

Introduction: From the End of Nature to the Beginning of the Anthropocene

Extinctions in a Bag

The Muji store I walked into in a Hong Kong shopping mall in November 2010 had all the usual hallmarks of this Japanese retail chain: housewares, furniture, and clothing designed with clean minimalism, muted colors, and elegant functionality. Mujirushi Ryōhin, whose Japanese name 無印良品 translates as “No Brand Quality Goods,” has made a brand name out of the refusal to brand, a logo of “no logo.” It caters to upper-middle-class longings for the return to a simple life in the midst of urban complexity, with an emphasis on quality, minimalism, recycling, and reduced waste. Not that everybody sees the charm—a German friend of mine once referred to Muji dismissively as “the Japanese Ikea”—but its appeal is widespread enough that the chain now has stores all over East Asia, western Europe, and North America.

During the Christmas season, Muji departs from its basic principle, which is always sticking to the same lineup of goods so customers can easily replace lost or broken parts, and offers more unique gift items. That year, among wooden toys, tin robots, and delicate stationery, a pile of small linen drawstring bags with the words “Extinct Species” printed on them drew my eye. Each contained a set of ten

small wooden animals, carved toy replicas of ten extinct species from around the world (fig. 1), whose Latin names were indicated along with their place of origin on a delightfully Japanocentric paper map (fig. 2).

I bought several of these bags—I had begun to be interested in endangered and extinct species several years before—without being sure for whom, exactly, this would turn out to be an appropriate gift. I had repeatedly given dinosaur-related presents to friends' children who were at the age when a dinosaur obsession seems well-nigh inescapable. But these toy animals seemed too simple and unspectacular by comparison, and more sinister in their implication: after all, these were all species for whose extinction, unlike that of the dinosaurs, humans were directly or indirectly responsible. What does it mean to give a set of extinct-species toys to a kid to play with or to an adult to enjoy aesthetically, I wondered? Why do we produce and consume replicas and images of endangered and extinct species as commodities, and with what effects? Do they draw attention to an urgent environmental crisis or, on the contrary, trivialize it? Do they use an everyday object slyly to alert us to the problem, or do they help to integrate biodiversity loss into everyday routines to the point where it does not seem disastrous or even extraordinary anymore? In the years that followed, as I continued to research this book, and as I read popular science books, novels, and poems about endangered species, watched documentaries, and looked at photographs, paintings, and Internet art, these questions returned to me again and again.

Why do we care about nonhuman species at risk? In asking this question, *Imagining Extinction* departs from the usual emphasis of popular or academic books on endangered species, which typically seek to convince their readers that the current biodiversity loss is a major crisis, that we do not care enough collectively, that we need to care and do more to rescue species at risk, and that readers should participate in this concern and contribute to conservation efforts. I believe these are valid and important objectives—and there are hundreds of books and documentary films, thousands of photographs, and tens of thousands of essays, articles, and websites that aim to do exactly these things. The sheer volume of texts and images concerning particular endangered species or the general panorama of biodiversity loss has by now turned into so large-scale a phenomenon that it deserves the attention of cultural scholars.

Driven by a growing interest in animals and plants, both domestic and wild, I began to read books and watch films about endangered species around 2005. The broad consensus of these works was that at the turn of the third millennium, humankind likely faces a mass extinction of a kind that has occurred only five times before in the 3.5 billion years



FIGURE 1 Set of “Extinct Species” toy figures, Mujirushi Ryōhin (2010). Author’s photograph.

