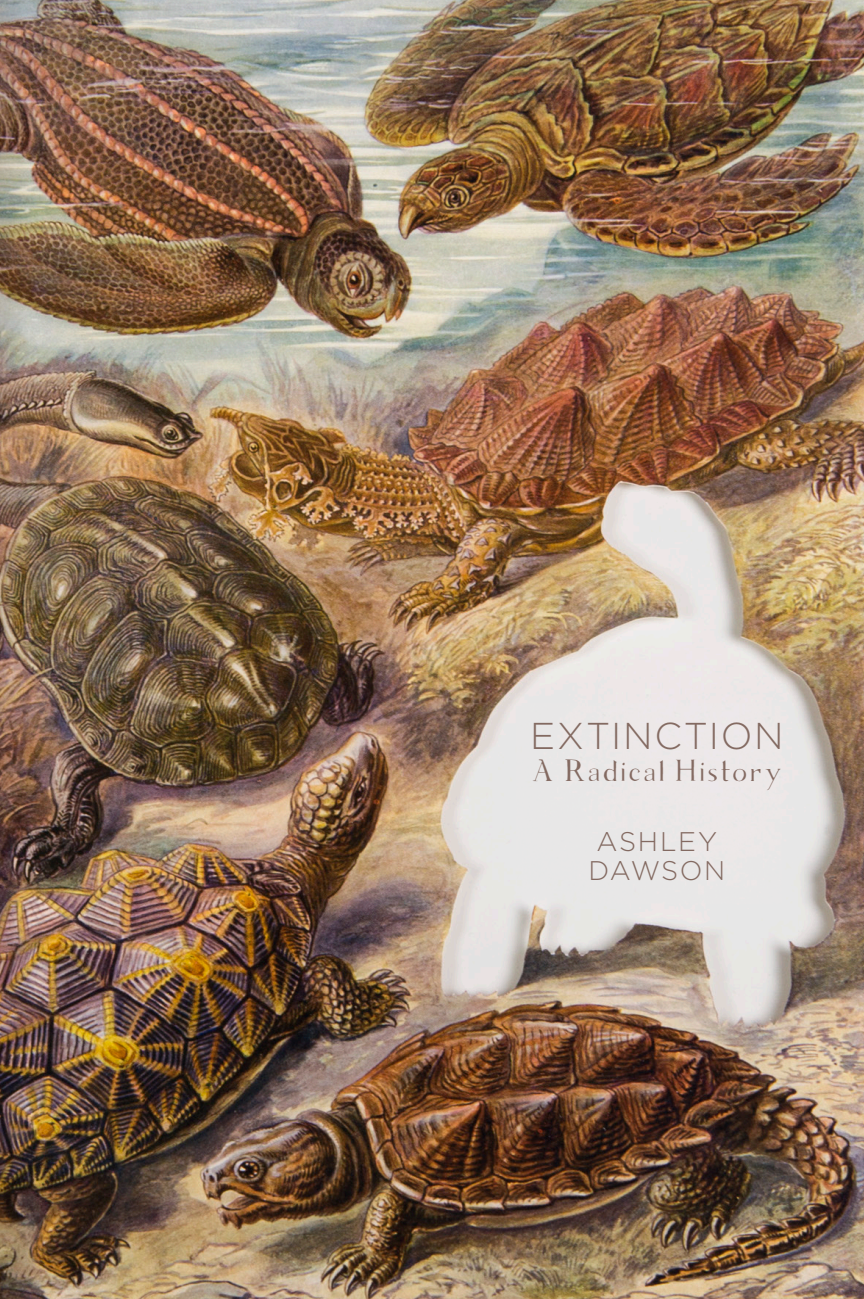
EXTINCTION
A Radical History
ASHLEY
DAWSON

"Dawson's searing report on species loss will sober up anyone who has drunk the Kool-Aid of green capitalism."

—ANDREW ROSS

Just a few tens of thousands of years ago the world was home to an immense variety of extraordinary creatures, from saber-toothed tigers to armadillos the size of cars. Then human beings arrived. Devouring their way down the food chain, they began a process of extinction that continues to the present.

Headlines today are made by the threat facing large animals such as rhinos and pandas, but the devastation summoned by humans extends to the humbler realms of beetles, bats and butterflies. Currently the earth loses about a hundred species every day.

Ashley Dawson contends that this relentless extinction is the result of capitalism's global attack on the commons, the great trove of air, water, plants and creatures that has been regarded traditionally as the inheritance of humanity as a whole.

Extinction cannot be understood in isolation from a critique of our economic system. To grasp it fully we need to transgress the boundaries between science, environmentalism and radical politics. *Extinction: A Radical History* performs this task with both brio and brilliance.

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A RADICAL HISTORY

ASHLEY
DAWSON

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TABLE OF CONTENTS

1: INTRODUCTION

His face was hacked off. Left prostrate in the red dust, to be preyed on by vultures, his body remained intact except for the obscene hole where his magnificent six foot long tusks used to be. Satao was a so-called tusker, an African elephant with a rare genetic strain that produced tusks so long that they dangled to the ground, making him a prime attraction in Kenya's Tsavo East National Park.[1]

These beautiful tusks also made him particularly valuable to ivory poachers, who felled him with poison arrows, carved off his face to get at his tusks, and left his carcass for the flies. The grisly death of Satao, one of Africa's largest elephants, is part of a violent wave of poaching that is sweeping the continent today. In 2011, twenty-five thousand African elephants were slaughtered for their ivory.[2] An additional forty-five thousand have been killed since that time. If the present rate of slaughter continues, one of the two species of African elephants, the forest elephant, whose

numbers have declined by 60 percent since 2002, is likely to be gone from Africa within a decade.

