RAMBUNCTIOUS GARDEN

Saving Nature in a Post-Wild World

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We have lost a lot of nature in the past three hundred years—in both senses of the word *lost*. We have lost nature in the sense that much nature has been destroyed: where there was a tree, there is a house; where there was a creek, there is a pipe and a parking lot; where there were passenger pigeons and Steller's sea cows, there are now skins and bones in dimly lit museum galleries. But we have also lost nature in another sense. We have misplaced it. We have hidden nature from ourselves.

Our mistake has been thinking that nature is something "out there," far away. We watch it on TV, we read about it in glossy magazines. We imagine a place, somewhere distant, wild and free, a place with no people and no roads and no fences and no power lines, untouched by humanity's great grubby hands, unchanging except for the season's turn. This dream of pristine wilderness haunts us. It blinds us.

Many ecologists spend their lives studying the most pristine places they can find, and many conservationists spend their lives desperately trying to stop wilderness from changing. We cling to fragments of "virgin" or "old growth" forests, to the "last great places," the ever-rarer "intact ecosystems," but they slip through our fingers. Like slivers of soap, they

shrink and disappear. And we mourn. We are always mourning, because we can't make more of such places. Every year there are fewer of them than the year before.

This book is about a new way of seeing nature. Yes, nature is carefully managed national parks and vast boreal forest and uninhabited arctic. Nature is also the birds in your backyard; the bees whizzing down Fifth Avenue in Manhattan; the pines in rows in forest plantations; the blackberries and butterfly bushes that grow alongside the urban river; the Chinese tree-of-heaven or "ghetto palm" growing behind the corner store; the quail strutting through the farmer's field; the old field overgrown with weeds and shrubs and snakes and burrowing mammals; the jungle thick with plants labeled "invasive" pests; the carefully designed landscape garden; the green roof; the highway median; the five-hundred-year-old orchard folded into the heart of the Amazon; the avocado tree that sprouts in your compost pile.

Nature is almost everywhere. But wherever it is, there is one thing that nature is not: pristine. In 2011 there is no pristine wilderness on planet Earth. We've been changing the landscapes we inhabit for millennia, and these days our reach is truly global. Inhale. That breath has 36 percent more molecules of carbon dioxide than it would have had in 1750.[1] There is no going back. Certain stories are especially symbolic of this: bobcat families moving into foreclosed suburban homes;[2] Yellowstone moose birthing calves by roads where human presence protects them from bears,[3] songbirds giving full throat to complex car alarm sequences. But more significant are global phenomena like climate change, species movements, and large-scale transformations of land.

We are already running the whole Earth, whether we admit it or not. To run it consciously and effectively, we must admit our role and even embrace it. We must temper our romantic notion of untrammeled wilderness and find room next to it for the more nuanced notion of a global, half-wild rambunctious garden, tended by us.

This garden isn't restricted to parks and protected areas. The rambunctious garden is everywhere. Conservation can happen in parks, on farms, in the strips of land attached to rest stops and fast-food joints, in your backyard, on your roof, even in city traffic circles. Rambunctious gardening is proactive and optimistic; it creates more and more nature as it goes, rather than just building walls around the nature we have left.

Many conservationists are opening up their definitions of nature and embracing a whole suite of possible goals beyond the familiar "pristine wilderness" goal. They find that when they do, they can use all sorts of new tools and approaches, the stories of which will be told in the chapters to come. As they experiment, they are finding that the values that got them into conservation in the first place are still relevant. We can cherish evolution in action even if all the species struggling for existence aren't "native." We can protect ecological processes like soil formation and water filtration that benefit us. We can marvel at the diversity of life and fight its disappearance, even if that diversity occurs in unfamiliar places. We can find beauty in nature, even if signs of humanity are present. We can see the sublime in our own backyards, if we try.

But changing our ideas about nature isn't easy. It's hard for you and me; it's probably hardest for those who have spent their lives studying and protecting wilderness. The scientists who are trained to be dispassionate are often the most passionate and opinionated when it comes to what counts as nature and what is worth saving.

