



An engraving of Roelandt Savery's dodo portrait (circa 1625), from Hugh Strickland and Alexander Melville's *The Dodo and Its Kindred* (1848)

## Icons of Oblivion

by ARI KELMAN

In the early 1780s Thomas Jefferson, having just witnessed the birth of a nation, struggled to comprehend the death of an entire species. Jefferson wondered if it could be possible that the animal we know today as the mammoth had entirely ceased to exist. Gathering observations for one of this country's first great scientific and literary masterpieces, *Notes on the State of Virginia*, Jefferson decided that the answer had to be no. His mind shackled by a venerable scientific theory known as the great chain of being—the notion that all life in God's creation took the form of hierarchical links that could never be sundered—he refused to accept the reality of extinction. “Such is the economy of nature,” Jefferson wrote, “that no instance can be produced of her having permitted any one race of her animals to become extinct; of her having formed any link in her great work so weak as to be broken.” Waving away the absence of mammoths in the settled portion of the continent, Jefferson speculated that perhaps the elusive giant ranged outside the gaze of contemporary observers, lumbering throughout the landscape onto which he routinely projected his dreams for the young United States: the West.

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### Nature's Ghosts

*Confronting Extinction From the Age of Jefferson to the Age of Ecology.*

By Mark V. Barrow Jr.  
Chicago. 497 pp. \$35.

### Rewilding the World

*Dispatches From the Conservation Revolution.*

By Caroline Fraser.  
Metropolitan. 400 pp. \$28.50.

Beyond bowing to the scientific state of the art, Jefferson the naturalist remained answerable to Jefferson the nationalist. Europe's great cities might feature sumptuous palaces and vast cathedrals, he allowed, as well as libraries groaning beneath the weight of humankind's accumulated knowledge and museums stocked with centuries' worth of masterpieces. But the United States boasted natural wonders that beggared description. Abundance in the New World seemingly overflowed into limitlessness: forests stretching to the horizon, mountain ranges of surpassing majesty and curiosities like Virginia's Natural Bridge, which Jefferson owned and labeled “the most sublime of Nature's works.” For Jefferson the patriot, America's natural advantages counterbalanced Europe's prodigious cultural patrimony. So in picking a fight with the Old World, he no doubt found

it prudent to recruit a massive beast like the mammoth to his side.

A worldview in which extinction appeared beyond the pale of the natural order and an affront to national destiny now sounds at once anachronistic and alluring. Today we find ourselves in the midst of what scientists believe is the sixth great era of extinction. Five times previously, between 450 million and 65 million years ago, huge numbers of species died off, including during the Cretaceous period, when, after a gigantic asteroid or volcanic eruptions abruptly altered the earth's environment, most of the dinosaurs shuffled off this mortal coil. The current wave of extinctions, which began within the past 100,000 years, is different; people are the cause of the disruption this time. As modern humans scattered across the globe, wherever they went they brought with them exotic diseases and seeds of invasive species. They exploited the resources they found: depleting fisheries, felling vast stands of timber and overhunting game. And as their numbers grew—from roughly 5 million 10,000 years ago to nearly 7 billion today—the habitats they despoiled precipitated the current crisis. By the century's end, perhaps 50 percent of the now extant species will have died off. An alphabet soup of animals has already disappeared: the Arabian gazelle, the bulldog rat, the Caribbean monk seal. Hundreds of others are gone, and an unknown number will likely soon join them.

Mark Barrow is less concerned with gazing into the hazy future than clarifying the growing awareness of humankind's role in extinction. In *Nature's Ghosts*, he explains how naturalists, driven by affection for the nonhuman world, gradually became worried about the “specter of extinction” and eventually “mobilized to act.” By following their example, Barrow suggests, we might still chart a course from this precarious moment to a future of biodiversity.

The course first changed around the turn of the nineteenth century when Georges Cuvier, a French naturalist, snapped the hold the great chain of being had on scientific discourse by pointing to irrefutable evidence of extinction embedded in the fossil record. Scientists began asking how and why, rather than if, animals had disappeared through the years. By the 1830s, British geologist Charles Lyell had made another logical leap, positing a competitive natural order. Species, Lyell insisted, were forever locked in a “struggle for existence.”

