand?" he said. "The trick is to *never* forget that they were once alive."

That night, when Charlotte left for her cave, I followed her out the door. I wore four sweaters of varying weights, two pairs of wool pants, a neck gaiter, a balaclava, a sheepskin cap with earflaps, and a hooded parka with sleeves that completely covered my double-gloved hands. Earlier that day, I had laid out three reindeer hides in the snow, overlapping each other; onto this thick mattress I unrolled my sleeping bag, then placed a tarp over it in case it should snow while I slept. It was difficult to wedge myself into the bag, a tight fit with this much clothing, but once I had wriggled my feet into the bottom and zipped up the side, it was all right. In fact, it was warm. I could feel the heat of my skin radiating into the layers around me, and could feel the heat, too, that was captured by the reindeer hides shielding me from the snow. I squirmed onto my back and looked up at the sky. There were no northern lights, but the stars shone.

I remembered something Vidar had told me several months ago, maybe even before *mørketida*. We had been standing in the kennel, looking up at the night sky. The stars were dim and small, scattered like early snowflakes. They seemed very far away. It was easy to find the North Star; it rested on top of the sky while the others rotated around it.

As we watched, a green light swept from the northeast, swinging down and breaking into long fingers that spread out until they touched all corners of the horizon, brushing the tops of the mountains. Light poured from the sky and spiraled around us; it danced and pulsed, faded and reappeared elsewhere like a magician's trick. Red flickers traced the edges of the green and vanished as quickly as they had come. The stars shone through the billowing veils, faint and still against the movement, and then the lights melted and were gone, leaving only a faint glow, a lingering shadow in the east.

Vidar sat down on one of the empty doghouses, his beaver-skin hood falling from the back of his head, the ruff already slipping past his ears. He pressed his tongue into his upper lip, rearranging the tobacco he had tucked there, and smiled, watching the sky. "There it is," he said.

"There what is?"

He gestured upwards. "The great dogsled in the sky. When I was young, my father used to say that if only he were a bit taller, I could climb onto his shoulders and ride across heaven."

It took me a while, but eventually I saw it, too. There it was, a sled trailing behind a six-dog team, arching upwards as if rising from a river crossing. In the flickering lights I saw the excitement of a run, the joy of open space and the freedom to cross it. The whole sky, just waiting. "At home," I said, "we call that the big dipper."

Vidar nodded politely, as if he had heard this before but did not find it particularly compelling. "My father used to hear them howling," he said. "That's what he told me." There was a long silence, and then he said, more softly, "I've never heard it myself."

We sat there a while, both of us looking. The sky then had looked the same as it did now, as I lay on my back, staring upwards: it looked open.

In a few days the sun would rise again; the snowy landscape would catch like a candle-wick and blaze up around the school. Dogs would howl and the students would play their fiddles, and children would dance in the street under yellow hats, children who had grown up with the understanding that the sun never left without coming back, as surely as dogs ran for the joy of it and the aurora never quite touched the ground. It would feel like coming home. But I didn't know it yet.

ON BEING LOST

Colby College, in Maine, sits atop a broad hill that slopes down into woods on all sides, like a castle moated by a tangled knot of trees. In my four years at this school, I've spent a great deal of time getting lost in these woods, whose size—only a few square miles, really—suggests that for most of us, getting lost would be difficult if not impossible. Luckily, I'm willing to put in the effort. There's a magic in being lost, and when I set off for an hour's or an afternoon's expedition, I try to cross the boundary into the unfamiliar. I try to find an instability of place.

I leave my dormitory and enter the woods along a broad, rutted-dirt trail. My favorite time to do this is early morning, when the sky is blue and the branches are dark veins against the white light of the rising sun on the horizon—or else on overcast mornings, when the whole gray sky seems to glow above me, smooth with fog or mottled with clouds, and the sun could be nowhere or everywhere at once. In fact, any time of day will do. Within a few minutes of entering the woods I begin to pass animal trails, threads of open space, marked only by a slight parting of bushes, cracks of greenery less dense than those around them. It is these that I most like to follow.

Sometimes there are footprints between the ferns, footprints cloven and confident, no longer than my thumb. They are even, immaculate, each pressed into the soil with equal force; my own footprints, on the other hand, vary from the deep gouge of a landed leap to a gentle disturbance of twigs, left while I hesitate to look over my shoulder. If I were to walk with certainty, then my prints would be as the deer's; as it is, I've got no chance in the world.

Lately I've been wondering how animals navigate—if they even realize they are navigating. When a deer passed along this trail, parting these same bushes, was she following a scent, a feeling, a certain unknowable pull towards food or water or home?

I've never seen an animal lost, not outdoors at least. I've seen animals lost indoors, and I know that even to witness such a thing is alarming, disconcerting. Last year, while waiting for a flight at JFK airport in New York, I saw no fewer than four plump sparrows swooping under the domed ceiling. They rode the air in high arcs,

passing over the bowed heads of men and women holding suitcases and cell phones. One of the sparrows kept fluttering against a tall window, sliding back and forth against the glass, over and around. It would stop, rest its small feet on the sill and shiver itself into a perfect light ball; then, after its feathers had smoothed, it would rise again to fly endlessly against the glass. Two of the other birds were hopping beneath a row of benches, pecking the ground. One held a worm in its beak, and I stared at it, stunned, wondering how this perfect anomaly had occurred, how a bird and worm had both happened into the same cement-walled room and found each other in time to enact this modest replica of wildness; then, at the same moment, I understood that the worm was a French fry.

I thought then that the birds could spend their whole lives in the airport, could find food and water and simply *live* there, for years, maybe even die of old age in that one room.

In any case, though the deer who made these trails may well have known its destination, I don't know mine, and that's how I want it. I don't try to lose my way; instead, I simply let myself *follow*, follow whims or desires or some vestigial instinct left long unnoticed. I walk. I walk over roots and down into gullies, walk through the creases of earth worn away by last year's snowmelt, walk into and out of clearings. I pluck ticks from my ankles. I loiter, wallow, rub leaves between my fingers.

In the spring, I count fiddleheads as they sprout, admire their elegance as they push through humus in delicate curls; later, as I pass through a carpet of ferns, I remember how they started out. I lie on my back and look at the sky; then I lie on my stomach and look at the soil. I have seen squirrels, deer, skunks, groundhogs, and on one occasion, a red fox, who trotted parallel to my path for several minutes; we stared at each other the whole time, neither of us changing direction. Then, abruptly, the fox was gone, ducked and vanished into some unseen cavern, and I understood that it had come home.

Usually, after an hour or two of wandering, I too begin heading for home. Unlike the fox, I never beeline; I couldn't if I tried. I know that if I make my way uphill, I usually emerge at some point into a field, or near a road I recognize. But I have, at other times, surprised myself, coming out in a location totally, miraculously

unknown. Once, blinking, I stepped out of the woods and into a groomed backyard, where I was met with three charging poodles. After a moment's consideration, I sprinted around the side of the house—which was generously pillared, with three cars in the driveway—and came panting into a cul-de-sac, which I traced back to a main road several miles from campus. Later, when I looked at a map, I discovered that the section of woods I had emerged from was not, in fact, attached to the section of woods I had entered several hours before; they were separated by a four-lane highway, which I had never actually crossed.

Do you understand? I am addicted to such mysteries.

Last summer I worked as a mapmaker for Colby's Environmental Studies program. I sat for eight hours a day in a computer lab, staring at a screen, trying to diagram Maine's woods and mountains—trying to demystify them. It was technical work. I spent a lot of time typing numbers into spreadsheets, column after column; it was hard to imagine that data like this could somehow represent wilderness. But there was, I found, a precise beauty in the maps' layers, the speckled lakes and jagged mountains, the lacy coastline, the spider web of roads and rivers. I liked to know where everything was, to see the relationships between places, the way creeks converged into streams, and streams into rivers, and the thick mass of forest spread across the northern half of the state like jam on toast. And to be able to put these maps together myself, to construct a model representing hundreds of miles—I felt like I was cupping the whole state between my hands.

One morning, as I settled into the lab, my professor came to me in a rush. That very afternoon, he said, he would be bringing several researchers up into the mountains to show them a conservation project he was working on, and that they had helped to fund. He needed a map. Not just any map, but one made by his own student, in his own lab. He wanted to show them what I could do. Normally it took me days, if not weeks, to make a map—he needed this one in three hours. Could I do it?

Of course, I told him, already starting to sweat. A map. I could do it. In three hours? No problem. Relax, I said. I have it under control.

For the rest of the morning I typed and squinted and cursed, tracked down data and tried to make sense of it. I painted rivers. I colored the forest. I shaded the dark sides of mountains. I added a legend, a compass, and a scale bar, and I signed my name at the bottom: *by Blair Braverman, June 2010*. The map, when I finished, was lovely—bright and intricate, detailed enough to be useful in navigation without sacrificing artistry. I printed five copies—one for my professor and each of the researchers—then slid them into plastic covers, knocked on my professor's door, and handed him the neat stack. He smiled. My job was done.

That evening I went for a walk in the woods, and I felt a certain confidence I had never before experienced, an unfamiliar sense of authority. *I know you*, I thought to the trees. I had mapped the wilderness. I was on top of it.