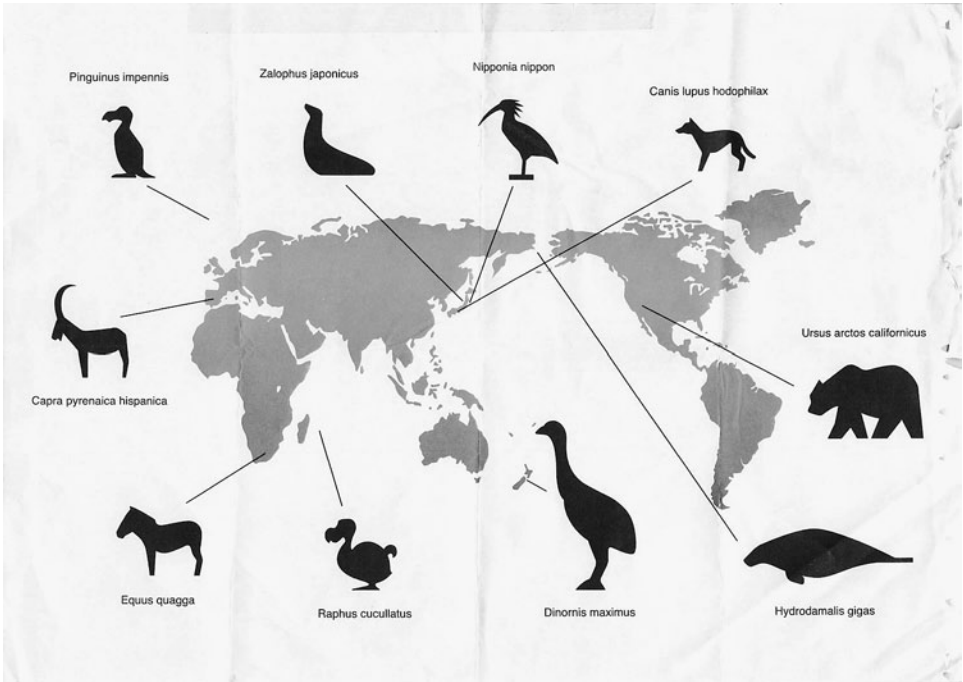


FIGURE 2 Map accompanying Mujirushi Ryōhin’s “Extinct Species” toy figures (2010). Author’s photograph.

of life on Earth, but this time it would be due to human impact. Years of rather depressing research turned up dozens of works whose titles typically featured phrases like “The Last X,” “The Search for Y,” or “The Race to Save Z.” One anthology of poems hailed with the ominous title *The Dire Elegies: 59 Poets on Endangered Species of North America*. Most of these books and films combined apocalyptic portrayals of the future of wildlife with, usually, one or two more optimistic sections at the conclusion that pointed to successful conservation efforts and exhorted readers to become involved.

The formula quickly became too familiar to remain inspiring in and of itself, although I did come to admire more and more the deep commitment and intense effort that was evident in these works. Rather than the imperative that we should care, the fact that we evidently do care a great deal, even if our concern may not at present suffice to save many animal and plant species at risk, imposed itself more and more as the central question for thinking about why conservation matters and how it might be fostered. The omnipresence of endangered species—from chocolate wrappers at the supermarket and stuffed animals in museum stores to pictures on yearly calendars and extensive news coverage of newborn polar bears and dead panda cubs, and from the films of David Attenborough to Lee Hyla’s classical composition about the ivory-billed woodpecker—highlights just how sustained an interest cultural communities in various nations already have in certain endangered species, if not in all of them. Individuals, organizations, and corporations, even some of those whose practices contribute to habitat destruction and species extinction, invest significant amounts of money in conservation efforts.

Many of the books, essays, and films tell personal and moving stories about how the writer or filmmaker became aware of the plight of threatened species; how encounters with this or that majestic, spectacular, bizarre, or pitiful animal triggered an emotion and a concern that turned into the vocation to fight on its behalf; how journeys around the globe revealed the magnitude of the crisis and what difficulties emerged in the attempt to mitigate it. From my perspective as a textual and cultural scholar, what is most interesting about these works is not so much their uniquely personal content as the elements that repeat themselves across many stories and the means they use to convince readers with quite different experiences to share the concern expressed in them. How, when, and why do we invest culturally, emotionally, and economically in the fate of threatened species? What stories do we tell, and which ones do we not tell, about them? What do the images that we use to represent them

reveal, and what do they hide? What kind of awareness, emotion, and action are such stories and images meant to generate? What broader cultural values and social conflicts are they associated with?

The central thesis of this book is that however much individual environmentalists may be motivated by a selfless devotion to the well-being of nonhuman species, however much individual conservation scientists may be driven by an eagerness to expand our knowledge and understanding of the species with whom we co-inhabit the planet, their engagements with these species gain sociocultural traction to the extent that they become part of the stories that human communities tell about themselves: stories about their origins, their development, their identity, and their future horizons. These human stories that frame our perception and relation to endangered nonhumans are the subject matter of this book. Such stories, directly or indirectly, explain why we care, not just as individuals but as communities or cultures. This is not to deny the important role that passionate individuals have played in science and conservation and will no doubt continue to play, but to focus on the larger narratives that enable individuals' efforts to resonate with larger social networks. Public engagement with endangered species depends on these broader structures of imagination, and individuals' paths to conservationist engagement become meaningful for others only within these cultural frameworks. Ultimately, I will argue that biodiversity, endangered species, and extinction are primarily cultural issues, questions of what we value and what stories we tell, and only secondarily issues of science.