From there, many naturalists, including Charles Darwin, focused on the extinction of island animals, especially flightless birds

like the dodo. Popularly depicted as having resembled a botched hybrid of a goose, a turkey and an ostrich, the ungainly dodo became, in Barrow's words, a "veritable icon of oblivion." But rather than mourning the bird's loss, most scientists at the time blamed the victim. Too slow, too stupid, too fat, the dodo, conventional wisdom dictated, had deserved its fate. Other extinct animals, including the moa (whose gangly skeleton suggests an early prototype for the bird Kevin from Pixar's recent film *Up*), were also scorned by naturalists, who hadn't yet begun advocating for the protection of species.

**W**hen Europeans first arrived in North America, millions of bison thundered across the continent's interior, and billions of passenger pigeons sometimes blotted out the sun when they took flight. But by 1900 these animals had all but disappeared, preyed on by hunters serving an increasingly voracious market for hides and feathers. Around the same time, a second industrial revolution transformed the nation's economy. Hundreds of thousands of immigrants, seeking a better life, began arriving annually; American cities swelled to previously unfathomable sizes; and settlers scrambled overland to fill the last unoccupied corners of the West, "closing the frontier," as Frederick Jackson Turner put it in a widely cited address delivered at the Chicago World's Fair in 1893. The pace and scale of these changes threatened to overwhelm increasingly nostalgic Americans, who clung to threatened symbols of the nation's past.

For many concerned onlookers, steeped in Jeffersonian and Turnerian intellectual currents, the West served as a synecdoche for the United States, and the imperiled bison served as a synecdoche for the West. If the rugged bison died out, then so too, they worried, might America, a nation they felt was being feminized by an economy that alienated workers from the land; radicalized by labor activists preaching class warfare in exploding cities; and mongrelized by ostensibly unassimilable immigrants (Catholics, Asians and Jews).

So when William Hornaday, a naturalist at the Smithsonian, realized in 1886 that fewer than 300 bison still roamed the West, he panicked. There was nothing else to do, he reasoned, but embark on a scientific expedition to shoot or capture some of the remaining beasts. Since the prevailing natural history of Hornaday's times was, in Barrow's words, "firmly rooted in collection and taxonomy," such a rash cure seemed far better than the disease. But upon return-

ing home, Hornaday blazed a new trail. He didn't just stuff, catalog and display his quarry. He also called for protection of the species, experimented with captive breeding programs and considered methods of restocking the Great Plains with bison. A year later, Hornaday had six of the animals grazing on the National Mall. A little more than a decade after that, the Bronx Zoo featured some of his bison. And at the dawn of the century he loosed a herd to ramble in an Oklahoma wildlife sanctuary. The bison would survive, a symbol not just of the nation but also of the growing efficacy of an emerging conservation movement.

The passenger pigeon, by contrast, went the way of the dodo. Although the shaggy bison is hardly a fetching beast, its utility as an icon far outstripped the pigeon's. Pigeons aren't cuddly. Even though new conservation organizations like the Audubon Society lobbied on the bird's behalf, by 1909 the last pair of passenger pigeons, George and Martha Washington, were perched in the Cincinnati Zoo. George died a year later, and Martha followed in 1914. Zookeepers encased her corpse in ice and shipped it to the Smithsonian, where the ornithologist who performed the autopsy issued a dire prediction: "The day will come when practically all the world's avifauna will have become utterly extinct. Such a fate is coming to pass now, with far greater rapidity than most people realize." Museum officials then mounted and displayed Martha's body, a macabre warning to visitors that even the most abundant species, absent stewardship, might soon disappear. A few years later the last Carolina parakeet died, also at the Cincinnati Zoo. One wonders if the animals still at the zoo, apparently a cradle of extinction, sought transfers to other facilities.