The feeling lasted until the next day, when I met my professor with his head in his hands. How had the trip with the researchers gone? A disaster, he said—well no, not quite a disaster, but an embarrassment. He had spoken so highly of his students, and so proudly of the map I'd made, and yet when he and the researchers began to search for a certain river that was an integral part of the conservation effort, they drove in circles for over an hour; they simply could not make a connection between the map in their hands and the landscape around them. It wasn't until late in the afternoon that my professor realized, in horror, that the river *wasn't on the map*. I had simply—forgotten it. Left it out. How was that possible? My professor didn't know; I had used official government data. I looked at the map—but it was so pretty!—and then out the window, feeling helpless. It was windy outside, and trees waved their branches, the forest shrinking away toward the horizon.

I sat down that evening with my map and an atlas, creased flat on the table, and began to compare the two, segment by segment. Sure enough, there was the river in the atlas, and when I looked at my own map, I couldn't even find the place where it was *supposed* to be. The only thing there was a lake—a really big lake. The lake wasn't named, and—now, this was strange—I couldn't find it in the atlas. In fact, it seemed to be directly covering the missing river—and not just that but the whole area around it, a dozen or so small towns, two mountains.

I stared at the map and atlas with a feeling of dawning horror. It was possible, I realized, that I had drowned half of northern Maine.

Later, I would think that the amazing thing wasn't the lake itself, but the fact that none of us had noticed it. Not me, not my professor, not even the researchers—we had all failed to question a lake the size of a Rhode Island puddled in the middle of the state, a lake none of us had ever heard of. That even as the researchers searched the map for a certain river, it was easier to acknowledge it as missing than to point out that *Hey, so's the rest of the county!* After all, the data should have been reliable. The computer shouldn't have lied.

This was the first time that being lost frightened me.

I thought of the sparrows in the airport, nesting in the branches of potted trees, swallowing French fries. I thought about how they could live their whole lives in that terminal, cocooned in glass and cement, soaring under metal beams. Did they even realize something was missing? Did I?

A sparrow, I have learned, navigates with the direction of the setting sun, the angle of the horizon in the distance. A beaver builds its home based on the flow of water, and measures the seasons not by weeks or months but by the chill of the air, by the crust of ice that starts at the edges of the pond and spreads inwards, a silver ceiling. A bat echolocates; a grasshopper follows the prevailing winds, a bear lets its nose find the way.

And I pass through a doorway into the bright outside, down a path to the mouth of the woods. I step off-trail, walk through a crease in the bushes, follow the shadows of mountains cast by a sun ninety-three million miles away. There's a chipmunk on a stump, ignoring me, and a line of ants by my feet. I take a few turns; I've never been here before. At the top of a hill I stop to catch my breath and look out at the horizon, over fields and the dark roofs of a few loose cabins. Far beyond them, in the distance, is the flash of sunlight on a lake.

A MAP OF HERE

Not long ago, I saw my first fireflies. When I was younger I had learned of them from books—had seen pictures of children with their hands cupped tight, the creases between their fingers glowing red—and put them on a mental list of animals I expected never to encounter, like walrus, or unicorns. It's possible that, if asked if fireflies really existed, I might have hesitated before answering—just for a slice of a second, as I combed through my own experience. I have seen a number of miraculous things—a lizard shedding its skin, say, or the reflection of a sunrise on water—but until lately, fireflies were not one of them.

Last week, I went to the arboretum at dusk. The woods were crackling with small noises: mice and insects stirring the surface of the soil, or maybe they were snakes. I had recently passed a snake on the same trail, a dark cord winding over the ground until it vanished into a patch of grass; it looked like water flowing downhill. It had been hot then, and now, days later, it still was. Through openings in the trees I could see Miller tower piercing an orange sky, and behind it, torn fragments of cloud over the horizon. I was tired from the day and thinking of heading home.

In previous summers I had traveled—I worked as a wilderness guide in Norway and Alaska, and as a naturalist in Colorado—but this year, for my last summer as a student, I chose to stay on campus to do research. I spent hours each day before a computer, sorting data and making maps of places like South Africa and the Yukon. Sometimes I would find myself gazing at the screen, trying to imagine the feel of each place. Hot wind blowing off the Kalahari. The sharp, muddy smell of a northern tundra. It was good work, research was, but I missed the magic.

And so I often found myself doing this at the end of the day: slipping into the woods, walking the trails. I was trying to learn the flowers; it seemed embarrassing to pass them without knowing, as if I had neglected to learn the name of a friend. I knew some of the trees, but not all. I touched their bark, noting the thick ridges of the Douglas fir, the pale dust left on my fingers by an aspen. I enjoyed watching the fiddleheads unfurl, the violets blush purple, the yarrow bloom in white clusters. I

wanted to remember that wilderness wasn't far away: that if I reached out my hand, or closed my eyes and listened, or leaned back and looked at the sky, I could find it.

That night I was walking slowly on the trail, passing through as silently as I could. I liked to think I wasn't disturbing anything, that the woods could go on just as they pleased despite my presence. And so when I saw the first flash—down by the stream, in a patch of aster—I only blinked and blinked again, and wondered if I had not drunk enough water that day. It was an odd thing to see, a light in the deepening shadows. I kept walking. Night was settling over the trees, and it might be best to hurry back.

But then it happened again, beside me, and I bent and saw a beetle on the side of a leaf, right where the light had been coming from. It spread its wings and there—*there*—a soft glow pulsed at the end of its abdomen, just as it lifted up and was gone. Laughing now, I followed one light after another as they flickered in the darkness, and as the stars spread out overhead I came to a clearing, a pond, and stopped before the cattails, stopped to breathe and watch the night light up. There were hundreds, it seemed; thousands. From the water came the voices of frogs, croaks and hiccups as they called to each other, and I stood on the bank and listened to them in the warm air, which was sweet with the smell of things growing. Tiny fireworks rose and sputtered and lived their lives around me, as if determined to prove the richness of the world, or else the wonder of it, and I watched them fill the trees in every direction, watched them spread out through the forest like points on a map of here.

WASTELAND

In Africa, the angriest I saw my teacher was when another student threw away a pair of shoes. They were cheap flip-flops, broken at the strap and worn soft at the heel, and my teacher, a South African, lifted them from the trash and cupped them in her hands, fingering the thin soles and growing redder all the while. She turned in a circle to see who had done such a thing.

The culprit was a girl named Megan, a student at the University of Vermont who was, like me, spending a semester in Namibia. Megan raised her eyebrows when she saw her jettisoned shoes held aloft, and even more so when the teacher took her aside for a scolding; later, she stood before us at dinner to recite her lesson. “Don’t throw anything away because it’s old,” she said, her hands knotted and fumbling before her ribcage. “No matter what it is, and no matter how broken, someone will need it.”

“And love it,” said the teacher.

“And love it,” Megan repeated.

The teacher smiled with grim approval; the other students nodded, though we complained later that the scolding had been unreasonable. For my part, I was relieved: I had thrown away a torn bandanna the day before, and felt vaguely that I had been spared what was surely an unfair reprimand in the first place. The teacher patched the flip-flops with medical tape and wore them for the next two months.

Her example did not go unheeded. As the weeks went on, the other students and I made it a point of pride to conserve. We stitched patches on our shorts, saved cardboard, complimented each other on artfully mended belongings. I wrote in the margins of my journal as the empty pages dwindled. But through the duct tape and the pricked fingers, through the virtuous displays of patched shirtsleeves, I felt uncomfortable, as if we were all just tracing the surface of something none of us quite understood.

Recently, back home in Maine, I visited a municipal landfill. I knew roughly where it was located—knew that it was off a certain highway, just beyond a certain town—but

as I drove, nothing looked promising: far from the mountains of trash I had expected would serve as landmarks, both sides of the road sloped away into fields of tall grass, scattered with clusters of aspen and pine trees. After backtracking several times I found myself behind a garbage truck, which was stuffed full, and I followed it onto a narrow road by a sign that read “Wildlife Preserve.” A little ways in was an iron gate, where I pulled over and parked.

I had arranged to be met by a former landfill manager named Dave Jarvis, who thought I was doing research for a course. In fact, although a class of mine covered waste management, I was coming for my own reasons: I wanted to know about the business of trash.

Dave was waiting at the gate, a brawny, white-haired ex-Marine in khakis and a camouflage shirt, and he grinned at me as he introduced himself. He told me he had retired from the Navy at age forty before earning a degree in environmental science at the University of Maine, then gone on to work at Waste Management—“My final purpose,” he called it. As he talked, he led me past an open field—a meadow, really—and into a clean white building with wooden shutters, then through a hallway lined with motivational posters. Several offices branched off from the hallway, and their residents glanced up and waved to Dave as we passed.

We entered a meeting room, where Dave pulled two upholstered chairs out from a table and gestured for me to take one. A television screen behind him flashed a circuit of messages—*You're either moving forward or going backward!*—and he fumbled with it before joining me, running his finger along a row of buttons and pressing each one before finally coming to the power switch; the room fell into thick silence. “Now,” said Dave, settling with his arms crossed and resting on the table. “How can I help you?”

I wasn't sure where to start. “Why do you do this?” I said. “Run a landfill, I mean?”

He nodded, as if this was exactly the question he'd been waiting for. “I'm a businessman,” he said. “I'm in it to make money. And when everything else is falling apart, the one thing you can count on is trash.”