Even those who are interested in expanding their conception of nature run into problems. The notion of a stable, pristine wilderness as the ideal for every landscape is woven into the culture of ecology and conservation—especially in the United States. Take the *baseline*. Virtually every scientific study of environmental change uses or assumes a baseline. Baselines are reference states, typically a time in the past or a set of conditions, a zero point before all negative changes. In the past, a place's default baseline was often before Europeans arrived. Today, as we learn more about how indigenous inhabitants of places from Australia to the Americas changed their surroundings, it is sometimes set to before any humans arrived. For many conservationists, restoration to a prehuman or pre-European baseline is seen as healing a wounded or sick nature. For others, it is an ethical duty. We broke it; therefore we must fix it. Baselines thus typically don't just act as a scientific *before* to compare with an *after*. They become the *good*, the goal, the one correct state.

When conservationists restore a site or manage a park this way, they first set a baseline. Then they characterize the site at that time. What species existed then, in what proportion? Where were the rivers? How deep and wide were they, and how fast did they flow? Where was the shoreline? What properties did the soil have? Once they have picked a baseline and characterized it, they have to get down to the heavy lifting of wrestling the area backward in time. Some species are removed, others reintroduced. Rivers are engineered, islands are built of sand, trees are killed and left to provide rotting habitat for beetles, and so on.

But ecosystems are slippery, and setting a baseline is not straightforward. Take Hawaii, some of the remotest islands in the world, home to hundreds of species that live nowhere else, many of which are rare and at risk for extinction. Earlier ecologists might have used 1778, the year Captain James Cook landed in Hawaii, as the baseline date for the island chain. But restoring the islands' ecosystems to the way they were in 1777 would be restoring them to a state very much shaped by the Polynesians who had been living there for at least one thousand years: a semidomesticated landscape filled with species the Polynesians brought with them, including taro, sugarcane, pigs, chickens, and rats, and missing others, including at least fifty species of birds, who were hunted out by the first arrivals.[4]

But if we set a date thousands of years back, safely before any humans arrived, we run into another problem. Ecosystems are always changing, whether humans are involved or not. Ancient forests with trees thousands of years old may feel timeless to us. We are a short-lived species with a notoriously bad grasp of timescales longer than a few of our own generations. But from the point of view of a geologist or paleoecologist, ecosystems are in a constant dance, as their components compete, react, evolve, migrate, and form new communities. Geological upheaval, evolution, climatic cycles, fire, storms, and population dynamics see to it that nature is always changing. On Hawaii, volcanic activity wipes the slate clean on any given slope every few hundred years, and occasional new arrivals to the islands, washed ashore or drifting in on the wind, adapt to their new home and find a place for themselves in its ecosystems.

Once we pick a date from amid this muddle, another problem emerges. Even when we use all the scientific tools available to look backward in time, from fossil pollen records to the climate information enshrined in tree rings, we don't always know what places looked like thousands or even hundreds of years ago.

The final and perhaps most vexing issue with prehuman baselines is that they are increasingly impossible to achieve—either through restoration or management of wild areas. Every ecosystem, from the deepest heart of the largest national park to the weeds growing behind the local big-box store, has been touched by humans. We have stirred the global pot, moved species around, turned up the thermometer, domesticated a handful of plants and animals, and driven extinct many more. We have definitively changed the entire planet, and it is getting increasingly difficult to undo all these changes at any one place.

I saw the scale of the challenge first hand when I visited Hawaii in 2009. The lush tropical plants out the hotel window looked gorgeous, but I knew that many of them had been introduced by people and were now considered a threat to the native species. I also knew that Hawaii has been called "the extinction capital of the world," and that many of its beautiful birds are either gone or near gone. Here was "the biggest ecological catastrophe in the United States," in the words of a *St. Louis Post-Dispatch* reporter,[5] and yet the islands are thick with conservationists who have not given up on the ideal of Hawaii as it once was.

My first stop was a group of experimental field plots testing the feasibility of restoring lowland forests on the Big Island's wet side. The plots are hidden in a forest on the Hawaii Army National Guard Keaukaha Military Reservation. Growing on flat land with plenty of rain, most forests of this type had been cleared for agriculture. What was left, or what grew back, is now dominated by plants from places other than Hawaii.

Rebecca Ostertag of the University of Hawaii at Hilo explained why these "invaders" are so prevalent on Hawaii. Hawaiian plants, having evolved in isolation for up to 30 million years,[6] generally grow slowly and use resources less efficiently than continental plants, which evolved with more competition. Similarly, Hawaiian birds and other animals are mostly helpless against introduced diseases. Avian malaria has knocked off many bird

species; there were no mosquitoes on the islands until recently, so birds there never evolved any defenses to the mosquito-borne disease. Hawaiian raspberries and roses have even lost their thorns, and Hawaiian mints their minty defense chemicals, because there were no plant-eating animals around to fend off.[7] Such mellow Hawaiian species are pushovers for the scrappier mainland species that humans brought to the islands. Today half of the plants in Hawaii are nonnative.[8] In many lowland forests only the large trees are native; under them grows a carpet of introduced seedlings, just waiting for the day the giant natives fall. Some ecologists call such places "forests of the living dead."