The image of Satao lying faceless in the dust is a haunting one. While the elephant as a species will probably not go extinct (since some individuals are likely to be kept alive in game reserves and zoos), the decimation of their numbers in the wild reminds us of a broader tide of extinction, the sixth mass extinction Earth has witnessed. Only tens of thousands of years ago, during the Pleistocene epoch, Earth was home to an immense variety of spectacular, large animals. From wooly mammoths to saber-toothed cats to lesser-known but equally exotic animals like giant ground sloths and car-sized glyptodonts, megafauna roamed the world freely. Today, almost all of these large animals are extinct: killed, most of the evidence suggests, by human beings.[3] As they spread across the planet, *Homo sapiens* decimated populations of megafauna everywhere they went. Humanity essentially ate its way down the food chain when wiping out biodiversity.[4] Africa, our ancestral home, is virtually alone in harboring some remnants of the Pleistocene biodiversity. In the grisly death of Satao and his fellow elephants, we are witnessing the final destruction of the world's remaining megafauna, the endgame of an epoch of epic defaunation or animal slaughter.[5]

But it is not just charismatic megafauna like elephants, rhinos, tigers, and pandas that are being pushed to the brink of extinction. Humanity lives amid, and is the cause of, a massive decimation of global biodiversity. From humble invertebrates like beetles and butterflies to various terrestrial vertebrate populations like bats and birds, species are going extinct in record numbers. For example, since 1500, 322 species of land-based vertebrates have disappeared, and the remaining populations show an average 25 percent decline in abundance around the world.[6] Invertebrate populations are similarly threatened. Researchers generally agree that the current extinction rate is nothing short of catastrophic, clocking in between one thousand and ten thousand times the rate before human beings began to exert a significant pressure on the environment.[7] The Earth is losing about a hundred species a day.[8] In addition to this tidal wave of extinction, which conservation biologists predict will eliminate up to 50 percent of currently existing animal and plant species,[9] the abundance of species in local areas is declining precipitously, threatening the functioning of entire ecosystems.[10] This mass extinction is thus an under-acknowledged form—and cause—of the contemporary environmental crisis.

Although this wave of mass extinction is global, the vast majority of species destruction is concentrated in a small number of geographical hotspots. This is because biodiversity is unevenly distributed. On land, tropical rainforests are the primary nursery of biodiversity. Although they cover only 6 percent of the Earth's surface, their terrestrial and aquatic habitats harbor more than half the known species on the planet.[11] As E.O. Wilson puts it, the tropics are the leading abattoir of extinction, their great verdant expanses chopped up into quickly dwindling fragments, their plant and animal species struggling to adapt to habitat destruction, invasive species, overharvesting, and, increasingly, anthropogenic climate change.[12] From the great Amazon basin, to the rainforests of West and Central Africa, to the jungles of Indonesia, Malaysia, and other parts of Southeast Asia, human beings are eliminating the homes of millions of species. In doing so, we are not only condemning vast numbers of species (the great majority of them still unidentified) to extinction, but we are also imperiling our own tenure on this planet.

With the publication of accessible works of science journalism such as Elizabeth Kolbert's *The Sixth Extinction*, the word has begun to get out about the dire plight of the planet's flora and fauna. Kolbert's book takes readers on a

terrifying tour, interviewing botanists who follow the tree line as it vaults up the side of mountains in the Andes and marine botanists who track the acidification of the oceans. The current wave of extinction, she explains, follows five previous mass extinction events that have devastated the planet over the last half billion years. This wave is predicted to be the worst catastrophe for life on Earth since the asteroid impact that destroyed the dinosaurs. Reflecting on this melancholy reality, humanities scholars have begun to write about "cultures of extinction."[13] In response to such increasing concern, the Obama administration recently set up an interagency task force on wildlife trafficking, and has begun to discuss the trade networks linking the slaughter of elephants and rhinos to guerrilla groups and crime syndicates such as the Janjaweed and al-Shabab, which are using the high profits from the illicit wildlife market to fund their operations.[14]

All too often, however, initiatives such as Obama's result in a "war on poachers" that ignores the underlying structural causes that are driving habitat destruction and overharvesting of animals.[15] The planet's biodiversity hotspots, after all, are located in what Christian Parenti calls the "tropics of chaos."[16] In the planet's tropical latitudes,

Parenti identifies a *catastrophic convergence,* a supremely destructive alignment of three factors: 1) militarization and ethnic fragmentation related to the legacy of the Cold War in postcolonial nations; 2) state failure and civil discord linked to the structural adjustment policies imposed on the global South by institutions like the World Bank in the name of debt repayment since the 1980s; and 3) climate change-fueled environmental stresses such as desertification. Parenti writes at length on the impact of this catastrophic convergence on postcolonial people and states, but the picture he provides of the stresses affecting the global South is incomplete without a consideration of the relations between humanity and the natural world in its fullest sense. We cannot understand the catastrophic convergence, that is, without discussing the decimation of biodiversity currently unfolding in the global South. Nor, conversely, can we understand extinction without an analysis of the exploitation and violence to which postcolonial nations have been subjected.