I must have looked skeptical, because Dave reached over and tore a sheet of paper from my open notebook. In a single movement he twisted the paper into a ball and tossed it across the room, a light, high-arching toss that scraped against the far wall, so that the paper dropped and fell still in the crease at the edge of the carpet. Now he smiled. “Wherever you are in central Maine,” he said, “whatever you throw away—a piece of paper in your dorm, a cup at a coffee shop, a candy wrapper, a pop bottle, whatever—where do you think it goes? It comes to *my* landfill.”

Before Waste Management took over the Norridgewock landfill, the entire operation had fallen into near disrepair. The landfill had been built on an underground layer of blue marine clay, a dense, jellylike formation. The clay particles were so fine as to be near-impermeable to liquid, to such a degree that water poured into a bowl of clay would evaporate before sinking in; this helped to contain the landfill’s leachate (“juices”) and to prevent groundwater contamination. In the end, though, the clay’s instability proved nearly fatal.

At 6:30 in the morning, in August 1989, the clay under the landfill gave out, collapsing beneath one side of an overloaded waste pit. The trash—over a million cubic yards’ worth—surged out like water from a broken dam, wiping out roads that would just an hour later have been jammed with trucks and workers. In 20 seconds the landfill spread from 15 to 23 acres, and toxic leachate pooled into the surrounding, unprotected earth.

The physical damage alone would take months to remediate, not to mention the work of regaining the community’s trust, and it proved too much for the company. They covered the waste pile with dirt, sold the facility, and left town.

Waste Management bought the property and set about completely remaking the entire landfill. They gathered the loose, piled waste from the accident and transported it into a lined facility, then covered it and attached the lining to the cover, making a secured container, a “dry tomb” from which nothing could ever again escape. A decade’s worth of a state’s trash, sealed and gone—I imagined it a thick, dark mass of all that had been discarded, nothing now but a pocket of taken space.

Sealing waste is a complicated matter in itself, as I soon learned. Many seemingly-benign household objects contain toxic chemicals to start out with—shampoos, pizza boxes, plastic toys, flame-resistant pillows—and these, along with improperly-discarded batteries, electronics, and paint, combine to form a sort of no-man’s-land of sludge, a dense mass that ferments together into new, uncertain substances, with leachate sinking through to the bottom and natural gas rising to the top. Landfill liners are a system of painstakingly engineered materials, rolled out along the bed of earth before trash can be added and pressed over the top once the land is full, like upper and lower sheets on a made bed that have been tucked in at the edges.

In his office, Dave showed me samples of the landfill lining materials, a stack of thin rectangles. When I took them from him, the lower layer released a puff of white powder that dusted my arms and rose up in a column of light from the window. “That’s just the bentonite,” he said. The bentonite layer was a half-inch thick and looked like canvas, but felt as heavy in my hands as an x-ray technician’s lead apron. “It’s made of granulated clay,” Dave said. “They mine it out West, Wyoming, and ship it here. When bentonite gets wet it expands to ten times its size. That means that if this layer gets punctured, it’s self-sealing.”

“So this is the bottom layer?” I asked.

Dave shook his head. “No, no. Below anything else, we spread a full foot of re-compacted clay, which gets tested every 50 feet for permeability. If the permeability’s anything lower than ten times ten to the seventh centimeters per second—that means that in a million seconds, water can’t get through more than a centimeter—we have to do it over again.”

“Beneath the bentonite,” I said.

“Yes.”

“Is there anything else?” I couldn’t imagine that other layers would be necessary. But above the re-compacted clay layer and the bentonite was a sheet of high density polyethylene, and above this came a sheet of felt that seemed to have been glued to a plastic chain-link fence—a final protection against puncturing. Counting the re-compacted clay, this made for four different layers, each of which

alone would be virtually impermeable. All this, I thought, to protect us from what we ourselves had thrown away.

Next Dave took me on a tour. I wasn't sure what to expect; I figured we'd walk out to a big pit, maybe pinch our noses closed, and gaze in at a pile of junk. Maybe I'd recognize something—not my own trash, necessarily, but something vaguely familiar, an object or wrapper that seemed mundane enough to have come from Colby, to have been thrown out by someone I could relate to. Dave led me to a little wood-paneled sedan he had parked around the side. He opened the doors and cleared an orange vest and a pile of hunting brochures from the passenger side, then gestured for me to take a seat. It was drizzling a little, and a haze of droplets spread over the windshield, congealing into beads that rolled clear stripes over the glass. When Dave turned the key, the engine sputtered twice before kicking to life.

We rolled slowly along the road, which was bordered with strips of manicured grass between the edges of dense forest. I was still looking for some sort of sign—a broken bottle, perhaps, or a can, any hint of where we were—when we pulled up into a large dirt clearing, packed with chugging machines and tractors that were clustered around a series of dark piles. The closest, I saw, consisted of tires of all sizes, heaped fifteen feet high and spilling out at the edges. A man stood dwarfed before the pile, gesturing with spread arms at a tractor that reared above him and trembled slightly, as if in anticipation.

There were perhaps a dozen piles behind this, even larger than the first, and I saw as we drove slowly past that each contained smaller and smaller pieces of tires, so that the last pile was made of rubber bits reminiscent of coarse gravel. Dave explained that the tire pieces were used in the landfills as an extra cushion above the liners. I looked back at the piles and tried to imagine how many weeks—or months—worth of waste they could represent, how long it had taken for the region to discard such a quantity of tires. Dave laughed when I asked him. “Months?” he said. “This is less than a week's worth. We've got a full team of men here twelve hours a day, six days a week, and we can still hardly keep up.”

I was doing math in my head, multiplying mountains by mountains, picturing the expanse filled by a year's worth of tires, or a decade's—and trying to think of somewhere large enough to hold them all. “How long does it take them to break down?” I asked.

“Break down?” said Dave. He stopped suddenly—the car had been drifting forward—and turned to look at me. “Blair, honey, these tires will be here ten thousand years.”

I was thinking about Africa again. In village after village, artists and craftspeople had spread their wares by the roadside, sitting cross-legged on the warm sand as they wove baskets of grass, or shaped old telephone wires into delicate animal sculptures, or carved elaborate bracelets from slices of PVC pipe. There were always several displays of black sandals, fashioned with a rectangular rubber sole and matching heel- and toe- straps—the same sandals worn by nearly every person we passed, or at least those who were not barefoot. I realized that they were made from tires—sliced, glued, and knotted—only after noticing footprints on the sand that mirrored the stripes of a car's worn tread.

It wasn't until several weeks later that I tried a pair myself. My group was staying at a tiny village near the Angolan border, where we were gathering plant data for a local conservation organization. We were camping just outside of the community, which consisted almost entirely of Himba tribespeople. For the most part, the Himba had little interest in my group of students—and, not wanting to be offensive, we kept our distance from the village.

After work each day, I liked to explore. I often visited a marble quarry, a brilliant white, otherworldly structure about a mile from the village in the surrounding foothills. It looked to me as if an enormous mouth had taken a bite from the base of the mountain, leading gnawed-off blocks of white rocks, sharp edges, tiered shelves leading down and around the cavern. The marble faces were cool even in the sun, and cut perfectly flat and surprisingly rough, like fine sandpaper. Little chips of it were scattered about and glistened in the light. The quarry had been funded by Chinese developers, but once the marble had been lifted from the ground, they discovered—

realized—that the roads to the village were too rough to drive the blocks over, and the entire project had been deserted.

On this day I was sitting in the shade of the marble, dozing against one of its cool walls, when I heard a voice singing and the sharp clip-clop of hooves against stone. I turned and saw coming up behind me a Himba girl, her body covered in traditional red paint, riding bareback upon a thick-furred donkey and humming to herself as she twisted the donkey's mane between her fingers. I lifted a hand to wave, and she glanced up, startled. In one movement she pulled back on the donkey's mane to stop its walking, then swung her leg over its back and came down softly two-footed on the marble ground. There were red lines down the donkey's ribcage where her legs had been gripping its sides.

Without taking her eyes off of me, the girl walked sideways to the edge of the quarry to a small stand of Mopane trees. She peeled a long strip of green bark from the trunk of the closest tree, then tied one end in a knot around the donkey's lower jaw and the other end to the tree's lower branches. Her animal tethered, she crossed her arms and began walking towards me.

But it is not the donkey, or the paint, or even the girl herself that I remember most; it is what the girl did next. She sat down beside me, cross-legged, and reached out a hand—I saw from the smallest of trembles that she was as aware as I was of the unusual nature of our encounter—and she pointed towards my shoes, a pair of black sandals, then frowned slightly, as if in question. Understanding her request, I took off one of the shoes and handed it to her for inspection.

The girl brought the shoe close to her face and pinched the sole hard, watching how the rubber flattened under pressure. She examined the worn-down tread, then traced around the rubber edges with her fingertip. To my embarrassment, she brought it to her nose and sniffed. Finally, still turning the shoe over in her hands, she looked back to me. "What's this?" she asked in careful Afrikaans.

I was surprised that we spoke a common language, and even more surprised by the question itself. "A shoe," I said. "It's a shoe."

"No." She gestured to the sole itself. "What's this? Is good."

I shook my head. "I don't understand."