At the army base, mynah birds from Asia stood in the road. The air was soft and humid. Ostertag and I met up with her colleague, Susan Cordell of the U.S. Forest Service, and a graduate student named Joe Mascaro from the University of Wisconsin, Milwaukee. Together we headed out to the study plots. After hopping a fence intended to keep out feral pigs, we pushed through a jungle of foliage from everywhere: trumpet tree with its huge star-shaped leaves, a native of Mexico, Central America, and Colombia; bingabing, a small tree with big parasol-like leaves, from the Philippines; tasty strawberry guava, from the Atlantic Coast of Brazil; purple-flowered Asian melastome; "Koster's curse," a little shrub originally from Mexico and parts of South America; and albizia, another immigrant from Southeast Asia. Many of these species were introduced not only deliberately but methodically—aerially seeded in the 1920s and 1930s after large forest fires to prevent erosion. The experts figured that Hawaiian plants would grow too slowly to do the job effectively. The resulting cosmopolitan forest is green and dense, with creepers hanging everywhere. Underfoot, dead leaves like starched, crumpled brown napkins made a terrific crunch.

Suddenly we stepped into a clearing. Here plants were spaced widely apart, with black lava rock covered in chartreuse moss visible in between. This was one of the study plots: small squares in which every single nonnative plant had been ripped out by hand. To get these spaces to a purely native state, researchers had to pull up and remove almost half the vegetation, a process that took about a week's worth of labor per thousand

square feet for the initial clearing and epic bouts of weeding thereafter.[9] As a result, the plots look a bit sad and empty, like someone's living room in the middle of a move-out.

Here, I could get a better look at the typically less showy Hawaiian natives, including tree ferns; lama, a hardwood in the ebony family; the vaguely Mediterranean-looking 'ohi'a tree with feathery bunches of bright red stamens; and the sweet-smelling maile vine, used for making fragrant leis.

The plots weren't created to be showplaces, however, but as experiments to see whether a native Hawaiian forest would bounce back if all the introduced species were removed. With all those aggressive tropical invaders exiled, would the native flora tap into the soil nutrients, rain, and newly available sunlight and grow vigorously to fill up the space? When I visited, it had been five years since the experiments began. Disappointingly, the mature native trees had grown very little. As Ostertag and Cordell put it, "The native trees may either be responding to the treatments very slowly and still undetectably, or they may be unable to respond at all."[10] The researchers were pleased, however, to see quite a few native seedlings appear on the sun-dappled forest floor.

These removal plots were weeded out for a specific experiment. But they also represent, in miniature, what many conservationists would love to do for huge swaths of the planet: rip out the introduced species, make way for the natives, and return the area to the way it used to be, making the baseline the goal.

But Ostertag and Cordell's lowland wet forest, like just about everywhere else on the planet, has baseline problems. The area was burning-hot lava no more than fifteen hundred years ago,[11] so there is a chance that humans had already arrived on the island by the time plants were reestablishing the area, leaving no clean prehuman window of time to look back to. However, the researchers can get around that by looking at nearby, similar forest that predates human arrival. More problematic is the characterization of that moment in time. No one catalogued this kind of forest early enough, so there may have been other native species here that disappeared without a trace, lost to record or memory. "There are only about

five native tree species here," said Ostertag, as she looked around at the unassuming native plants. "It seems to me there probably would have been more than five."

And the final problem is the sheer amount of work involved. Their baseline just isn't achievable without spending a huge amount of money and time. "I think that people that are interested in protecting Hawaii's flora and fauna have resigned themselves to it being in postage-stamp-size reserves," said Cordell, sadly.

Of course, Osterag and Cordell's forest is in particularly bad shape. But are ecosystems that aren't so trashed perhaps redeemable? The answer is no, at least not in Hawaii. Nothing is going to go all the way back to the way it used to be, not even the Laupahoehoe Natural Area Reserve, so valued for its pristineness that it is used as a reference area—a contemporary baseline—for all similar forests. Scientists have erected a data-recording tower as tall as the canopy of the forest for characterizing the ecosystem. The idea is that instead of recreating the past, they will use this place as a proxy for the past. But even as they built their tower, scientists knew they were grasping at straws. The forest is just changing too fast.