The writer Jon Mooallem, in his quasi-anthropological study of conservationists, has likened current efforts to manage wildlife in the United States to "a surreal kind of performance art": "We train condors not to perch on power lines," he writes. "We slip plague vaccine to ferrets. We shoot barred owls to make room in the forest for spotted owls. We monitor pygmy rabbits with infrared cameras and military drones. We carry migrating salamanders across busy roads in our palms" (2013, 2). Everyone from high school kids and retirees to the Cornell Lab of Ornithology and the Army Corps of Engineers participates willingly in elaborate maneuvers to give endangered animals one last stab at survival. We expend enormous labor and capital to save polar bears, whose habitat is melting away and who may be interbreeding with northward-migrating grizzlies; we guide whooping cranes with planes on hundreds of miles of migration to summer habitats that may well be engulfed by rising sea water in the foreseeable future, as Mooallem highlights. Even though these efforts are often undertaken in the name of nature and the restoration of

wild things that used to be, they more closely resemble a collective construction of alternative natures that obeys cultural impulses more than scientific ones.

Studying the imaginative webs that surround endangered species will, I hope, be helpful in thinking about conservation and its public face in the future. But it also shows some of the crucial ways in which animals and, more rarely, plants and other organisms, are cultural tools and agents in humans' thinking about themselves, their communities, their histories, and their futures. Understanding the ways in which relationships to other species already form part of our self-understanding will be useful in developing the forms of multispecies justice and multispecies cosmopolitanism I discuss at the end of the book as possible models for rethinking humans' place in what we have come to call the Anthropocene.

Nature at Risk

The roots of environmentalism in general and contemporary perceptions of endangered species in particular lie in the decades around the turn of the nineteenth century, when Western societies' perception of nature underwent a seismic shift. For most of the preceding millennia, nature had been both the principal resource and a major threat to human well-being. Even as it provided humans with the basic raw materials and foodstuffs for survival, nature also put them constantly at risk. Heat, cold, storms, floods, droughts, earthquakes, fires, predators, poisonous plants, and diseases all forced human communities to struggle with nature, at the same time that soil, water, climate, animals, plants, and other organisms enabled them to go on living and to develop a richly varied inventory of tools and practices by which to make use of their environment and ward off its dangers.

In the face of the first wave of sustained industrialization around 1800, a perception that had only occasionally surfaced in earlier centuries began to make itself felt as a new cultural dominant: the sense that humans were endangering nature on a grand scale, rather than the other way around. Nature, it seemed, was deteriorating under the impact of modern society and might vanish entirely in another generation or two. This sense of nature at risk catalyzed the emergence of movements and societies for the protection of nature at the end of the nineteenth century, led to the rise of modern environmentalist movements between the 1960s and the 1980s, and shapes current fears about a range of ecological crises, including climate change, ocean acidification, and biodiversity loss. Exactly what causes nature to go from bad to worse has varied in cultural

perception over time and region, as have the consequences of nature's decline. The enclosure of the commons, the construction of railroads, and deforestation worried nineteenth-century advocates for nature in Europe and North America; population growth, urbanization, and environmental toxins moved to the forefront in the 1960s; ozone depletion and biodiversity loss dominated environmental discussions in the 1980s, along with the connections between colonialism, racism, and environmental degradation in the 1980s and 1990s; and over the past decade, climate change and its connections to neoliberal forms of capitalism have overshadowed all other environmental concerns in public debate and have led to the most alarming forecasts for the coming century.

Whatever the concrete ecological crises at hand, modern environmentalists, like their nineteenth-century forebears, have tended to rely on a similar story template: the idea that modern society has degraded a natural world that used to be beautiful, harmonious, and self-sustaining and that might disappear completely if modern humans do not change their way of life. In postcolonial societies, this story often contrasts an indigenous, ecologically grounded past with the degradation of nature European imperialism has brought about. Environmentalism inside and outside of recognizable social movements and organizations has relied on such "declensionist" narratives, as historians and literary critics call them. In these stories, the awareness of nature's beauty and value is intimately linked to a foreboding sense of its looming destruction. Environmentalist writers and thinkers have skillfully mobilized literary and aesthetic concepts and genres such as the sublime, the picturesque, pastoral, apocalyptic narrative, and what one critic has called "toxic discourse" about polluted landscapes and deformed bodies so as to convey a sense of a precious, beautiful, and fragile natural world at risk (Buell 2001, 30–54).