The girl slipped off her own sandal and placed it, and mine, beside each other on the marble floor. She touched hers. “From tires,” she said. She brought a hand to her skirt—“from cow-skin”—and to the beads around her neck, “from paper.” Then she touched my shoe and waited.

“It’s just—rubber,” I said. “It didn’t used to be anything else. I bought it at a store.”

“Bought *what?*” said the girl. She wrapped her arms around her knees and sighed, frustrated.

“I bought the shoe,” I said. The sun was setting over the mountain, and the long angles of light brought the abandoned quarry into startling relief; the angles of the ledges sharpened, then vanished, as plane by plane the quarry fell into shadow. I looked at the girl beside me and felt as if I had been kept from something my whole life. “I’m sorry,” I said. “That’s all it ever was.”

How much of our trash, I asked, could actually be reused? Dave estimated around 95%. “It’s not just cardboard, glass—the usual recyclables,” he explained. “We’re throwing away resources. Let’s say you’ve got an old TV, right? It’s got plastic in it, glass, heavy metals. Everything has a value. If we designed things so that, when they were discarded, we could re-extract the resources that went into them, we would have access to all that—we wouldn’t need to mine new materials, we could just keep cycling old ones through the system. We’re talking about a lot of money saved.”

As Dave saw it, there are two main problems with recycling today. First, it degrades the resources, a concept known as “downcycling.” With each production cycle, materials are alloyed with chemicals and other substances, lowering overall quality; at some point, they become unsalvageable.

The second problem with recycling is that there’s not enough of it—because yes, though recycled materials are eventually thrown away, it is still best to delay the inevitable junking. Why don’t people recycle as much as they could? “It has to do with attitudes,” Dave said. “And money—it’s always about money. If recycling was free but we charged five dollars a trash bag, that would make a difference. And if it

cost twenty dollars to throw away a bag of trash—well, you can bet you'd think hard about every little scrap or rubber band. We'd see a real big change, real fast.”

We kept driving. The rain was coming down harder, and the sky in the distance had darkened gray. The road traced the skirt of a large hill and Dave parked in a gravel pull-off. He played his fingers against the steering wheel as if it were a piano and leaned forward in his seat to better peer out the window. “Look at her,” he said, gazing upwards. “There she is.”

I leaned forward, too, and saw for the first time a line of creeping movement near the top of the hill, blurred like a painting through the wet window. There were garbage trucks—small as ants upon an anthill—lined up at the top, which was flat. One by one the trucks pulled forward and tilted their backs, letting their contents tumble out and down into the earth; one by one they rolled away, and were replaced by another from the procession. I thought of them, trucks come from a hundred miles in every direction, a steady flow of trucks bearing the unwanted from every household. I thought of the pencils and magazines, the water bottles and orphaned socks and outgrown teddy bears, the napkins and the worn-out sandals—which never had been, and never would be, anything but just that. I thought of all these tumbled together as one, poured down into the lined earth and—when the pit had been filled, with alarming momentum—I thought of the cover rolled out over the top of it all, and I thought of Dave's word for it: *tomb*.

I have never been in a place where I've known what my belongings are really made of, and even less in a situation where I have had to make any proportion of them myself. A quick look around my room confirms this. I do not know what trees were felled for my library, where the metal was mined for my teapot, or where the cotton grew for my jeans—nor what chemicals were used in the growing of that cotton. There's a neoprene mousepad on my desk; I don't even know what neoprene *is*. Ditto for the ink in my pens and the fleece hanging in my closet—they are unconsidered mysteries. And I have no concept of the origins of the waves of disposable objects—napkins, magazines, coffee cups—that pass through my possession every day.

This is amazing, absurd: I can bring objects into my life at will—objects made of materials from around the world, built of limited supplies by the hands of strangers who, for me, also absorb most of the health risks these materials present—and when I decide that these objects have fulfilled their values, I can make them vanish.

Whatever portion of the earth's finite resources is represented by these objects has been mined, shipped, smelted, molded, painted and packaged for my benefit alone, and then, at my wish, is sent out of my sight, where it will occupy a share of the earth's finite space for long after I am dead. Is this how I want to change the world?

Even if I were alone in this consumption, the full magnitude would be hard to comprehend. As it is, this happens every day in every house on my street, in my town, and in my country. Each American discards, on average, four and a half pounds of trash a day, and much of the developed world does the same. The problem is that such a lifestyle, with its artificially low costs to the consumer, always comes at a cost to someone else, and so it is the world's impoverished and desperate who risk their health and destroy their environments to make possible a lifestyle they will never themselves realize; consider mined for luxury countertops beside a village of dirt-walled huts. How much longer can we do this?

The thing is, we live in a system that is based on breaking things that matter—human lives, and the earth itself—and it is only time before the whole system shatters, bringing down even those of us who ride atop it like a throne.

“Dave,” I said, “In a perfect future, what would you want most, trash-wise? What's the best situation you can imagine?”

Dave looked at me, then back at the landfill. He opened his lips and shut them. “I'm a businessman,” he said finally. “I want business.” He rubbed the side of his face with the palm of his hand. “In a perfect future,” he said, his face turned towards the rain-washed glass of the driver's-side window, “there would be no use for me.”

THE CATTLE-LIFTER

The woods where I walked in northern India were sparse and quiet, the trees tall and narrow, sprouting from thickets of sedge and juniper. Green parrots gathered in the upper branches and wild boar nestled underneath, and through it all wove a thin network of trails, loopy and circuitous, which I was doing my best to learn to navigate. I was spending the month of January on an organic farm about an hour from the city of Dehradun, and on at least one occasion, here in the woods, I came across a sight that shocked me.

I had been walking about fifteen minutes, and came to a place where the trail ran parallel to a dirt road. Although the rest of the forest had been deserted, there were people here—men mostly, their wool-capped heads emerging from the bushes ahead of me, rising and ducking as they climbed over roots and through gullies. Motorbikes approached on the road, the roar of their engines cut by the sound of children shouting, and a woman's scolds. People stepped through the forest all around me, drawn to a point of convergence just out of sight, ahead and to the left; I followed them. Then I passed around a bush, and there it was, lying flat on one side, limbs and tail extended in a sleepy stretch, chin tucked slightly—a leopard.

The people had gathered in a perfect ring around the creature, and leaned forward slightly, their voices ever rising, as if they had come upon the boundary of some invisible bubble and now sought, in unison, to lean pressure upon it from all sides until it burst. I made my way towards the ring, craning my head to see the leopard. Its pale shape was framed in my vision by shoulders draped in blankets and worn-thin jackets, or shivering shoulders in dirty cotton shirts, and bare brown necks risen with goose bumps—from the spectacle or the cold, I couldn't tell.

The leopard was the size, approximately, of a Labrador retriever—though the lines of the cat were not jagged, like a dog's, but smooth as oil, each line shifting into others, from the soft bristle of whisker and bulge of the skull to its long spine and the elegant black tip of its tail. The spots on its sides, unclosed circles, lay against an orange-brown sunset that grew lighter as it neared the belly, fading to a pure white that echoed the muzzle, the insides of the tufted ears, and the tops of the large,

demure feet. Were it not for the subtle ivory spike of a tooth pressing a dimple into the lower lip, it would be hard to imagine that this creature was anything but velvet—anything that killed with a sharp bite to the jugular, that could bring down an animal many times larger than itself with the strength and greed of a hungry belly.

It was this hunger, the men around us were murmuring, that had killed the leopard: three days ago it had eaten a farmer's cow, not far from here, and now look: dead in the prime of its life, cramped and choked by its own gluttony. Indigestion, they said, and this, too, rode the wave of voices, spreading like sunlight over eager questions. Indigestion! A stomach knotted with plenty, a cow-ful of sacred meat.

For the cows in India are holy, indispensable, used for milk and plowing fields and for the dung that makes up the very matter of the villagers' homes; they are never killed for meat. They are brown and soft-eared and crusted in muck, and their heavy hoof-prints gouged the path that I followed out of the forest, after I had left the leopard behind. I pictured them passing there days or weeks before, led by whips or shouts or a sharp tug on rope-threaded nostrils.

I learned, several days after seeing the leopard, that it had not died of indigestion. This explanation had been a ruse, a rumor spread by the same farmer whose cow had been eaten—or so people were saying, because the leopard had been poisoned by a stash of bad meat, set out intentionally to kill it. And who would do this, the people said, unless he had a personal stake in the leopard's death?

This animal was endangered, a species that used to be common in this area before its habitat was systematically destroyed through the spread of towns and agriculture. For many of the villagers, this was the first leopard they had ever seen. The species, *Panthera pardus fusca*, is listed under Appendix 1 of the Convention on International Trade in Endangered Species, which means that to kill one is illegal under international law; it struck me as an act of unimaginable cruelty, and surely unforgivable.

A leopard kills in stealth, invisibly; its body moves with such sleekness that its prey rarely detects movement prior to attack. The farmer's cow had likely been tethered in his yard, fed and milked with a comforting regularity that would have suggested, to the animal itself, that the rest of its life would unfold in the same way: a bowl of leaves to eat, clean water, a field to plow. Eventual death by old age, a fate few cows anywhere but India can ever hope to reach.

I imagine how it happened: at dusk, probably, when wildcats around the world open one eye from the day's sleep and rise to their feet, like water un-pouring from a vessel, to step hungrily through the growing shadows. Somewhere in a village, a cow stands asleep.