Extinction is the product of a global attack on the commons: the great trove of air, water, plants, and collectively created cultural forms such as language that have been traditionally regarded as the inheritance of humanity as a whole. Nature, the wonderfully abundant and diverse wild

life of the world, is essentially a free pool of goods and labor that capital can draw on. As critics such as Michael Hardt and Antonio Negri have argued, aggressive policies of trade liberalization in recent decades have been predicated on privatizing the commons—transforming ideas, information, species of plants and animals, and even DNA into private property.[17] Suddenly, things like seeds, once freely traded by peasant farmers the world over, have become scarce commodities, and are even being bred by agribusiness corporations to be sterile after one generation, a product farmers in the global South have aptly nicknamed "suicide seeds."[18] The destruction of global biodiversity needs to be framed, in other words, as a great, and perhaps ultimate, attack on the planet's common wealth. Indeed, extinction needs to be seen, along with climate change, as the leading edge of contemporary capitalism's contradictions.[19]

Capital must expand at an ever-increasing rate or go into crisis, generating declining asset values for the owners of stocks and property, as well as factory closures, mass unemployment, and political unrest.[20] As capitalism expands, however, it commodifies more and more of the planet, stripping the world of its diversity and fecundity—think about those suicide seeds. If capital's inherent tendency

to create what Vandana Shiva calls "monocultures of the mind" once generated many local environmental crises, this insatiable maw is now consuming entire ecosystems, thereby threatening the planetary environment as a whole.[21] There are at present no effective institutions to deal with the "cancerous degradation" of the global environment that David Harvey argues is brought about by capital's need for continuous exponential growth.[22] And yet capital of course depends on continuous commodification of this environment to sustain its growth. The catastrophic rate of extinction today and the broader decline of biodiversity thus represent a direct threat to the reproduction of capital. Indeed, there is no clearer example of the tendency of capital accumulation to destroy its own conditions of reproduction than the sixth extinction. As the rate of speciation—the evolution of new species—drops further and further behind the rate of extinction, the specter of capital's depletion and even annihilation of the biological foundation on which it depends becomes increasingly apparent.

Extinction: A Radical History is intended as a primer on extinction for activists, scientists, and cultural studies scholars alike, as well as for members of the general public looking to understand one of the great but all too often overlooked

events of our time. Extinction is both a material reality and a cultural discourse that shapes popular perceptions of the world, one that often legitimates an inegalitarian social order. In order to respond adequately to this planetary crisis, we need to transgress the boundaries that tend to keep science, environmentalism, and radical politics separate. Indeed, extinction cannot be understood in isolation from a critique of capitalism and imperialism. *Extinction: A Radical History* begins with a discussion of the notion of the Anthropocene, using this term not simply to ask fundamental questions about when the sixth wave of mass extinctions began, but also about whom exactly is responsible for extinction. The second section outlines the different facets of extinction that are products of capitalism, from early modern forms of defaunation such as fur hunting to the episodes of mass slaughter such as whaling that arose in tandem with the industrial revolution. This section also discusses forms of *collateral ecocide* such as coral bleaching and extinction related to invasive species, as well as forms of *ecological warfare* such as the use of Agent Orange in Vietnam and the polluting of the Niger Delta. The third section of *Extinction: A Radical History* looks at *disaster biocapitalism*: the variety of political, economic, and environmental responses by capital to the extinction crisis. This section highlights not just the glaring failure of efforts to

address extinction within a capitalist framework, but also the increasing trend to open a new round of accumulation using synthetic biology to address the crisis. Finally, the section on radical conservation explores various anti-capitalist solutions to the extinction crisis, approaches grounded in social and environmental justice.

The specter of extinction haunts the popular imagination today. Contemporary culture is filled with depictions of zombies, plagues, and other spectacular representations of ecological catastrophe.[23] For those who inhabit the wealthy nations of the global North, such representations are portents of a terrifying world to come. But for the billions of people around the world whom Ranajit Guha and Juan Martinez-Alier call "ecosystem people," whose fate is intimately intertwined with the planet's flora and fauna, the question of extinction relates directly to their own present and future survival.[24] The butchering of an elephant such as Satao may enrich a few poachers, but it dramatically impoverishes the ecosystem he inhabited. We are only just beginning to understand the impact of the liquidation of large wildlife like elephants on the habitats they inhabit, but it is becoming clear that such holes punctured in the web of life have a dramatic cascading effect.[25] As millions of species are snuffed out, the

biodiversity that supports the planetary ecosystem as we and our ancestors have known it is imperiled. This catastrophe cannot be stemmed—let alone reversed—within the present capitalist culture. We face a clear choice: radical political transformation or deepening mass extinction.

2: AN ETIOLOGY OF THE PRESENT CATASTROPHE

"Gilgamesh listened to the word of his companion, he took the axe in his hand, he drew the sword from his belt, and he struck Humbaba with a thrust of the sword to the neck, and Enkidu his comrade struck the second blow. At the third blow Humbaba fell. Then there followed a confusion for this was the guardian of the forest whom they had felled to the ground. For as far as two leagues the cedars shivered when Enkidu felled the watcher of the forest, he at whose voice Hermon and Lebanon used to tremble. Now the mountains were moved and all the hills, for the guardian of the forest was killed."