**T**hroughout *Nature's Ghosts*, Barrow sympathizes with the naturalists he studies yet almost never ignores their warts. Hornaday, for instance, was often a crank, his advocacy for animals born in part out of anxieties over racial decay. In 1913 he published a 400-page call to arms, *Our Vanishing Wildlife*, demanding protection for threatened species. In one breath he extolled the virtues of "gentlemen sportsmen," the white knights who, he argued, formed the "bone and sinew of wild life preservation." But in the next he damned so-called pot hunters, people who took game to feed their families. African-Americans and Southern European immigrants, whom he referred to as "pestilence that walketh at noonday," came in for especially harsh treatment. Hornaday had plenty of company—

men like Theodore Roosevelt and Madison Grant who, Barrow suggests, "tended to be deeply ambivalent about the forces of modernity that were transforming the American landscape." Their ambivalence often manifested itself as racism, xenophobia or blood lust. During his 1909 expedition to Africa, Roosevelt assured the world of his virility by sponsoring a genteel blood bath: eleven elephants, fourteen rhinoceroses and seventeen lions counted among the more than 500 animals killed for sport.

Only Barrow's treatment of Aldo Leopold, a secular saint in the pantheon of modern American environmentalism, flirts with hagiography. In the years between 1900 and 1940, federal authorities, including Leopold, hunted predators far more frequently than they protected them. As late as 1931 the Biological Survey devoted three-quarters of its annual budget to eradicating animals like the coyote and the gray wolf. At that time, Leopold, a federal forester and devotee of William Hornaday's, began expressing doubts about the killing after he studied the notorious Kaibab deer crisis.

In 1906, eager to increase the number of mule deer in the Kaibab National Forest, sited on the Grand Canyon's North Rim, the Biological Survey began systematically eliminating all the predators in the area. Within fifteen years an exploding deer population had run short of food. Disease and hunger then began culling the herd, work that predators once would have done. A great die-off ensued. Leopold diagnosed the problem in 1933: overweening hubris. His solution? Apply an ecological worldview, focused on the interconnectedness of all organisms, to managing wildlife. Two years later he helped found the Wilderness Society, and he soon published "Thinking Like a Mountain," still a sacred text for environmentalists. In that essay, Leopold recalls an episode from his days as a young forester, when he killed a mother wolf. "We reached the old wolf in time to watch a fierce green fire dying in her eyes," he writes. "I was young then, and full of trigger itch; I thought that because few wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the fierce green fire die, I sensed that neither the wolf nor the mountain agreed with such a view." Leopold's epiphany became the foundation for what he called a "land ethic," the idea that people must extend their ethical considerations to include other members of their complex, interwoven biotic community, including all manner of nonhuman species.

The postwar years in the United States, Barrow argues, became an "Age of Ecology."

Confronted by the apocalyptic threat of nuclear annihilation, many Americans embraced ecological tenets and joined a popular environmental movement. In these same years, naturalists, whose worldview often owed more to Aldo Leopold than Thomas Jefferson, increasingly embraced activism and found a willing audience among the public, and eventually within the government. Political will rose to meet the environmental crisis of the '60s and '70s, leading to passage of endangered species acts in 1966, 1969 and 1973. This high-water mark lingered until the mid-1990s, when Congress, under Newt Gingrich, began rolling back environmental regulations. The United States, Barrow concludes, has "effectively abandoned its long-established role as a world leader in endangered species protection."

In *Rewilding the World*, Caroline Fraser travels the globe, visiting sites where naturalists are struggling to return habitats to a wild state. Rather than defining her terms—she never explains precisely what she means by "wild," for instance—Fraser tells inspiring stories about scientists reintroducing wolves in the American West, creating wilderness corridors in Latin America,

protecting forests in Europe, opening peace parks in the Middle East, saving elephants and big cats in Africa and restoring ruined agricultural land in Australia. Fraser's subjects are thinking big, sometimes working on a continental scale. She claims that they offer perhaps the last and certainly the best hope for a planet teetering on the brink of biotic collapse. "Conservation biology and its epiphanies," Fraser notes, "constitute a latter-day Copernican revolution. Just as Copernicus revealed that the earth was not the fixed center of the universe, so conservation biologists have found that *Homo sapiens* is not the independent actor he has imagined himself to be." She is, in sum, a true believer in the high church of ecology. So while Barrow the scholar typically moderates his tone and enthusiasm, Fraser the acolyte sings her subjects' praises.