Then a flash through the air and a sudden pressure on the cow's back, the arch of a spine and sharp scent of blood—and quickly, very quickly, there is quiet, just the slow tumble of the cow, and the leopard, its sides pumping, entering with its teeth the sudden wealth spread before it, filling itself with hot meat as the sun sinks away into night.

When a leopard takes a human as prey—and they do, for recently, in the Himalayas, a single leopard killed twenty villagers over the course of a year—it attacks by first, in one movement, peeling off the scalp of its struggling victim, then folding this wet flap down over the victim's eyes. Still very alive, but blinded by his own skin, the human has no chance of fighting back.

A windfall to one marks an equal loss to another, and so after the feast and the full belly, there came, inevitably, the farmer's discovery. Maybe it was the same night; the farmer might have heard or seen the disturbance, or else intuited the loss of the cow, mysteriously—felt with some unknown sense a contraction in the boundaries of his household and its property, like a pool of water evaporating on a hot afternoon. But probably not. I imagine, rather, that the discovery happened the next morning, when the sun had again risen, or else was about to lift free of the distant mountains. There was the crowing of roosters and the barking of dogs, and the farmer rises from his bed, still dressed in yesterday's clothes—they are his only warm layer—and steps

into the yard to fetch water for tea from the pump at his neighbor's house. He is carrying a steel bucket. His scarf is wrapped around the back of his head and under his chin in the standard men's style of the region. He takes a breath of cold air, and then, for reasons he will later wonder at, he looks over his shoulder at the back corner of his yard, and he sees—

I don't know. An absence, or a presence, unexpected. Some measure of remains; an incalculable loss.

In this region, a cow costs around 8,000 rupees, more than half a year's salary for most villagers. There exist compensation programs in the area, so that farmers whose livestock are taken by predators can receive money in return, but this is a new strategy by conservationists; it is possible, even likely, that our farmer was not aware of the possibility of reimbursement, as state-run programs are underfunded and poorly implemented. For this reason, he may also not have known that to be caught poisoning a leopard means a large fine and ten years in prison—the standard sentence for poaching an endangered species.

In fact, until a few decades ago, revenge against a predator was accepted, even admired. Researcher SR Davis explained this in his 1954 paper, "A Novel Method of Destroying Man-Eaters," which now appears in the Oxford Anthology of Indian Wildlife:

As long as a tiger is a game-killer, he is a gentleman; he never interferes with man or his property. And so long as a tiger remains a gentleman he has our admiration and respect. But cattle-lifters and man-eaters adopt new ways of life (perhaps compelled to do so by man himself) which make them a source of danger and menace to man and his live-stock. Such creatures are in no way better than 'goondas' [petty criminals] among human society, and surely nobody feels any compunction about how a goonda ends his life.

Later, curious, I would ask a researcher at the Wildlife Institute of India how likely it was that any given poacher would be caught or punished. We were standing in the

doorway to the institute's forensics lab, and the researcher kept pinching the doorframe with his thumb and forefinger, tapping the wood with a sort of quick rhythm. "It's very illegal to kill an endangered species," he said. "Anyone who is caught will be punished to the full extent of the law."

"How often are they caught?" I said. "If, say, a farmer poisons a leopard—what are the odds he'd be punished?"

"We have only three investigators in all of India," the researcher said. "The investigations can face bureaucratic delays. But once we start a poison investigation, we reach a conclusion within a week."

He was tapping more quickly now. I waited.

"Look," he said. "I'll be honest with you. It takes us months to even get to a case. And by then most of the evidence is gone, if it was even there at all."

"So he'd probably get away with it," I said. "The farmer, I mean."

The researcher sighed and lowered his hand from the doorframe. "You must understand," he said. "There's really very little we can do."

What leads a leopard, once a gentleman, to kill that which is not his? What leads a farmer to do the same? The leopard is easy. Humans are spreading across land that was once wild, turning forests into plantations, mountains and fields into villages. The wilderness is netted with roads, speckled with towns, often wiped out completely for agriculture and industry. Many of the prey animals that once thrived here—like the musk deer, now nearly extinct—have been decimated intentionally for human use; others have been destroyed unintentionally, as their habitats are steamrolled, flooded, chopped down and paved. What's a leopard to do? She slips into a field of sugar cane, and sleeps curled in a dwindling island of what was once forest but is now nothing more than a cluster of trees. There is no food here, of course. The food is long gone. But springing up around her is a new kind of food, food that walks on two legs and four, food with dull senses, food tethered and waiting.

The leopard learns fast, or else becomes desperate fast. In the state of Uttaranchal, four humans were killed by leopards in 2001, and ten leopards poached

in retaliation. By 2006, those numbers were 41 and 54, respectively. The leopards in India, it seems, are becoming goondas.

But so are the people; after all, more leopards are killed than humans. I am trying to understand this, and the choices behind it. I am beginning to sense that my culture has pulled my skin over my eyes—that I am blinded by my own background, my own self.

I am not a poor farmer—not a farmer at all. I cannot gauge the degree of loss resulting from an eaten cow, nor can I understand the religious forces involved; how does such a loss change when the animal that was killed is holy? I do not know whether the poison was preventative, an insurance against the death of remaining cows—or people—or whether it was laid out as an act of calculated vengeance. I'm not sure it matters. Rather, I envision the laying of poison as an effort to balance the scales both in present and future, a pre-emptive retaliation.

I cannot imagine doing such a thing myself—but then, I have no cows. Instead, I try to imagine what degree of loss would be comparable; how much would have to be stolen from me, or even threatened, before I would seek out a death in return. Money, maybe, but how much—a hundred, a thousand? Ten thousand? A car, or a home? How does the worth of an object change if it is sacred?

It is a threat to human life, I finally decide, to which I would retaliate—not a life lost, necessarily, but merely the thought of one. The shadow of a chance—and, judging from the numbers in Uttaranchal, this shadow is a heavy one. Just the idea, for instance, of my mother in her garden by the woods, while in the trees above her slunk a flash of copper-brown, tasting her scent... or children—if I had children, and they liked to play in tall grasses at the edge of the yard, grasses easily concealing a slippery, subtle shape, a shape that already associated my yard with a source of food—just the thought, and already I am dosing out the stinking, adulterated meat.

RANGEFINDER GIRL

Maybe this is about rhinoceros. But it is just as much about the smell of myrrh, or the warm grit of water from a desert spring—how it coats the mouth with salt, as if even the land were sweating. It is about the men who were our guides, and the ways I misunderstood them—the ways I misunderstood all of it. Mostly it's about how the desert looks when viewed through a rangefinder—shrunk and precise, with neat crosshairs through the center and a digital number showing just how far away it all is, the whole world so small and clean that you could serve it in a teacup. And then you lower the rangefinder, let it swing down from your neck, and everything rushes up around you, from the hot sand in your shoes to the red-black hills and the white of a dusty sky, closer than you ever imagined.

It started like this. I had come to Namibia with six other American students to do research on desert-adapted black rhinoceros. For the next two weeks we would be tracking rhinos in the Ugab desert, a stretch of wilderness so barren that its name, in Damara, means *Place of Silence*. At home in Maine, I often fantasized about the outdoors, about adventure, and I had been looking forward to the trip for months. Deserts could be tough, sure, but I had done fieldwork before, high in the Rocky Mountains and on glaciers in Alaska. I knew I was prepared.

It took twenty hours to drive to the Ugab from Windhoek, the capital, and we left pavement behind after the first thirty minutes. The dirt road passed over flatland scattered with cement sheds and stick huts, brown goats and skinny, open-mouthed dogs. In one village, a few kids played soccer in a field, barefoot, kicking a cool-green melon that spit dust as it rolled. Donkeys and cattle leaned against tree trunks, pressed into fragments of shade. But after a while there were no more houses, and then there were no more trees. Cracked dirt spread out in every direction, as if it had been poured from some great height.

Finally we came to a spring—a round pool in the center of a plain, almost perfectly ringed with hills—where we had arranged to meet our guides, who worked for the organization Save the Rhino Trust (SRT). Fresh ostrich and zebra tracks

crisscrossed the sand, circling and spreading from the pool like threads from the center of a spiderweb. Meeting times in the bush are flexible—even the day is uncertain—and so we took time to explore, shuffling over rocks to find crinkled layers of basalt and chunks of deep purple amethyst. It was drizzling, each drop a pinprick of cold on my hot skin, and the ground darkened and shone.

Another student, Erin, and I found a darkling beetle meandering on legs like stilts, and we bent close, listening to the gentle scraping of its belly against the ground. Its body was black and perfectly round, its back striated and glistening such that the grooves caught light and appeared, at certain angles, to be stripes of clean white, which flickered on and off with the beetle's every step. The beetle was struggling to cross the humps and divots in the sand. It would come to a crest, totter, and careen down the other side, landing on its back with legs and long antennae swiveling. After rocking back and forth it would right itself, hesitate—as if pausing for breath—and start up the next mountain. Finally, after several minutes, the beetle came to the top of a ridge and stopped. Very slowly, it stretched its back legs straight, raising its rear until it was nearly balanced on its head. I leaned closer. The beetle was standing quite still.

A raindrop splattered onto its domed back. Then the water pulled into itself, pearling into a ball that rolled down the grooves of the beetle's back and onto its head. Something moved in the little face; the antennae twitched. Erin and I looked at each other, astonished: the beetle was catching rainwater to drink! It stood frozen for several more minutes; then, as the rain slowed, it continued on its laborious path across the sand.