This sense that humans—in particular, modern and colonial humans and the ways of life they have developed in Western societies over the past two centuries—put nature at risk has not only aesthetic but also considerable political power. As Raymond Williams's classic *The Country and the City* (1973) showed in some detail, the idea that humans used to live in a more harmonious relationship with nature just a generation or two ago is not mere nostalgia, but also a powerful anchoring point for both political authority and resistance. For environmentalists, this story template offered an important critique of more dominant narratives about social, economic, and technological progress, and as such it was able to attract a variety of political forces that were opposed to certain aspects of modernization. From Thoreau's ambivalence toward the construction of the railroad to the countercultures of the 1960s and current

protests in the global south against the role of northern societies in generating global warming, to pick just three examples, advocacy on behalf of a natural world at risk has been linked to—and has arguably derived a good deal of its power from—broader opposition to the shape modern society has been taking. Regret, mourning, and melancholy over aspects of nature that were degraded or lost in modernization processes, as I will discuss in more detail in chapter 1, turn into more than personal emotion in this context, as public grief over what most societies have not normally considered worth mourning becomes an act of political resistance.

The End of Nature

In our own historical moment, the environmentalist rhetoric of decline has come to a head in the cultural meme of the end of nature, the idea that nature such as we have understood it since the Romantic age has disappeared. When researchers, writers, or activists claim that nature has vanished, they do not mean, of course, that natural processes such as plant growth, seasonal variation, and decay no longer happen. Neither do they mean only that certain landscapes or species have disappeared, although such disappearances form part of the process. Rather, what they propose is that nature in the sense of a domain apart from human intention and agency no longer exists. This idea has been most forcefully articulated by the environmental author and activist Bill McKibben. In his book *The End of Nature* (1989), one of the first books to ring the alarm about climate change for the nonscientific public, McKibben argues that climate change, aside from its material consequences, has also brought about the end of nature as modern society conceived of it: “We have changed the atmosphere, and thus we are changing the weather. By changing the weather, we make every spot on earth man-made and artificial. We have deprived nature of its independence, and that is fatal to its meaning. Nature’s independence is its meaning; without it there is nothing but us” (58). And he laments: “We have ended the thing that has, at least in modern times, defined nature for us—its separation from human society” (64). Almost a quarter of a century later, with the consequences of climate change far more visible globally and far more present in public debates, McKibben has given this idea a new, science-fiction-style twist that I will discuss in greater detail in chapter 6. In a book with the oddly spelled title *Eaarth: Making a Life on a Tough New Planet* (2011), he argues that “the world hasn’t ended, but the world as we know it has—even if we don’t quite know it yet. We imagine we still live on that old planet. . . . It’s a different place. A different planet. It needs a new name.

Eaarth” (2–3). Consequently, McKibben proposes, humans today face a challenge similar to the one confronting settlers on an alien planet that in some ways resembles Earth, but whose global ecology is palpably different and will require new ways of life.

Environmental scholars such as Leo Marx and Richard White have argued that defining nature as in principle separate from humans turns it into an abstract, metaphysical concept with serious limitations for understanding how humans—and, for that matter, other species—actually inhabit material environments (Marx 2008, 19; White 2011, 119). The study of how human communities have inhabited nature in different cultures over time has led other environmental researchers to agree with McKibben’s sense that traditional approaches to nature and its conservation are no longer quite in sync with the environments we currently confront. But quite a few of them arrive at this conclusion by way of arguments that are diametrically opposed to McKibben’s. The idea that environmentalism should seek to protect natural ecosystems from human interference and, where possible, return them to what they were before modern (especially European) humans disrupted them is becoming harder to sustain as evidence mounts that indigenous peoples around the world have reshaped their environments far more extensively and over longer time periods than was previously thought. Environmental anthropologists, geographers, and historians have shown that in Australia, Latin America, and North America, landscapes that European settlers perceived as “wildernesses” untouched by humans had in fact been altered by indigenous societies for millennia before their arrival.

The Australian historian Bill Gammage, for example, has shown that Aboriginal peoples extensively managed their land through fire, vegetative cycles, and water flows for thousands—quite possibly tens of thousands—of years before they were displaced by Europeans (2011). Charles Mann, in his books *1491* (2005) and *1493* (2011), synthesizes parallel research for Central and South America that points to much denser populations and much more intensive land usage in the pre-Columbian ages than was previously documented, some of it “agroforestry” of a kind unknown and unrecognizable to Europeans. Even the Amazon rainforest, it emerges, was by no means just the domain of scattered tribes of hunter-gatherers but was partly cultivated and domesticated.¹ Analogous studies of North America have also revealed regimes of fire management that date back millennia (Pyne [1982] 1997, 2003). The wilderness

1. For a detailed study of the Amazonian rainforest in this context, see Hecht and Cockburn ([1990] 2010).

European settlers in North America initially feared and later came to embrace as they began to think of their new continent as “nature’s nation,” it turns out, was often purchased at the price of ignoring or understating the impact of the indigenous societies that had preceded them (Cronon 1995).