I visited Laupahoehoe after leaving Ostertag and Cordell's poignant little plots. My guide was Christian Giardina, a lean, silver-haired government ecologist. To reach the data-recording tower, we had to drive up the side of a mountain. As we climbed, the most obvious human influences fell away one by one. Down low, pheasants from India scampered across the dirt road. We drove by dense forests of nonnative strawberry guava, until they thinned out. At some point we passed beyond the reach of the mosquitoes that bear avian malaria (they can't take the cold). We made a quick stop at the "valley of the giants" to look at enormous hundreds-of-years-old native ʻōhiʻa and koa trees. Tall straight koa, prized and liberally used for canoe building, are now rare on the islands.[12] These giants towered above an increasingly tangled understory of introduced plants like ginger and strawberry guava.

At last, up on the heights, we found the reference forest. Compared to the bustling jungle below, everything growing here felt large, well established, widely spaced, and dripping with moisture. The result was an impression

of tranquillity. Tree ferns unrolled their fronds five feet above Giardina's head, and we walked on spongy dark turf littered with the perfect crescent-moon leaves of the koa tree. For him, this is Hawaii at its best. But visits are bittersweet. Even here, in the most unchanged place on the Big Island, its native character may already be anachronistic. "We know it is not pristine," said Giardina. "The carbon dioxide is elevated; key fruit dispersers and pollinators are extinct. But it is the best that we have." He mused on the inevitable changes that would occur when the "invasion front" we passed on the road up made it to the top of the mountain and the climate warmed. Already there were signs. Between the koa leaves, the forest floor was pinpointed with tiny seedlings of introduced species poised to inherit the space. "This will be transformed," he said. "Aesthetically it will be very different. The species composition will be different. You won't be able to walk through. I get sad thinking about it: a forest type unique on the planet, and it will just get snuffed out."

Despite knowing in their hearts that they cannot turn back the clock, many conservation and most restoration projects explicitly try to recreate a former time, like Ostertag and Cordell's plots, but on a larger scale. This still seems like the most obvious goal to many conservationists. But these projects are often incredibly difficult and expensive, which means that unless the governments of the world suddenly decide to spend vastly more money on conservation, they will always be small, like little islands of the past. Or at least little islands *like* the past.

Such "islands like the past" spangle the planet here and there. Many U.S. national parks are managed to look as they did in colonial or frontier days. This has often meant that managers focus on stopping things from changing—which in these days of climate change means much more than keeping hands off. But other places have been actively restored, and it is here that things get most difficult and expensive.

In the summer of 2009 I visited one of the thousands of such restoration projects. The Australian Wildlife Conservancy is attempting to return a small area of the outback to the conditions of 1770, when Captain Cook (same Cook; he got around) first landed in Australia, some 40,000 years after people first arrived. "Australia can give up on a pre-aboriginal landscape,

but there is a chance to go back to pre-European times," says Matt Hayward, an Australian Wildlife Conservancy ecologist. Easier said than done.

Scotia Sanctuary is a 250-square-mile tract of land about 90 miles upstream of the confluence of the Murray and Darling rivers, northeast of Melbourne, Australia.[13] Many species of eucalyptus grow here, emerging from red sand and splitting at ground level into many small trunks, each shedding bark and sporting branches with small, tough leaves adapted to the arid heat. Underground, these trunks all grow from a swollen root called a lignotuber, some of which are perhaps one thousand years old, which will survive even if fire destroys the aboveground tree. In between the trees are fairy rings of dagger-sharp spinifex grass.

The Sanctuary includes two fifteen-mile-square areas enclosed by what looks like a prison fence—serious, sturdy, tall, and electrified. The landscape inside these fences looks much like that outside, except the ground is pitted with numberless fist-sized holes, the traces of several threatened species of mostly nocturnal marsupials, including woylies, boodies, numbats, bilbies, and wallabies. These little creatures have been declining continentwide since Europeans—and their favorite animal companions—arrived. They have two strikes against them: they evolved without many predators to keep their survival skills up, and they aren't terribly bright. Some scientists argue that the poor soils of Australia created a world where big brains were just too energetically expensive.[14]

Several of these marsupials were brought here from their last wild haunts, offshore islands free of introduced predators. Cats and foxes, introduced as pets and for hunting, respectively, are devastating predators for the crew. Some species have only a few hundred individuals left. A population of bridled nailtail wallabies, kept inside another fence within the main fence, are the "backup" reserve for the whole species, which is poised on a knife's edge.