—*The Epic of Gilgamesh* (2500–1500 BCE)

When did the sixth extinction begin, and who is responsible for it? One way to tackle these questions is to consider the increasingly influential notion of the *Anthropocene*. The term, first put into broad use by the atmospheric chemist Paul J. Crutzen in 2000, refers to the transformative impact of humanity on the Earth's atmosphere, an impact so decisive as to mark a new geological epoch.[26] The idea of an Anthropocene Age in which humanity has fundamentally shaped the planet's environment, making nonsense of traditional ideas about a neat divide between human beings and nature, has crossed over from the relatively rarified world of chemists and geologists to influence humanities scholars such as Dipesh Chakrabarty, who proposes it as a new lens through which to view history.[27] Despite its increasing currency, there is considerable debate about the inaugural moment of the Anthropocene. Crutzen dates it to the late eighteenth century, when the industrial revolution kicked off large-scale emission of carbon dioxide into the atmosphere.[28] This dating has become widely accepted despite the fact that it refers to an effect rather than a cause, and thereby obscures key questions of violence and inequality in humanity's relation to nature.[29] By thinking through the periodization of extinction, these

questions of power, agency, and the Anthropocene become more insistent.

If we are discussing humanity's role in obliterating the biodiversity we inherited when we evolved as a discrete species during the Pleistocene epoch, the inaugural moment of the Anthropocene must be pushed much further back in time than 1800. Such a move makes sense since the planet's flora and fauna undeniably exercise a world-shaping influence when their impact is considered collectively and across a significant time span. Biologists have recently adopted such a longer view by coining the phrase "defaunation in the Anthropocene."[30] How far back, they ask, can we date the large-scale impact of *Homo sapiens* on the planet? According to Franz Broswimmer, the pivotal moment was the human development of language, and with it a capacity for conscious intentionality.[31] Beginning roughly 60,000 years ago, Broswimmer argues, the origin of language and intentionality sparked a prodigious capacity for innovation that facilitated adaptive changes in human social organization.[32] This watershed is marked in the archeological record by a vast expansion of artifacts such as flints and arrowheads. With this "great leap forward," *Homo sapiens* essentially shifted from biological

evolution through natural selection to cultural evolution. Yet, tragically, our emancipation as a species from what might be seen as the thrall of nature also made us a force for planetary environmental destruction.

With this metamorphosis in human culture, our relationship to nature in general and to animals in particular underwent a dramatic shift. During the late Pleistocene era (50,000–35,000 years ago), our ancestors became highly efficient killers. We developed all manner of weapons to hunt big game, from bows and arrows to spear throwers, harpoons, and pit traps. We also evolved sophisticated techniques of social organization linked to hunting, allowing us to encircle whole herds of large animals and drive them off cliffs to their death. The Paleolithic cave paintings of the period in places such as Lascaux record the bountiful slaughter: mammoths, bison, giant elk and deer, rhinos, and lions.

Some of the first images created by *Homo sapiens*, these paintings suggest an intimate link between animals and our nascent drive to imagine and represent the world. Animals filled our dream life even as they perished at our hands.

One of earliest recorded forms of creative expression by *Homo sapiens*, this Pleistocene stag was painted on the wall of the cave at Lascaux in southern France.

In tandem with this great leap forward in social organization and killing capacity, humanity expanded across the planet. From our ancestral home in Africa, we radiated outward, colonizing all the world's major ecosystems within the span of 30,000 years. We spread first to Eurasia, then,

around 50- to 60,000 years ago, to Australia and New Guinea, then to Siberia and North and South America around 13,000 years ago, and then, most recently, to the Pacific Ocean Islands only 4,000 years ago. At the same time, humans underwent a massive demographic boom, expanding from a few million people 50,000 years ago to around 150 million in 2000 BCE. The late Pleistocene wave of extinctions cannot be understood in separation from this spatial and demographic expansion of *Homo sapiens*. In most places around the planet, the megafauna extinctions occurred shortly after the arrival of prehistoric humans.[33] On finding fresh hunting grounds, our ancestors encountered animals with no evolutionary experience of human predators. Like the ultimate invasive species, we quickly obliterated species that didn't know how to stay out of our way. The susceptibility of creatures who were unfamiliar with humans is evident from what biologists call the *filtration principle*: the farther back in time the human wave of extinction hit, the lower the extinction rate today.[34] This filtration effect means that in our ancestral home, Sub-Saharan Africa, only 5% of species went extinct, while Europe lost 29%, North America 73%, and Australia an astonishing 94%. Given the fact that biologists are only just beginning to understand the cascading, ecosystem-wide impact of the destruction of megafauna, it is hard to gauge the full impact

of the late Pleistocene wave of megadeath. Nonetheless, given its planetary scale, the mass extinctions of the period are certainly the first evidence of humanity's transformative impact on the entire world's animal species and ecosystems.

When all the big game was gone, our ancestors were forced to find alternatives to their millennia-old hunter-gatherer survival traditions. Combined with climatic and demographic changes, the megafauna extinctions catalyzed humanity's first food crisis.[35] Pushed by these crisis conditions, humanity underwent what may be seen as its second great transition: the Neolithic Revolution. Given conducive environmental conditions—including plant species that could be domesticated, abundant water, and fertile soil—human beings shifted from nomadic to sedentary modes of food production. This shift happened remarkably rapidly, from about 10,000–8,000 BCE. The transition to agriculture, with its greater capacity for food production, led to a demographic explosion. About 10,000 years ago, around the time of the Neolithic Revolution, the global human population was four million. By 5,000 BCE, it had grown to five million. Then, in a pivotal period as settled societies developed on a major scale after 5,000 BCE, our population numbers began doubling every millennium, to 50 million by 1000 BCE and 100 million

3: CAPITALISM AND EXTINCTION

Unpin that spangled breastplate which you wear,
That th'eyes of busy fools may be stopped there.
Unlace yourself, for that harmonious chime,
Tells me from you, that now it is bed time…
Licence my roving hands, and let them go,
Before, behind, between, above, below.
O my America! my new-found-land,
My kingdom, safeliest when with one man mann'd,
My Mine of precious stones, My Empirie,
How blest am I in this discovering thee!
To enter in these bonds, is to be free;
Then where my hand is set, my seal shall be.