Moreover, precisely at the time when McKibben published his elegy for nature, the Indian sociologist Ramachandra Guha argued that American environmentalists’ emphasis on the conservation of untouched landscapes ran against the interests of environmentalists in the developing world. Barely recognized by environmentalists in the global north as engaged in the protection of nature, many communities in developing regions struggle to continue their own sustainable uses of resources against the destructive practices of corporations and organizations based in industrialized nations (Guha 1989). Together with the Catalan scholar Joan Martínez-Alier, who had extensively researched such movements in Latin America, Guha sought to persuade European and North American environmentalists that they needed to acknowledge “varieties of environmentalism” other than those grounded in the reverence for pristine landscapes (Guha and Martínez-Alier 1997). Against the background of historical and political arguments such as these, the idea of nature as Bill McKibben and other North American environmentalists have defined it increasingly appears as, at best, a retrospective misperception and, at worst, a misconstruction of the historical context and ecological impact of Euro-American colonial ventures. Nature never really was separate from human society; it appeared untouched only to those who did not know, or did not want to know, how much indigenous peoples had transformed it long before Europeans’ arrival. This is not to deny the very different kind of impact that colonial societies had on their natural environments compared to that of the civilizations that preceded them, or that precolonial societies can in some cases offer models for how to co-inhabit places with other species. But it does mean that whatever baseline for a desirable nature the environmentalist movement sets for itself needs to be chosen from different cultural models and preferences rather than grounding itself simply on the idea of minimal human presence and impact.

Beyond the End of Nature: New Environmentalisms

In view of this historical evidence as well as humans’ pervasive impact in the contemporary age, some environmentalist organizations have begun to shift their focus. The biologist Peter Kareiva, former scientific director

of the world's largest conservation society, the Nature Conservancy, for example, has suggested that environmentalists should move away from the idea that they need to protect nature from human impact. Instead of dwelling on stories of decline, environmentalists should acknowledge that nature is largely domesticated and should actively shape its human uses: "There really is no such thing as nature untainted by people. Instead, ours is a world of nature domesticated, albeit to varying degrees, from national parks to high-rise megalopolises. . . . Instead of recounting gloom-and-doom statistics, it would be more fruitful to consider the domestication of nature as the selection of certain desirable ecosystem attributes, such as increased food production, with consequent alteration to other ecosystem attributes that may not be desirable" (Kareiva et al. 2007, 1866). Other biologists have begun to study what they call the "novel ecosystems" that result from human interventions in and subsequent abandonment of particular ecosystems (Hobbs, Higgs, and Hall 2013), and they have suggested that environmental science may need to reenvision its own task in terms of "intervention ecology," the deliberate design of future ecosystems, rather than the more conventional "restoration ecology" (Hobbs et al. 2011). The science writer Emma Marris has popularized these ideas with a similar metaphor of domestication in her tellingly entitled book *Rambunctious Garden: Saving Nature in a Post-Wild World* (2011). Over the past few years, such attempts to reenvision environmentalism in the context of a pervasively domesticated natural world have begun to overlap with discussions around the concept of the Anthropocene, as I will show in detail in chapter 6.

Moving beyond established decline narratives to a new, future-oriented conceptualization of environmentalism is clearly no easy task in the United States, and not just because quite a few environmentalists themselves resist the shift.² Whatever the shortfalls may be of environmentalists' gloomy forecasts and nature nostalgia, they have, since the 1960s, set in motion social movements that have sprung up around the globe, changed political and legal landscapes, and provoked far-reaching cultural transformations. Changing the basic concepts and story lines that have mobilized millions of people across different continents runs the risk of weakening environmentalism's cultural and political power—a danger that is quite apparent in Ted Nordhaus and Michael Shellenberger's calls for rethinking environmentalism. From initial limited critiques in the years around 2004–5 of the political strategies

2. The German biologist Josef H. Reichholf makes a similar point for environmentalism more generally (2008, 211).

the environmentalist movement had adopted, they have in recent years moved to a relentless boosterism of modernization and technological progress that leaves no room for considering how the missteps and disasters of the past might be kept from repeating themselves: “The solution to the unintended consequences of modernity is, and has always been, more modernity—just as the solution to the unintended consequences of our technologies has always been more technology” (Nordhaus and Shellenberger 2011, 18). Their arguments often end up reverting to the unqualified, relentlessly anthropocentric narrative of progress that environmentalism set out to question, intellectually and politically, in the first place.