Over coffee at the communal table at Scotia's main building, I interviewed Tony Cathcart, a mild-eyed fellow in thick glasses, a V-neck sweater, and baseball cap who got rid of all the introduced cats, rabbits, goats, and foxes in Stage Two, the second of the two fenced blocks. His previous jobs had included bellhop, computer technician, and painter, but feral animal control may be his true calling. The job requires an incredible patience and

commitment. Leave just two rabbits alive inside the fence, and in a few years the nibbling hordes will be back. You have to get every last animal.

Cathcart told me how he cleared Stage Two. He was able to shoot out the goats in a matter of days. Rabbits were harder. Every day he put out carrot bait, so that every rabbit's hole—and there were thousands of them—was within about five hundred feet of some carrots. The rabbits would tentatively nibble and learn to trust the new food source. On the third or fourth day, the carrots would be poisoned. Cathcart repeated this routine three times, running through 12,500 pounds of carrots, killing the majority of the rabbits. Then he switched to "spot cleaning" to get the remaining few.

Foxes have large ranges, so only about a dozen lived inside the fence. But they are also smart. For each fox, he learned its habits and was eventually able to find perfect places to trap or poison them. He also trapped the cats. But they too are smart. "The average in Australia is that it takes one hundred nights per cat," he said. "My first cat took one hundred eighty seven nights." When he finally arrived, one dawn, at the trap to find a gray figure inside, he had mixed feelings.

The whole process took eighteen months, and the key to making it work, he says, was "perseverance, perseverance, perseverance." Eighteen months is actually pretty darn fast. It took Cathcart's predecessor five years to clear Stage One.

"It isn't really about the killing," he said, as we rinsed out our coffee cups. "It's about seeing the grass come back or the animals you haven't seen before—the little cute-and-furries." There are further effects as well. All that digging the cute-and-furries do turns the earth; their holes catch organic detritus and moisture. Scientists at Scotia are looking at how these changes affect soil nutrient turnover, bugs, and plant growth.

More than six years of effort for about thirty square miles: unless the whole country decides that its number-one priority is ridding Australia of feral animals, these little fenced islands are all that pristine-focused conservationists can hope for. Luckily for the marsupials, they'll never know their territories are inside de facto zoos. And the cats, foxes, and rabbits are a continuing threat, just outside the fence. To hold the blocks to a simulacrum of 1770, conservationists must shoot, poison, trap, fence, and watch, forever watch, lest the excluded species find their way back in.

The day after a rare rain, I went out into the reserve with Matt Hayward and his family. Streamers of bark blew in the wind. Dead leaves and twigs rot very slowly here, so they blow about and form little drifts in marsupial holes or against the base of spinifex clumps. The wet had brought out countless shiny brown cockroaches, and Hayward's girls—Madeleine, three and a half, and Zoe, nearly two—were intrigued. They ran around after them and asked their daddy to pick them up. They watched as a scorpion pulled one into his burrow—at which point their mother suggested they put shoes and socks on. We visited a malleefowl nest—a huge raised platform of earth and sticks and leaves, maybe six feet across, all made by one male malleefowl, a bird the size of a chicken. Zoe patted the nest thoughtfully with a stick. In some mud, we spotted kangaroo and emu tracks. In an odd way, these girls are just as oblivious as the marsupials. They are spending their childhood in an anachronism, an Australia where numbats and malleefowl are all around them, where bilbies come out at night with shining eyes.

Holding small areas like Scotia to states that resemble historical baselines may be possible, depending on where the area is and what date one would like to return it to. But to do it will take human intervention, both in the beginning and indefinitely into the future. A historically faithful ecosystem is necessarily a heavily managed ecosystem. It is not quite the "pristine wilderness" many nature lovers look to as the ideal. And there's the paradox that unravels the idea of "pristine wilderness." If we define *wild* as "unmanaged," then the ecosystems that look the most pristine are perhaps the least likely to be truly wild.