—John Donne, "To His Mistress Going To Bed" (1654)

In the first of his accounts of his voyages to the New World, Christopher Columbus describes the island he named Española as an Edenic land whose "mountains and plains, and meadows, and fields, are so beautiful and rich for planting and sowing, and rearing cattle of all kinds, and for building towns and villages."[54] Greed and lust for power drip from Columbus's pen as he describes a marvelous land of abundant harbors and many rivers, "most of them bearing gold," and populated by naïvely generous inhabitants "so liberal of all they have that no one would believe it who had not seen it."

For Columbus, the biodiversity of this new world is equally notable, for, as he notes the islands are "covered with trees of a thousand kinds of such great height that they seemed to reach the skies," trees in which "the nightingale was singing as well as other birds of a thousand different kinds."[55] Columbus' breathless description of the material riches to be found in the "New World" set the tone for the European imperial expansion in the subsequent five centuries. As John Donne's sonnet to his mistress suggests, the lust for this imagined natural bounty was so strong that it permeated all aspects of European life, penetrating even the erotic fantasies of poets such as Donne. The flora and fauna of newly

European representation of Columbus landing in the "New World," where naive indigenous people hand him their treasure in a sign of welcome.

"discovered" lands appeared to Europeans to be an apparently boundless store of natural wealth, free for the taking. Today we confront the baleful legacy of this feckless appropriation and dissipation of the global environmental commons.

If, in other words, human beings have engaged in notable forms of ecocide throughout our history, it is only with the expansion of Europe and the development of modern

capitalism that ecocide has taken on a truly global extent and planet-consuming destructiveness. As Europeans subjugated and colonized "virgin" lands, they dramatically augmented processes of environmental degradation and extinction. The expansion of capitalist social relations through European colonialism and imperialism pushed what had previously been regional environmental catastrophes to a planetary scale. In addition, by transforming nature into a commodity that could be bought and sold, capitalist society shifted humanity's relations with nature into a mode of intense ecological exploitation unimaginable in previous epochs. Capitalism is not necessarily more immoral than previous social systems with regard to cruelty to humans and the gratuitous destruction of nature. As a mode of production and a social system, however, capitalism *requires* people to be destructive of the environment. Three destructive aspects of the capitalist system stand out when we view this system in relation to the extinction crisis: 1) capitalism tends to degrade the conditions of its own production; 2) it must expand ceaselessly in order to survive; 3) it generates a chaotic world system, which in turn intensifies the extinction crisis.[56] By wrenching specific elements out of the complex ecosystems in which they are intertwined and turning them into commodities, that is, capital remorselessly breaks down the

complex natural world into impoverished but exchangeable forms, simultaneously discarding all those elements that don't appear to have immediate exchange value. In addition, as Marx argued in the *Grundrisse*, "capital is the endless and limitless drive to go beyond its limiting barrier."[57] This argument is quite clear on an intuitive level: any corporation that doesn't outcompete its rivals will be driven out of business in short order. Finally, as the era of globalization demonstrates, capitalism creates a turbulent world in which "all that is solid melts into air," as established modes of governance and all other social forms are torn apart by a gale of "creative destruction." While many commentators have highlighted these dynamics of capitalism previously, they are particularly starkly evident when seen through the lens of extinction. These three key ecological contradictions of capitalism are interwoven in practice, but their particular dynamics are more evident when they are considered in isolation, as they are in the following sections. The examples discussed in these sections span the capitalist epoch, from the earliest years of merchant capitalism to contemporary forms of neoliberal globalization. Yet if these examples suggest that the ecological contradictions of capital are endemic, they also underline the remorselessly intensifying character of capital's death-dealing reign.

CAPITALISM'S DEGRADATION OF THE ENVIRONMENT

The tendency for capitalism to degrade the conditions of its own production is shockingly evident in the fur trade, one of the main forces that drove European expansion after 1500. Aside from keeping wearers warm, fur clothes were status symbols in early modern Europe. The right to wear fur was tightly controlled by so-called sumptuary laws, which dictated that only people of certain social rank were allowed to don luxurious clothes. Nevertheless, as the mercantile bourgeoisie grew, the demand for furs spiraled. Western Europe quickly destroyed most of its fur-bearing mammals, and Russia began its long expansion eastward into Siberia, where it collected furs as tribute from conquered peoples such as the Tatars. By the sixteenth century, furs were the Russian state's largest source of income. Siberian beavers, sables, and martens were driven to the edge of extinction within two centuries.[58] The insatiable demand for fur consequently became one of the primary catalysts for European colonization of the Americas. Indeed, the French, Dutch, and English development companies established to facilitate European colonization of North America quickly realized that furs offered one of the most convenient means

for the colonists to remit value back to Europe. Furs made fortunes for many European traders, who exchanged common and relatively cheap manufactured items such as iron axe heads with Native Americans for valuable beaver, deer, ermine, and other pelts.