The question that the tension between these divergent new strands of environmentalism raises, then, is whether and how it might be possible to move environmentalism beyond the stereotypical narrative of the decline of nature without turning it into progress boosterism. What affirmative visions of the future can the environmentalist movement offer, visions that are neither returns to an imagined pastoral past nor nightmares of future devastation meant to serve as “cautionary tales”? What new ways of conceptualizing the relationship between humans and nonhuman species might an environmentalist perspective rely on, beyond saving nature only as a resource for humans or, conversely, privileging nature in itself to the point where human aspirations become secondary? How can environmentalism accommodate especially the aspirations of those communities who have already been stymied by colonialism or poverty? Now that the notion of “nature” itself has become tenuous ground, what might be the foundation for a new kind of environmentalism?

Rethinking Biodiversity and Endangerment

Imagining Extinction was written against the background of these questions about the future of environmentalist thought and politics. Clearly, the narrative of nature’s decline under the impact of modernization is an important framework within which we need to understand the interest in biodiversity loss: endangered animal species—and, more rarely, plants, corals, and fungi—derive a part of their perceived value and beauty from their rarity and the larger crisis in our relation to nature that their endangerment points to. The elegiac and tragic modes in which endangered species are often portrayed in film, photography, and writing are meant to convey this general sense of decline, of sweeping losses of life, diversity, knowledge, and beauty. However effective these modes of storytelling and image-making may have been, it is also clear, at this point,

that conservationists will need to complement or even replace them with other kinds of stories. As in environmentalist communication in general, stories and images of decline go only so far. Is it possible to acknowledge the realities of large-scale species extinction and yet to move beyond mourning, melancholia, and nostalgia to a more affirmative vision of our biological future? Is it possible to move beyond the story templates of elegy and tragedy and yet to express continuing concern that nonhuman species not be harmed more than strictly necessary?

In pursuing these questions about environmental cultures of risk, I assumed initially that the science on species extinction in general and the current mass extinction of species in particular was fairly straightforward. The cultural filtering, transformation, and re-creation of that science in image and narrative would be the most interesting aspects to a scholar in the humanities, I thought. But I was wrong. Much about the science is extremely complex, indeterminate, or unknown. And if our perception of species at risk is founded on scientific research, it is equally clear that a good deal of the science is shaped by underlying cultural assumptions, in many cases by the same stories about the decline of nature that have shaped our ecological culture at large. For this reason, the project broadened from its primary objects of study—the books, films, photographs, websites, and other aesthetic artifacts that are the standard material of literary and cultural analysis—to include quite different objects such as biodiversity databases, Red Lists of endangered species, and endangered species laws. All of them, I came to understand, are expressions of our collective concern over threats to nonhuman species, even though they are channeled through quite different cultural forms and social institutions. Analyzing these different genres and artifacts contributes to a fuller understanding of what makes us collectively care about the well-being of nonhuman species, but it also helps us see what kinds of stories and genres might be more successful at generating this concern than others.

In asking specific questions such as why species go extinct, how we know what endangers them, why we care about some endangered species and not others, and what means we choose to express our concern, I also saw myself forced to confront the broader questions I have outlined here about how we envision nature and what stories we tell about its relationship to human culture. Coffee-table books, TV documentaries, and endangered species laws are all in different ways shaped by such broader narratives, and these objects themselves contribute to perpetuating or subtly changing the stories. What we think about endangered species and the current wave of biodiversity loss is difficult to separate

from the broader concern over the decline of nature and the positive valuation, over the past three decades, of both biological and cultural diversity. It turned out, then, that questions about endangered species and mass extinction, and about how they come to form part of our cultural life, are also questions about environmentalism more broadly understood with which the movement is currently struggling. In this way, *Imagining Extinction* is meant as a contribution to the ongoing conversation about the future of environmentalist thought.

The six chapters of the book move along an arc from concrete cultural engagements with endangered species in the first three chapters to broader political and philosophical reflections in the last three. The first three chapters examine how our interest in endangered species has manifested itself over the past few decades in cultural artifacts, in global biodiversity databases, and in endangered species laws, whereas the last three engage with the tensions between conservation and animal welfare advocacy, between conservation and the environmental justice movement, and with the role of conservation in ongoing debates over the Anthropocene.