Except when she doesn't. For every success story recounted in *Rewilding the World*, there are multiple tales of catastrophic failure. On one side of the ledger stands a massive preserve in Costa Rica, its future bright because one of its creators, a visionary biologist named Dan Janzen, understands not only the region's delicate ecology but also the vagaries of high finance. Janzen had the foresight to create a huge endowment for the park, a critical component of what he calls sustainable conservation. On the other side of the ledger, though, are wolves being slaughtered by irate ranchers in the desert Southwest; big cats and elephants being poached by tribal people in Africa, hunters too hungry to be troubled by conservation politics; and potentially vibrant peace parks sitting empty along the borders of North and South Korea, India and Pakistan, Iran and Iraq, and Israel and Jordan, as the parks' founders wait for peace to arrive in these regions.

Fraser, like Barrow, suggests that such failures are often rooted in history. In Africa, for example, conservationists once served as agents of colonialism, much as in the United States activists like William Hornaday advocated dispossessing Native Americans of land that could be transformed into parks. Oddly, though, Fraser doesn't answer contemporary critics, even when they crop up in her book, who believe that the modern environmental movement hasn't transcended its roots, that it remains too top-down and that rewilding is a luxury only elites can afford. For Fraser, such complaints are beside the point. In her view, "the environment must become a top priority" or the planet will enter a prolonged "demographic winter." The crisis is existential: rewilding is a matter of life or death for everyone. That may be true, but it ignores the

thorny politics of environmentalism, the reality that while scientists can identify endangered animals, they usually cannot preserve species without marshaling popular support and political will to their side. Instead of grappling with this issue, Fraser offers doomsday predictions and a discordant anecdote about her own engagement with rewilding—she feeds threatened prairie dogs discarded produce from Whole Foods.

The good news is that absent ongoing degradation, it turns out many threatened species and the landscapes they inhabit have rebounded remarkably quickly. But there's a hitch. The conditions most conducive to fostering an ecosystem's rebirth are deadly to human beings. In the wake of the cold war, for example, scientists discovered that what had been known as the Death Zone, the narrow parcel of land separating East from West Germany, was among "the most undisturbed natural areas" in Europe. Similarly, intractable strife has transformed the Korean Demilitarized Zone into an "Eden" entirely given over to wild nature, but only because it's a no man's land. As Fraser notes: "The 38th parallel, a border 155 miles long and 2 1/2 miles wide, guarded by two million North and South Korean soldiers, is believed to be the best-preserved piece of land on earth. It is also the most dangerous. No human being has set foot in it in fifty-five years." So long as war must serve as rewilding's most potent ally, Aldo Leopold's land ethic remains little more than a utopian dream.

And so, even as Fraser demonstrates that "land and wildlife recover when we leave them alone," she admits that deeper questions linger: "Can we find the will to restrain ourselves without the threat of annihilation? Can we do it in time?" On balance, *Rewilding the World* offers readers at best ambivalent answers. It seems that too many people remain enthralled by myths of abundance, or by the idea that the planet belongs to the human race; they doubt environmentalists' good faith, or live in circumstances so desperate that subsistence understandably supersedes conservation as a concern. For these people, sharing the planet with their nonhuman neighbors, on something like equal terms, seems as unlikely an outcome as extinction once did to eighteenth-century naturalists. Fraser remains resolute, going so far as to report on a futuristic rewilding scheme. Scientists recently discovered a beautifully preserved mammoth whose DNA, she says, "may, one day, help to resurrect her species." Jefferson, who in life rarely shied away from gloating, may just have stirred in his crypt and muttered, "I told you so." ■

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