To be sure, this is not to say that reserves like those at Scotia are not worth having, or that Cathcart spent eighteen months chasing a dream. Even if we don't care about 1770, we may need such fenced islands if we want to avoid the extinctions of the cute-and-furries. Managed, fenced areas may well be the only places that many native Australian animals can live, given the unlikelihood of ridding the whole continent of foxes and cats. "Maybe in a hundred or a thousand years they evolve resistance," says Hayward. "That's more likely than eradication of predators."

But managing to avoid extinctions is subtly different from managing to recreate 1770. For one thing, managing to avoid extinctions is actually achievable.

In the last ten years or so, many scientists have moved beyond the notion that the goal for any piece of land is returning it to an unobtainable baseline. They are rejecting a view of the world that says a place must be completely "pristine" to count as nature; that view would imply that there are only two possible future states for most ecosystems: perpetual weeding and perpetual watching, or total failure. They are embracing instead a wider vision of nature managed for a wider array of goals. Instead of focusing on the past, they are looking to the future and asking themselves what they'd like it to look like.

Back on Hawaii's Big Island, as we thrashed through the nonnative-dominated forest that encircled the weeded plots, Ostertag and Cordell mostly saw failure. But Joe Mascaro, the grad student who accompanied us, saw something less value-laden. He saw the future, and as an ecologist, he found it interesting. He saw plants interacting together in new ways, with new creatures dispersing their seeds, new competitions for resources. He expects that there will be some casualties when species come in contact for the first time—"local extinctions and whole ecosystem types that will evaporate," he predicts—but he does not expect that the resulting ecosystems will be worthless just because they are changed. They will still store carbon in the bodies of their trees, keeping it out of the atmosphere where it would contribute to global warming. They will still harbor many species. They will still smell cool and green. At the very least, he says, they should be studied, because they are probably more representative of today's Earth than any so-called "pristine" forest. "These ecosystems, like it or not, are going to be driving most of the natural processes on Earth," he says.

Forests like the one we walked through can be managed to achieve a smorgasbord of alternative goals, based on the various things that people care about. One section might be managed as part of a carbon-sequestration project tied into the global carbon-trading market. This wouldn't require native trees, just lots of them. Other sections might be semiweeded into quasi-gardens where Hawaiians can gather plants of cultural importance to make leis, canoes, and so on. Another section might look a bit like Ostertag and Cordell's plots and be used to teach schoolchildren about the ecological history of their home state. And if there are any species in the forest at special risk for extinction, such as birds threatened by avian

malaria, sections could be managed by scientists specifically to support them.

Around the world, no single goal will provide for a sensible, well-rounded conservation program. For example, if we focus only on avoiding extinctions, then we could end up with a zoolike world where all species are carefully tended by man but are separated from the ecosystems in which they once lived, died, and evolved. Similarly, a conservation program that focused only on what ecosystems can do for humans would have no time for ecosystems or species that don't contribute to human well-being in an obvious way.

Layering goals and managing landscapes with an eye to the future, rather than the past, is the cutting edge of conservation, but some ecologists, conservationists, and citizen environmentalists just aren't there yet. Among some conservationists, reverence for particular historic ecosystems can approach the religious.

One May evening at a Hilo restaurant, over a glass of wine, I talked to Giardina, my guide to the Laupahoehoe Natural Area Reserve, about his professional quest to eliminate introduced strawberry guava from the island. Giardina believes that historical ecosystems are superior to the new mixes of species emerging in the human-dominated present. And it both shocks him that other people do not share this view, and occasionally unsettles him that he, a scientist, believes it so implicitly.

"Are we so religious about this biodiversity ethic that we need to be called out on it?" he wonders. "I mean, one plant is photosynthesizing as well as another, right? The chloroplast in one plant is the same as the chloroplast in any plant. The rest is just window dressing—a series of tubes to get water or nutrients to that chloroplast. Who cares if it is a chloroplast in ʻōhiʻa or guava? If you really dig down to why we should care, you end up with nothing. You are running on faith that we should care."

This faith that native ecosystems are better than changed ecosystems is so pervasive in fields like ecology that it has become an unquestioned assumption. One often finds it built into experiments, which sometimes automatically classify any human change to nature as "degradation." Until recently, it lurked behind conservation organizations' mission statements, which exalted the untouched places above all others. And it still saturates

nature writing and nature documentaries, where the wild is always better than the tame. But it wasn't always so. The cult of pristine wilderness is a cultural construction, and a relatively new one. It was born, like so many new creeds, in America.