Chapter 1, “Lost Dogs, Last Birds, and Listed Species: Elegy and Comedy in Conservation Stories,” focuses on the wide range of fictional and nonfictional texts, photographs, film documentaries, musical compositions, and artistic websites that portray endangered species. The majority of them, this chapter shows, rely on the genre templates of elegy and tragedy to portray well-adapted animal species at risk or those that have already vanished through no fault of their own. Many of the species that are singled out for attention function as symbolic shorthands for more encompassing stories about a particular nation’s history of modernization and its changing relationship to the natural world, or about broader misgivings regarding the planetary consequences of modernization, as the cases of the dodo, the Honshu wolf, the ivory-billed woodpecker, the huia, the passenger pigeon, the thylacine, and the gray whale demonstrate. Such stories are both galvanizing and problematic: the nostalgia they generate has often successfully mobilized support for conservation and for critiques of modernization, even as it has made the understanding of ecosystem functioning more difficult and forward-looking perspectives more inaccessible. Only occasionally has conservationist writing mobilized the resources of comedy, a genre that offers an alternative model for thinking about biodiversity. Comedy emphasizes contingency and improbable modes of survival over predictability and extinction and thereby opens up different cognitive and emotional attachments to the lives of other humans as well as nonhuman species.

Chapter 2, “From Arks to ARKive.org: Database, Epic, and Biodiversity,” focuses on global biodiversity databases as a cultural medium that relies not on the framework of elegy but on that of epic and encyclopedia. Databases such as ARKive.org, the Catalogue of Life, the Encyclopedia of Life (EoL), the Global Biodiversity Information Facility, the International Nucleotide Sequence Database Collaboration, and the International Union for the Conservation of Nature’s (IUCN’s) Red List of Threatened Species, all Internet-based biodiversity archives, aspire to catalog all known species, and some of them emphasize endangered ones. Most of them function as metadatabases in the sense that they rely on information transferred from other, more specialized databases and invest varying degrees of effort into the integration of these sources. Drawing on media theorists who have approached databases as not just administrative and scientific tools, but as a cultural medium of their own in the digital age, this chapter seeks to understand global biodiversity databases as a contemporary form of ecological epic. This may seem like a counterintuitive claim at first sight, since databases typically lack the elaborate narrative structures that made epic so compelling a way of accounting for the premodern world. Yet some biodiversity databases include lengthy narrative entries on some species, and their metadata and classification schemata are in some cases clearly shaped by story templates that also appear in more properly aesthetic ways of engaging with biodiversity loss. “From Arks to ARKive.org” links the environmental and the digital humanities in its exploration of databases as ecological epic. This chapter engages in some detail with the IUCN’s Red List of Threatened Species, a database that is often used in national and regional efforts to establish Red Lists and formulate laws for the protection of endangered species. Chapter 2 also seeks to show how the database aesthetic has inflected texts and artworks about endangered species, from the novels of Lydia Millet and the installations of Maya Lin to Isabella Kirkland’s paintings and Joel Sartore’s collections of photographs.

Chapter 3, “The Legal Lives of Endangered Species: Biodiversity Laws and Culture,” approaches current laws for the protection of animals and plants from the comparative perspective that I pursue throughout this book. Many nations around the globe, as well as subnational states and supranational organizations such as the European Union, have passed such laws over the past half century. These laws share a few elements but derive from quite divergent national histories of engagement with nature at risk. In the laws of the United States and Germany, the history of the nation and national identity are interwoven with the concern for the conservation of endangered species in the United States and, in

Germany, for cultural landscapes, including their biodiversity. The European Union, unable to rely on a unique tradition for formulating the concern for biodiversity across its more than two dozen member nations, replaces the German rhetoric of “landscapes” with that of “habitats” and species, seeking at the same time to invoke a shared scientific approach and to create a sense of a shared patrimony in its conservation directives. In contrast, Bolivia, South America’s poorest country, has reinvented itself over the past decade with a new constitution and laws that invoke humans’ relation to “Mother Earth,” the “Pachamama” of indigenous cosmologies, to empower both traditional communities and the modern state to pursue a holistic form of development that will diminish poverty and ecological degradation at the same time. Fraught with tensions and practical difficulties, these laws are nevertheless an ambitious attempt to reconceive biodiversity conservation within the broader goal of building a just and equitable society. Highlighting the divergent cultural histories and current goals of contemporary laws about biodiversity and endangered species also shows why it is difficult to compare the effectiveness of laws that tell quite different stories about what is politically at stake in conserving nonhuman species. Biodiversity laws clearly demonstrate just how much conservation is at bottom a product of the cultural imagination rather than just of scientific investigation.