Over time, the Native American tribes caught up in the fur trade gradually abandoned their subsistent ways of life, becoming integrated into the emerging capitalist world system as specialized laborers working to harvest furs for European traders.[59]

European traders barter with Native American hunters for furs.

In addition to transforming indigenous subsistence culture, the fur trade catalyzed bloody conflicts between Native American tribes, including the so-called Beaver Wars of the mid-17th century, in which the Dutch- and English-backed Iroquois Confederation battled the predominantly Algonquin-speaking tribes of the Great Lakes region, whom the French supported. As beaver populations declined in places such as the Hudson Valley due to over-hunting, tribes like the Mohawks clashed with their neighbors to the north and west, where fur-bearing animals had not yet been hunted to the brink of extinction. The full human impact of these wars is still largely unknown since they took place beyond the frontier of European colonization, but they undoubtedly weakened the Native American tribes of the Northeast, making them more vulnerable to subsequent settler colonial campaigns of expropriation and extermination. In addition, such inter-imperial competition between the French and English led to higher prices for pelts, which increased the incentive for unsustainable over-harvesting of furs by European trappers and Native Americans. The fur trade continued until after the American Revolution, helping to make John Jacob Astor, owner of the monopolistic American Fur Company, into the US's first multi-millionaire. But Astor, having played a prominent role in decimating the continent's

fur-bearing animals, abandoned the trade for speculation in real estate early in the nineteenth century. Although the beaver did not become extinct, its numbers were so reduced that it was no longer viable to hunt commercially. Scarcely two hundred years had passed since King Henry IV of France had granted the first charter to a European fur trading company in North America.

As Europe subjugated other parts of the planet, it dramatically transformed, and in most cases radically diminished, biodiversity of all kinds. In some cases, this was unconscious. The expansion of Europe into the Americas took the form of a great wave of novel biota, from smallpox and influenza viruses to pigs and horses.[60] Traveling alongside the European conquerors, these invasive species often wreaked havoc in the New World, killing many millions of Native Americans who had not been exposed to the new germs and transforming the landscape wholesale. In many cases, however, the Europeans also consciously obliterated biodiversity for their own selfish economic ends. For example, consider the plantation system. The immense diversity of the tropical and semi-tropical lands settled by the Portuguese and Spanish, early implementers of the plantation economy, was dramatically remade as land was turned over to grow

a single crop such as sugar. As territories were subjugated and incorporated into European empires and the nascent capitalist system, indigenous agricultural practices that were adapted to the local climate (and consequently highly diverse and resilient) were extirpated. Such well-adapted agricultural practices were replaced by cash crops grown for export to the imperial metropole. Indigenous peoples were displaced and slaves were imported to work the land, generating a brutal system of hitherto unequalled exploitation based on invented notions of racial difference. In addition to displacing and killing many millions of people, the monocultures of the plantation economy quickly exhausted the land in the colonies, destroying soil fertility, and increasing vulnerability to pests.

By the late eighteenth century, plantation owners in the Caribbean islands had begun to worry about environmental degradation and climate change, which at the time was known as desiccation.[61] As a result of the deforestation linked to plantations, rain had ceased to fall on some of these islands. Mounting concern over the deteriorating environment led to the passage of the first conservation legislation, which set aside forest land in a forerunner of national park systems.[62] As plantation owners depleted the

land, inter-imperial rivalry surged, with European colonial powers vying to capture islands whose fertility had not yet been depleted. The British abolition of slavery in 1833 can, in fact, be seen as a reaction to the declining productivity of its Caribbean plantations, rather than as an act of selfless humanitarianism.[63] Despite mounting awareness of the destructive social and environmental impact of the plantation system, however, the European powers continued to establish plantations around the world, as extensive tea, rice, and rubber industries were opened in Asia and Africa well into the twentieth century. The Green Revolution of the second half of the twentieth century continued this trend towards displacement of small peasant agriculture by large landholdings devoted to export agriculture, with fossil fuel based fertilizers and pesticides used to cope with the resulting environmental stresses and contradictions.[64]

As Europeans colonized other parts of the world, they took cultural beliefs with them that legitimated their conquests. These ideologies of domination, intended to justify European expropriation of indigenous people and their land, also established an exploitative attitude towards flora and fauna in the colonies. The English philosopher John Locke, for example, argued that God intended the land to

4: ANTI-EXTINCTION

A living organism, after all, was a ready-made, prefabricated production system that, like a computer, was governed by a program: its genome. Synthetic biology and synthetic genomics, the large-scale remaking of the genome, were attempts to capitalize on the facts that biological organisms are programmable manufacturing systems, and that by making small changes in their genetic software a bioengineer can effect big changes in their output.

—George Church and Ed Regis, *Regenesis*

September 2014 was the fortieth anniversary of the US Wilderness Act, a law which protected millions of acres of public land and also provided a lucid definition of wilderness: "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Coinciding with this anniversary, however, the World Wildlife Fund released its *Living Planet Report*, which contained the shocking news that the number of wild animals on Earth has halved over the past forty years.[88] Clearly the strategy of setting aside dwindling islands of wilderness as "untrammeled" reserves, an approach central to wildlife conservation, is failing miserably. The massive wave of defaunation that has swept the globe over the last half century challenges the very idea of an unspoiled nature. There is no safe refuge from anthropogenic extinction. Indeed, the wilderness that remains has been so significantly degraded that we suffer from what J.B. MacKinnon calls *change blindness:* as the planet's remaining wilderness is degraded, each generation grows up with an increasingly impoverished view of natural biodiversity, so that human experience itself is undergoing a form of extinction.[89] What remedies can we imagine to reverse this natural and cognitive destitution? Does the specter of the end of speciation promise to catalyze a renewed

restoration ecology? And, if so, what kind of wilderness should be resurrected?