Erin and I were still glowing from the joy of entomological discovery when we heard the first mutterings of a vehicle. Bernd, a round-faced, skinny-legged German¹ with a buzz cut and a white beard, pulled up in a Land Rover as filthy as our own, its dirt-splattered sides dented and scarred. There was an open gash in the driver's-side door; I could see flashes of light through the hole.

¹ White Namibians are referred to by the language they speak at home, even if they were born in Africa. "German," then, refers to Bernd's first language, although he is a Namibian citizen.

We had been warned that our guide would be a military man—Bernd had fought in the Angolan Bush Wars, the Namibian War for Independence—and I could sense this in the way his eyes ticked over us from the cab, his head inclined with a soldier's stiffness. A dog, a Rhodesian ridgeback, perched on the front seat beside him, and two men rode cross-legged on the roof of the truck. The trackers were as dark and sun-creased as Bernd was pale, bundled in heavy canvas parkas with hoods pulled over their foreheads to block the raindrops. When I reached up to introduce myself, they glanced at each other and murmured in Damara before taking my hand. Their names, they said, were Johannes and Fulai—pronounced *Fly*. "Like the bug," Bernd noted from the front seat.

Now nine in number, we left the watering hole and drove onwards, whether on a road or not it was difficult to tell. Bernd led the way. We bucked over rocks and spun in deep sand, heaved left and right with such force that I was thrown into the laps of the students beside me, and at times tipped so precariously that the vehicle froze for an instant, as if deciding whether or not to topple; each time this happened, we would fling ourselves sideways in attempt to sway the outcome. The driving reminded me of something, but it took me over an hour to identify what that was. What else had I seen today, maneuvering terrain much too great for its own good? I felt a sudden understanding for the beetle; I knew how he felt.

Hills rose about us, first grassy and later sharp with rocks, and we rode the channels between them, curving through serpentine gulleys. As the day cooled the Brandberg mountains appeared silhouetted to the south, as smooth and flat as if they had been torn from paper. After five hours of driving we came to our camping-place in a dry river basin. The sand was flattened with elephant tracks—"Big Guys," Bernd called them, as in, "Did you hear about the tourists who got stomped by the Big Guys?"—and we set up our tents under a canopy of tall acacias, which were heavy with pink-orange seedpods. When it was quiet, I could hear the pods snap off and fall, rustling through layers of branches.

For dinner we cooked potatoes and springbok meat in cauldrons over a fire, and though Johannes and Fulai came to our circle to fill their bowls, they retreated

into the shadows to eat alone. I stood to invite them over, but Bernd stopped me. “Stay here,” he said. “They’ll be eating on their own.”

“They’re welcome to join us,” said Amber, a student, who sat with her bowl on her knees, hunched beside Bernd.

Bernd shook his head. “Don’t you get it?” he said, tapping pointedly at the skin on her arm. “They see themselves as different.”

The next morning we built our breakfast fire in the dark, and left camp before sunrise to get a head start on the heat. I rode on the roof of Bernd’s truck, between the trackers. I learned that Johannes focused intensely while he worked—he glared at the ground, as if daring it to reveal its secrets—but was quick to smile, and would answer a question in Afrikaans if I asked him directly. And Fulai was tall and very thin, with a bit of white in his hair and delicate spectacles. He didn’t speak, but his eyes flicked constantly across the horizon, as if he were reading, with mild interest, the world as it presented itself to him. Both men had red in the whites of their eyes, and they wore fitted green cargo pants, khaki shirts, and caps with Save the Rhino logos. Fulai wore his cap forwards, and Johannes rotated his hat to match the direction of the sun.

We started out driving along the broad sand of the riverbed, between rocky hills. In an aerial photograph, the long, curving hills of the Ugab look like the ridges on a fingertip; from the ground, every narrow valley looked alike. Bernd navigated without hesitating.

Our goal was to pass a rhino spoor, a trail we could follow on foot to the creature itself. We had been trained on how to act during a sighting—silently, with little movement—and how to gather data, marking down GPS points and the animals’ physical features so that Save the Rhino Trust could analyze the health and number of rhinos in the region. We each had a job, and I was Rangefinder Girl. I carried the rangefinder around my neck, a heavy black cube that swung with my every movement, and I peered through it occasionally to practice: 12 meters to the nearest hill; 2 to the ground; 170 to the base of the Brandbergs.

It was hard to rangefind from the vehicles, though, which bounced constantly, powering over boulders and through dry brush. “These Land Rovers can drive

sideways across a 45-degree angle,” Bernd said, but when he tried to demonstrate, the truck leaned so horribly that he accelerated off the slope. “Maybe not with people on top,” he amended.

There were low side bars around the top of the truck, and I clung to them the whole time, squeezing the hot metal, struggling to stay on as the roof of the Land Rover bucked beneath me. Meanwhile the trackers rested their hands in their laps, and hardly blinked when the vehicle threatened to fling them off. At one point the wheels on one side of the land rover lifted entirely into the air; I tensed my legs and measured the distance to the ground, preparing to jump off if the lean should worsen. I was embarrassed about my response, and mentioned it to Bernd later, feeling that I should be honest. I thought he should know of the limitations of his team members.

But Bernd only nodded. “Ach, good for you. Fear is a way of being careful—it is the ultimate respect. If something feels unsafe, get out. I did that in the war once, and it saved my life.” He paused and fluffed his white beard with his fingertips. “Some of the others weren’t so lucky.”

By the end of the day, we had spent a lot of time scrambling and driving but hadn’t seen anything like a rhino, except a few dozen zebra and ostrich and two giraffe. There was so much poaching in the area that the animals were constantly on edge. On the drive from Windhoek, the wildlife had looked at us like we were in their way, but here they were galloping off by the time we entered the far side of a valley, a speck of dust in the distance.

I noticed, also, that Bernd and Fulai carried walking sticks everywhere; when I asked why, Bernd told me that they were for killing snakes and “whacking rhino.” Why would you want to whack a rhino? “If the rhino is already on top of you,” said Bernd, “then you can reach up with your stick and whack it in the face.”

“Couldn’t you, I don’t know, throw rocks? If you needed to scare it away?”

“Oh, no,” said Bernd. “That would only make it angry, and the last thing you want is an angry rhino. They can stab you, trample you—just like that.”

I considered this. Then, feeling I was being duped, I went to Johannes. “Johannes,” I said, “why does Fulai carry a stick?”

“For snakes and rhinos,” said Johannes, swinging an invisible bat through the air. “Whack-whack!”

Early the next day, we came to a spoor. Rhino tracks are distinctive, about the size of my open hand, with three rounded toes like the leaves of a clover. The trackers started ahead, scanning the landscape beneath their feet, whacking-sticks loose in their hands. Bernd pointed out bent grass, chewed twigs, even a puddle of rhino drool—not yet dried—and we grabbed our packs and water and started off, pacing in single file. We followed the trail over hills, sidestepping sliding blocks of shale, then down to a grassland and through a swamp, up again, over, around, until it seemed we could be back where we started or else a hundred miles away. We walked without speaking, sweat dripping from our shirt-hems. The heat felt like warm palms pressing against my skin; it filled my mouth when I breathed. Then we came to a valley and Bernd raised a hand.

There was a rhino, lying in the shade of a salvadora bush, ears and horns emerging from the yellow grass like periscopes. I measured: 120 meters. We crouched behind a tree to fill out data forms—my hand shook so much that I had trouble recording the digits—then edged closer. For ten minutes nothing moved; the scene solidified around us, the great boulder of a creature lying sharp and sleepy in the sun. Then those ears swiveled like satellite dishes and the bull was up, running off with his tail straight in the air, at once tremendously heavy and agile as a dancer. Its shovel-shaped head was lifted, as if in pride, and its skin fell in heavy folds over its legs, slapping against itself with each step. I felt like I was watching a dinosaur run.

That evening I took the fly off my tent so I could watch the stars, and sometime in the night it started to rain, just enough to wake me up. I lay on my sleeping bag with raindrops falling on my arms and legs, marveling at the world.

That was the beginning. I felt, at every moment, like a child pressing my face to window-glass, watching scenery flow by in a bright and jubilant stream. And though I didn't realize it, I had a child's faith that the glass was impermeable—that it

displayed a world wholly separate from my own, and if the car shook a little, it only bettered the illusion.

That next morning I rode inside the truck with Bernd, and took advantage of the enclosed space to ask some of the questions I had been collecting. Why rhinos? What was it like to grow up in Namibia during apartheid? Why do you choose to live in the bush, and to take students with you? Are you lonely, so far from other people? His eyes never left the terrain, but he was accommodating in his answers, telling stories of people he had encountered and dangers he had seen. One night, he told me, he awoke from his cot in a sandy clearing to find that a herd of elephants had surrounded him while he slept. I tried to imagine it—their vast bodies in the early morning darkness like pieces of night broken apart from the rest.

A young bull came towards Bernd and gripped the foot of his sleeping bag with his trunk, tugging at it lightly, then harder, so that the bag strained under Bernd's body.