Chapter 4, “Mass Extinction and Mass Slaughter: Biodiversity, Violence, and the Dangers of Domestication,” shifts the discussion of endangered nonhumans and their legal status to a different conceptual level. In the 1970s, environmentalists and advocates for animal welfare sometimes fought side by side, for example in the struggle against the harvesting of furs from baby seals in Alaska and Canada. Today, the two movements continue to share a concern for the well-being of nonhuman species, but their ideological commitments and targets for political action differ quite sharply. Environmentalists usually fight on behalf of wild species, including animals, plants, and other organisms, and they approach these species with the larger goal of ensuring the continued health of ecosystems. In the process, they sometimes accept the necessity of eradicating introduced species so as to save native ones. Animal welfare and animal rights advocates, by contrast, focus on individuals rather than species, on animals to the exclusion of other kinds of organisms, and for the most part on domesticated animals and those used in research and entertainment. From the 1980s onward, environmentalist and animal welfare advocates have at times been sharply critical of each other, engaging in conflicts that T. C. Boyle’s novel *When the Killing’s Done* (2011) insight-

fully fictionalizes. At the same time, philosophers have sought to reconcile the two perspectives. My analysis seeks not so much to reconcile as to understand the different approaches to modernity and domestication that shape the two movements. Where environmentalists have located the danger of modernization in an excessive domestication of nature that leads to species extinction, animal welfare advocates have been critical of the incomplete or misguided domestication that results in factory farming. Since environmentalists over the past decade, as I pointed out earlier, have increasingly adopted the idea of domestication as a way of thinking about a planetary ecology that has been pervasively reshaped by humans, animal advocates' warnings about the dangers of domestication are becoming newly relevant to environmentalist thought.

If animal welfare advocates at times accuse environmentalists of not caring enough about animals, environmental justice advocates have sometimes reproached mainstream environmentalists for caring too much about animals and plants and not enough about disempowered humans. Chapter 5, "Biodiversity, Environmental Justice, and Multispecies Communities," engages the conflict between the concern for other humans and the concern for nonhumans that confrontations over environmental justice and biodiversity conservation have generated. The analysis of three texts, Cuban novelist Mayra Montero's *Tú, la oscuridad* (1995); the Stanford Graphic Novel Project's collectively authored graphic narrative *Virunga* (2009), edited by Adam Johnson and Tom Kealey; and Bengali author Amitav Ghosh's *The Hungry Tide* ([2005] 2006), traces different narrative templates that shape stories about the encounter of endangered humans and endangered animals: confrontations of scientific stories from the global north with indigenous knowledge from the global south; of literature with orature; of state power with the power of international corporations, NGO's, and subnational resistance movements; and the divergent symbolic meanings that different endangered species and communities hold in the cultural imagination. The emergent framework of "multispecies ethnography" as it has been developed by anthropologists over the past decade to highlight the shaping agency of nonhuman species in human societies, I argue, offers some of the conceptual tools for understanding such stories. It also offers a conceptual and political framework for rethinking environmental justice as "multispecies justice," reaching across differences of culture as well as of species.

Chapter 6, "Multispecies Fictions for the Anthropocene," takes these reflections one step further to environmentalist visions of the planetary future. The idea that we now live on a planet that humans have transformed even in its most basic structures, summed up in the concept of the

Anthropocene, draws on tropes of terraforming that are a staple of science fiction, itself a mode of epic complementary to the database. Not only do works of environmental nonfiction draw increasingly on themes and narrative strategies of speculative fiction, but the Anthropocene itself can usefully be understood as a science fiction trope. The idea that our own planet has already been pervasively terraformed has led to similarly futuristic projects of “de-extinction,” the re-creation of extinct species by means of DNA extracted from fossils or museum specimens and cutting-edge biotechnology. These scenarios and their conception of human species agency have theoretically crystallized in discussions following historian Dipesh Chakrabarty’s influential theses on the consequences of climate change for history and social theory. The debate about Chakrabarty’s “negative universalism” highlights the difficulties of arriving at a collective “we” that might jointly engage with nonhuman species. But it also foregrounds, I argue, the urgent need for a cosmopolitanism that does not take for granted anything about humans as a biological species but instead constructs versions of the human in a careful and painstaking, cross-cultural process of assembly in both its technological and its political meanings. These issues are worked through in speculative fiction itself, especially Orson Scott Card’s *Ender* series, which quite explicitly moves from humans’ extermination of other species to a vision of multispecies contracts, constitutions, and communities on other planets, thereby contributing to the imaginative and narrative possibilities—the multispecies fictions—of a cosmopolitanism that works through such assemblies toward multispecies justice.