If human beings are the prime authors of extinction, we can, according to advocates of *rewilding*, also be the creators of fresh wilderness. Introduced in the late 1990s by biologists Michael Soulé and Reed Noss, rewilding acknowledges the crisis in conservation provoked by dramatic defaunation. The concept was based on the then-radical idea that large, wide-ranging, usually carnivorous animals play a key role in preserving the diversity and resilience of ecosystems. In most cases, these keystone species, once viewed by human beings as a direct threat, have been displaced or driven to the edge of extinction. Rewilding entails the restoration of huge tracts of wilderness through the creation of large, linked core protected areas and the reintroduction of keystone species into such new wilderness. As imagined by its advocates, rewilding would not replace traditional conservation measures intended to protect the existing indigenous species of particular bioregions, but would complement such efforts by seeking to restore levels of biodiversity that have been eradicated from such sites in recent centuries.

Feral wolves reintroduced into Yellowstone National Park. Credit: Steve Jurvetson via Wikimedia Commons.

The idea of rewilding has gained significant traction as a result of the successful reintroduction of wolves into Yellowstone National Park. Seen by the European settlers who colonized the region in the nineteenth century as destructive predators whose behavior destroyed "more desirable" species like deer and elk, wolves had been almost entirely exterminated in the lower 48 states of the US by the mid-1900s. In the 1960s, however, the National Park Service moved away from an anthropocentric policy of treating Yellowstone like a carefully controlled game

reserve. Henceforth, the park's wildlife was to be allowed to manage itself. In response to this shift, biologists argued that wolves needed to be returned to Yellowstone in order to return the park's ecosystem to its "natural" condition, or at least to conditions before the arrival of European settlers, their cattle, and their predator-extermination campaigns. The idea of unleashing packs of wolves in Yellowstone generated a public outcry, but the reintroduction program, begun in the mid-1990s, has been a significant success. Yellowstone's gray wolves prey primarily on elk but also increasingly on bison, leaving carcasses that provide food to many other animals, including grizzly bears and cougars, helping to increase the numbers of these species. The wolves have driven elk herds out of the park's lowlands, leading to significant reforestation. As a result, record numbers of birds have returned to the park. Fish populations have also increased, as decreased grazing by elk has increased vegetation on riverbanks. Wolves are thus responsible for *trophic cascades*—chains of beneficial effects set off when an ecosystem's top predators change not just the numbers of their direct prey but also species with which they have no direct link.[90] Reintroducing predators and large herbivores in sites such as Yellowstone generates changes that cascade down the links of the

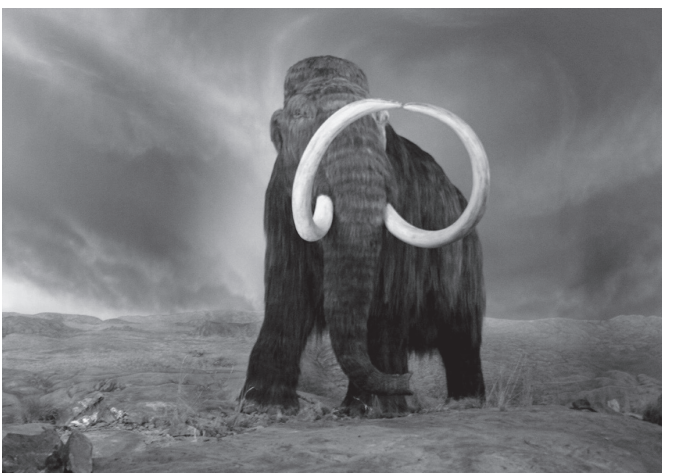
ecosystem, transforming even the soil composition and atmosphere of the region. By catalyzing a notable increase in the park's biodiversity, Yellowstone's wolves have given flesh to the hopes of rewilders.

For advocates like George Monbiot, rewilding promises to restore not just wilderness ecosystems but also humanity's hope about the environment. We no longer need think of ourselves as simply seeking to preserve an increasingly impoverished natural world, as traditional conservation biology does, Monbiot argues. Ecological change need not proceed as a remorseless downward spiral towards the end of speciation. As Monbiot puts it, by reversing destructive processes, rewilding holds out the hope that our silent spring may be succeeded by a raucous summer.[91] While it may be true that a species, once extinct, is gone forever, ecosystems themselves can be regenerated through the reintroduction of megafauna. Rewilding thus suggests that we can reverse the flow of ecological time. It proffers a possible restoration of lost environmental time. This temporal shift also augurs a rekindling of human wildness, as our ideas of what nature should be are transmuted through the reintroduction of displaced or extinct keystone species such as the wolf.