As Bernd lay there, certain he was about to die, the matriarch of the herd appeared at his head, so close that her skin brushed his hair. She lifted her face and let a rumble roll through her chest—"It seemed that the whole world rumbled"—and instantly, the bull let go and drew away: she had reprimanded him.

"And here is the part of the story you'll like," said Bernd, "but first I must tell you something else. One morning, during the Bush Wars, a soldier in my division refused to rise from his cot. 'There's a snake in my bed,' he said. 'I can't get up!'

"'Yes,' we answered, 'then none of us can get up, we all have snakes in our beds.' But it soon became clear that this man was telling the truth. There was more sweat on his face than is on ours right now, though the air was cool."

"What did you do?" I said.

"We poured diesel over his body, to make the snake sleepy. Then we unzipped his sleeping bag one centimeter at a time. And curled between his legs was a black mamba. The mamba was dazed from the fumes, and the soldier managed to get out. But I tell you, Blair, he was quiet a long time after that.

"Now, you must keep this in mind while I return to my first story. The ellies had scared a mouse, and it climbed into my sleeping bag to hide. I felt that mouse

moving and—*woop*—I was out of the cot so fast, dancing like I stood on scorpions! So there you go. A herd of elephants I can tolerate, but a little mouse was too much for big, brave Bernd.”

We didn't pass a spoor that day, and after returning to camp, I joined Fulai and Johannes where they were looking at camera trap photos with Bernd. The photos were loaded onto an old laptop, which plugged into a solar panel. There were over seven hundred images in all, grainy and green-black on the small screen. Most showed rock dove and springbok, but there was one oryx with her horns curling back halfway across her body, and a few low, tense jackals dipping their heads to the mirror-surface of the pool. Then several blurry night shots, and finally, what we were waiting for—a rhino right there, square on, nose so close to the camera that you could see the wrinkles and craters in her skin, a whole topography in itself.

Johannes and Fulai filled out forms for the rhino, under Bernd's supervision. I noticed that around the trackers, he lost his lightheartedness—he didn't smile at all.

I asked Johannes how long he had been working with rhinos. “I be assistant to an SRT tracker, two years,” he said, careful with the words. “After two years”—here his mouth twitched and split into a grin, which he pulled in again after glancing at Bernd—“I become permanent staff. And Fulai, he been permanent much longer. Thirteen, fourteen years longer than me.”

“That's wrong, Johannes,” Bernd said. “The longest-running trackers at SRT only came on a decade ago.”

Johannes nodded. “Yes, *meneer*.” And he was silent the rest of the night.

I read in my field guide that you can tell how poisonous a scorpion is, roughly, by the ratio of pincer to tail. Big pincers, and the scorp is making up for a feeble sting. But the bigger the stinger—and the more lethal the sting—the less of a need for pincers as defense.

During the day, yellow-legged ticks the size of pumpkin seeds patrolled the sandy ground in the riverbed, and after dusk the scorpions came out. They were black, and two or three inches long; looking at them, I couldn't see pincers at all.

We found a trail early, just a kilometer out of camp. We were heading to the spring to fill our water cans, and the spoor crossed over the previous day's tire tracks. By watching the trackers, I was learning what to watch for in a spoor: skin wrinkles on the bottom of footprints, dampness in the sand, whether fallen leaves along the trail retained moisture at the edges. And then there were the signs I could never hope to see: the faintest of smudges on solid rock; the places where a rhino had touched its nose to the ground and breathed.

All of these things told us that the spoor had been made since sunrise, less than two hours ago. We followed the tracks for an hour, two, three, as the sun rose higher and shadows shrank away. We turned, backtracked, backtracked again. And then, at the edge of a small valley, Johannes pointed ahead and we all dropped to the ground. There stood a bull, sixty meters away—I was surprised to find that after the past days' practice, I had gained an intuition for distances, and used the rangefinder only to double-check my estimates. This rhino had his head lifted, and his ears swiveled in our direction. His eyes were small holes in the side of his face. We were closer than we wanted to be, and so we crept backwards, crouched low; we didn't speak until we had made it up the nearest hill, safe above a cliff, and the rhino was just a bulge in the grass below us.

Later, as I peeled squash for dinner, Fulai came over and stood beside me. "Was dit naby?" I said quietly. Was that close?

Fulai squinted at me, then looked down at his hands, which clutched the end of his whacking stick. He was missing a thumbnail, had only a swollen scar in its place. "Ja," he said. "Dit was baie naby." *Too close.*

The next afternoon I went for a walk by myself; I was eager to explore on my own. I hiked up to a nearby ridge, enjoying the solitude and the late-afternoon wind. The hills were black, and ribboned with parallel ridges of stone; yellow grasses pushed between rocks, and here and there grew tangles of myrrh, its fragrant sap bleeding from bare twisted branches. When we had come up here the other day, Amber called these "the hills of the dead." The description didn't seem far off.

The sun was low in the sky and I had promised to return by dusk, when the leopards came out. As I walked I was aware of, though not concerned by, the homogeneity of the landscape—the way each naked hill melted into the next, the way stones rose up and blocked the view behind me. I noted landmarks as I passed them—a faint game trail, a stack of broken rocks, a zebra wallowing hole—and played with them in my head, twisting the landscape around, trying to figure out how to navigate back. *After the deepest wallow, walk perpendicular to the veins of shale, or Just past the dead myrrh, turn away from the sun.* It was a game, a way to entertain myself. I walked for forty minutes or so, then stood for a while admiring the Brandbergs before turning around.

Every direction looked the same.

As I began to retrace my steps, the sun slid down the sky as if greased; suddenly the landmarks meant everything. It would be so easy, I realized, to miss one sign and lose my whole system, to wander off a hidden cliff or into the wrong valley. Even if I wasn't eaten, I wore only a t-shirt, and the night would be cold; then would come morning and the heat, and how could I hope to find a spring?

It was already growing cool; the day's sweat had long since dried from my arms, and now goose bumps rose in its place. As I walked, I became keenly aware of the sensations of the landscape around me. I noticed the movement of rocks under my feet, the crunching sound as they rolled against each other. When I approached a myrrh, the air seemed to soften—to take on a slight blush as it filled with the smell of sap, like a mixture of pine and roses. I came to a myrrh that stood alone in the center of the ridge, its branches gnarled and contorted, and reached out to touch it as I passed, seeking, I suppose, some comfort in its solidity; I withdrew my fingertips glossy with sap. When I tried to wipe the sap off on the ground, grains and pebbles stuck to my skin, as dark as the mountains themselves. I looked down at my hand and started to cry.

I thought of the darkling from days ago, the beetle I had identified with in its struggle against a land too big to negotiate, but I saw now where I had been wrong. The beetle was clumsy, yes, but he was designed for this world, was designed to pull water from the air itself. I could no sooner pull water from the air than a springbok

from my back pocket. I was pink and soft, blunt-nailed and flat-toothed, inflexible in my constant dependence on so many physical resources: food, water, warmth, shade.

Finally, as the first stars appeared in the sky, I caught sight of bright colors below me: the tents back at camp. Most of the others were gathered around the fire, and did not notice my return. To get to my tent I had to pass Johannes and Fulai where they sat and ate dinner on the hood of the Land Rover. Johannes watched me as I passed—looked hard at my eyes, which, although I had rubbed them dry, still stung. “A good walk, miss?” he murmured. But when I looked at him, he dropped his gaze.

I was determined that the next morning would be better—that I would be responsible, and focused, and diligent in my recording of data. There would be no recklessness, and certainly no getting lost. The desert was a remarkable place, and I was lucky to be there. It would be a good day.

Sure enough, the morning started well: we came across a herd of elephants just outside of camp. They passed through the salvadora bushes like boats through water, all moving forward at the same slow pace, ears waving in the morning-damp air. Beside the largest was a baby, gray and wrinkled with loose-hung skin; although its back barely reached its mother’s stomach, it was still the size of a Volkswagen Beetle. Bernd told us that this was one of the largest herds in the Kunene region, led by a matriarch named Mama Africa—and that based on their tracks, they must have passed through camp last night while we slept. I thought back to Bernd’s story, and sent a silent thank-you to Mama Africa for leading the herd safely past us. Then I twisted backwards on the Land Rover, watching until the elephants were long out of sight, unable to stop smiling.

Not ten minutes later, we came to a plain that opened from the riverbed. A cheetah ran on the yellow slope before us, stretching and compacting its long limbs. It passed the way a shooting star might—a streak through my vision, gone before I blinked.

When we found the tracks it was still early, the sun still low. A breeze blew the grasses against our ankles. The spoor curled around itself in elaborate loops; we

entered dead-end valleys only to find that the rhino had climbed a steep slope, or passed through a narrow opening in the rocks. By afternoon we were thirsty and hurting. My feet had blistered and bled along the sides, where I had slipped against thorns or rocks. But there was something meditative about the tracking, something I liked, the heat and the sips of warm water and the quiet patience of it all, the way we chased a goal but not a destination. We decided that if we had found nothing by three o'clock, we would turn back.

At five to three we came around a boulder and Fulai froze; I had never seen someone stand so still so quickly. We dropped, pressing ourselves to the dirt, still unsure of what had happened. The air smelled of grass, and something rotting. Then I saw it: a gray head emerging from the grass, a sleeping rhino so close that in a few strides I could have touched its horns. Four meters, I thought, and I remembered what Fulai had said about the last rhino: *too close*.

Two ears perked, then rose, as the bull heaved itself to its feet. It took a step toward us. Shamira, the dog, pressed herself against Bernd's legs, and he grabbed a wad of skin from her neck in his fist, twisting it to pull her closer. His nails dug into her fur.

Still low, we crawled as one backwards up the slope behind us; scree fell beneath our hands and knees and rocks clattered against each other. The bull followed, head raised. It stood where we had been a moment before.

How to describe it, facing a rhino head-on? I could hear its breathing quicken. I could see the black hairs tufting from its ears and bursting from the point of its upper lip. The rhino came to the base of the slope and stood. Five, six minutes he stood, staring at us, and I tried to make myself small and silent. I tried to make myself into air.

Something in the rhino's expression reminded me, curiously, of an old man lowering his glasses to squint across a table. And then I understood: it couldn't see us. It knew we were there, but it didn't know *what* we were. Rhinos are nearly blind—they sense only motion, and bright colors—and we wore faded, dirty clothing; we blended into the rock. The wind swept our scent away from it. It was confused.

There was a movement. To my left, Bernd had lifted a camera from his backpack and was moving forward. It must have been a new rhino, one that SRT didn't yet have a photo of in their database. The rhino tensed. It watched Bernd come closer, and then it snorted.

Fulai lifted a hand in signal to Johannes; both trackers shook their heads. They nodded to each other in wordless, delicate communication, and Johannes motioned for Bernd to move away, to back up. *Nie doen*, Johannes mouthed. *Don't do it*. Bernd looked at Johannes for a long moment. Then he lifted his chin slightly and turned away, back towards the rhino. He raised his camera and snapped the shutter.

The rhino charged. It lowered its head, horns splitting the air, the skin on its sides bouncing as it came. Pebbles flew up and fell against the rocks around us; I closed my eyes as they hit my shoulders, my arms, my face. The rhino skidded to a stop when it reached Bernd, sending up a spray of dust that engulfed him completely. For several moments there was silence, a sudden calm as the dust cloud hung opaque before us, and then, as it began to settle, I saw a figure stepping backwards, camera still in hand.

The rhino stood watching. Then it kicked at the ground, turned, and trotted away in a zig-zag, peering over alternate shoulders every few steps. As I watched it leave, I exhaled fully for the first time since rounding the bend.

But the rhino wheeled and ran back towards us, stopping at the base of the hill, then turning away again. This it repeated eight or nine times, running away and coming back, and each time I was sure it was over. My legs were long asleep from squatting, and when I glanced at my watch I saw that we had been trapped there for close to forty minutes. Finally, when it seemed the rhino wasn't coming any closer, Fulai gestured instructions and we crept sideways around the hill; the trackers led, and Bernd fell into step behind them, among the students. The rhino stood with horns high, watching us go.

By the time we got back to camp it was evening, and according to our GPS we had walked twenty one miles. I helped Bernd refill our water cans at a spring, and I asked him why the rhino had charged—what it had been thinking.

Bernd tapped the ground with his stick. “I’ll tell you what the rhino was saying,” he said. “He was saying: ‘I don’t know what you are, but *I am very big.*’”

Later, as we ate dinner by the fire, there came a rustling in the darkness. First Johannes and then Fulai entered the circle of students, the firelight casting sharp, flickering shadows across their faces. They did not look at Bernd, nor did he look at them; nobody spoke. Bernd stirred his food methodically, lifting his spoon from the bowl of stew and dipping it in again. He looked up as if to say something, clearing his throat, but only stared at the fire for a moment, then resumed eating.

The next morning everyone overslept. We didn’t start the breakfast fire until 6:30, and didn’t leave camp until 7:15. After five hours of fruitless searching we headed back. That was fine with me; I was still shaken from the day before, and from my hike the day before that. I couldn’t admit it to the others, but I suspected, in truth, that I didn’t want to see another rhino. Not up close, at least.

The whole landscape felt too big for me; it was too far out of my control, beyond my understanding. I had lived in wilderness before, had loved how real it felt, how important and forgotten, but the Ugab frightened me. It was the most beautiful, dangerous place I had ever been.

I watched the trackers, the way the land spoke to them in words I couldn’t begin to follow, and it made me miss the places whose languages I *did* speak. And sometimes I felt foolish to have come to a place where I didn’t fully know how to protect my own safety. I didn’t want to get hurt. I thought of this when I checked for scorpions in my shoes and when I took my anti-malaria medication, swallowed with water I had scooped from between clumps of slime in an open pool. I thought of it when I climbed out of my tent at night to pee, and checked with the beam of my headlamp for the glowing eyes of leopards and lions. Or when I saw the thin, curving trails of spitting cobras in the sand. Or when I learned that thirty percent of the people in Namibia have AIDS.

Or when I stood in the grasses under an open sky and felt the warmth of the sun, and watched the looping flight of a cape glossy starling and heard the warm grating of cicadas in the soil around me, and thought: Why have I come here?

And thought: This is not my place.

I wanted so badly to not be afraid of it.

We spent our last full day cleaning up camp and organizing rhino forms, placing them in order and entering data into the laptop. In the hottest part of the afternoon, Erin began to vomit. She was sick for over an hour, then fell asleep. The rest of us boiled water for coffee in a kettle over the fire. After we had all drunk a cup or two, another student noticed the bottom of her mug and yelped—there was something there. It looked like insects' wings. She looked into the coffee press and found a half-dozen bees wedged under the screen. Then she looked into the kettle and screamed.

The bottom of the kettle was covered several inches thick with dead, crispy bees; when we shook it, they made a brittle, grating sound. All we could guess was that the swarm must have crawled in through the spout one by one, desperate for what little moisture remained inside. For the fifteen minutes or so that it took the water to boil, we had essentially been making bee tea, steeping their bodies into a hot broth. What little water remained at the bottom was thick and brown.

No one was sure if we would get sick from the bees. We sat there, feeling for something unpleasant in our guts, and finally decided we were fine. Probably. And then someone remembered Erin, who was sleeping away her illness in the shade of her tent. If she hadn't been sick, she too would have drunk the coffee.

But Erin is allergic to bees.

In the evening, after we had recovered from the afternoon's scare, Bernd made fresh *fetkok*, jelly donuts, to celebrate our last night. As we ate I found a scorpion on my leg, crawling up the back of my calf; I swallowed once, then twice, and managed to flick it off with a jelly knife. Fulai caught it in a jar so the students could see it up close—firelight shone on its dark shell, and its stinger straightened and curled like a beckoning finger.

We leaned in, raising the jar above our heads to see the scorpion's ridged belly, its sharp feet. Despite the jar, I felt a shiver of adrenaline in my chest. I thought

about what Bernd had said on the first day: "Fear is a way of being careful—it is the ultimate respect."

When we were done looking, Johannes released the scorpion on the far side of the riverbed. "We just be putting you here," he told the scorpion. "Thank you for sharing your home."

On the drive back to Windhoek a low haze spread across the horizon, what I took at first for fog. It obscured the hills so that even the closest were but brown outlines against a gray sky. I sat in the front seat with my window half-up, and it wasn't until I felt the sting of grains hitting my face that I realized the fog was sand.

It was funny, I thought, brushing the grit from my cheeks, how a thing could surprise you up close—fog to sand, and the sting of it through a window; a rhino at a hundred meters, and a rhino stopped suddenly before you; the desert itself. I had returned the rangefinder to Bernd that morning; my shoulders felt light, unfamiliar without the weight of it hanging before me, and when I touched the back of my neck I felt a crease where the leather cord had bitten my skin.

In fact, I was glad to be done with the rangefinder; I had begun to doubt the usefulness of it. Numbers, it seemed, were a poor measure of distance. After all, what of the distance between a night alone in the desert and a mere close call, a closed throat and a cup of coffee, a white man and his black assistants? What of the distance between me *then*, and me now?

Proximity, I realized, blurs perception; we are more frightened of the mouse hiding in our sleeping bag than we are of the elephant in the darkness beside us. The trick is to recognize this, to know when a situation crosses the boundary into *too close*. The trick is to see clearly through the glass.

We left the desert and passed through a field of dunes, where the wind was stronger. Around us, the landscape crumpled and folded like fabric. As the sun fell in the sky, the horizon melted purple, then blue, and the dunes turned shimmering, perfect colors, like a sea of opals. Lines of sand lifted from the ground and swam in the air, making patterns like the light cast off water.

It was one of those moments when the world lifts up and beneath it you glimpse something else, a place so big and different that when you breathe it fills you. I held each breath as long as I could.

PUBLICATION/AWARDS CREDITS

A Map of Here

Appeared in Colby magazine

Ice and Ashes

Honorable mention, Atlantic student writing contest 2010

Forthcoming in Appalachia (journal of mountaineering and conservation)

Life on Ice

Appeared in Writers on the Range, a division of High Country News

Magazine

Rangefinder Girl

First place winner, Atlantic student writing contest 2011

That's a Killer Look • Taking the Next Step to Keep Kids Safe • Repeal of Kid-Safe Products Act a Dangerous Step Backwards

All op-eds were published in the column Maine Today, which appears in the Morning Sentinel and the Kennebec Journal

Useless Bay

First place winner, Joseph Conrad/Williams Mystic Writing Contest

Wasteland (excerpt)

Forthcoming in Colby magazine