Rewilding also promises to rework environmental space. Looking forward to the calamitous impact of climate change, biologists have proposed radical new doctrines with the ominous-sounding names *assisted colonization* and *ecological replacement*. As habitats are transformed by climate change, the static spatial boundaries of existing parks and refuges are likely to strand animal and plant species in increasingly unsuitable sites. The pace of change in this regard is shocking: some plants are literally running up mountains at the rate of tens of feet per year in order to cope with climate change-induced habitat change.[92] Under such conditions, fears about the negative impact of invasive species must be tempered by the need to sustain entire ecosystems threated with annihilation.[93] Assisted colonization responds to this mutation of habitats by relocating endangered species to new, ecologically appropriate reserves.[94] Ecological substitution, conversely, involves introducing appropriate substitute species to restore an ecological role that has been lost when an original indigenous species goes extinct. In responding to the increasing instability of habitats likely to result in the all-too-near future from anthropogenic climate change, forms of rewilding such as assisted colonization and ecological substitution also challenge what Rob Nixon calls the eco-parochialism of conservation. All too often, Nixon suggests, conservation

has hinged on hermetically sealed definitions of ecosystems, downplaying the permeable boundaries of bioregions and ignoring the spatial networks and exchanges that have always linked diverse natural spaces.[95] By challenging such inherently exclusionary ideologies of environmental space, rewilding offers an important alternative to the potentially xenophobic spatial foundations of environmentalism.

How much lost environmental time does rewilding propose to redeem? The reintroduction of wolves to Yellowstone restores



A Woolly Mammoth, the most charismatic of megafauna and fetish object of schemes for de-extinction. Credit: Tracy O. via Wikimedia Commons.

5: RADICAL CONSERVATION

The philosophy of 'in the long run we are all dead' has guided economic development in the First and Third Worlds, in both socialist and capitalist countries. These processes of development have brought, in some areas and for some people, a genuine and substantial increase in human welfare. But they have also been marked by a profound insensitivity to the environment, a callous disregard for the needs of generations to come… It is what we know as the 'global green movement' that has most insistently moved people and governments beyond this crippling shortsightedness, by struggling for a world where the tiger shall still roam the forests of the Sunderbans and the lion stalk majestically across the African plain, where the harvest of nature may be more justly distributed across the members of the human species, where our children might more freely drink the water of our rivers and breathe the air of our cities.

—Ramachandra Guha, *Environmentalism: A Global History*

If mainstream environmentalism has been coopted by such neoliberal policies, what would a radical anti-capitalist conservation movement look like? It would begin from the understanding that the extinction crisis is at once an environmental issue *and* a social justice issue, one that is linked to long histories of capitalist domination over specific people, animals, and plants. The extinction crisis needs to be seen as a key element in contemporary struggles against accumulation by dispossession. This crisis, in other words, ought to be a key issue in the fight for climate justice. If techno-fixes such as de-extinction facilitate new rounds of biocapitalist accumulation, an anti-capitalist movement against extinction must be framed in terms of a refusal to turn land, people, flora, and fauna into commodities. We must reject capitalist biopiracy and imperialist enclosure of the global commons, particularly when they cloak themselves in arguments about preserving biodiversity. Forums for enclosure such as the UNFCCC's Business and Biodiversity Initiative must be recognized for what they are and shut down. Most of all, an anti-capitalist conservation movement must challenge the privatization of the genome as a form of intellectual property, to be turned into an organic factory for the benefit of global elites. Synthetic biology should be regulated.[121] The genomic information of plants, animals, and human beings is the common wealth of

the planet, and all efforts to make use of this environmental commons must be framed around principles of equality, solidarity, and environmental and climate justice.

Even well-meaning efforts to address extinction such as rewilding need to be challenged if they are not founded on considerations of globally redistributive climate justice. All too often rewilding schemes focus exclusively on wealthy areas of the planet. For instance, George Monbiot's "Manifesto for Rewilding the World" speaks exclusively of European rewilding schemes, and concludes by asking why Europe should not have a Serengeti or two.[122] This begs the question of what responsibility Europe has for Tanzania's Serengeti Park itself, as well as other wilderness areas in the global South. The record in this regard is deplorable. In 2013, for instance, Ecuador abandoned its Yasuni-ITT Initiative, which would have led to a moratorium on oil exploration in the Yasuni National Park, a UN biosphere reserve, in exchange for payments (by rich countries) of half the revenue drilling in the park was expected to generate.[123] The trust fund set up to manage the initiative received only a tiny fraction of the funds sought by Ecuador. How can one enthusiastically endorse rewilding in the global North when there is so little evidence of concrete determination to preserve existing biodiversity in

the South? Moreover, if rewilding is seen as a way of saving charismatic African megafauna like the elephant from destruction by importing them to the badlands of Western Europe or North America, it will all too easily become a latter-day form of imperial ecology, creating glorified zoos stocked with purloined African and Asian wildlife.[124] Finally, rewilding makes strong arguments about the pivotal role of keystone species, but, in so doing, tends to reproduce the traditional bias in Western conservation efforts towards the large, the beautiful, and the charismatic. It is not a solution for the vast majority of flora and fauna threatened with extinction today.

An anti-capitalist conservation movement must not only be aware of histories of colonial expropriation of flora and fauna, but should focus on ways of fighting such forms of exploitation today. Wildlife in parks such as the Serengeti was revived following centuries of European colonial big-game hunting of native animals. Today, well-armed poachers again threaten megafauna in the world's remaining biodiversity hotspots. While the poachers tend to send their culls of elephant tusks and rhino horns mainly to foreign markets, in most cases their weapons come from decades of proxy battles during the Cold War. Moreover, African states are often unable to challenge these poachers as a result of IMF-

and World Bank-administered structural adjustment policies that have left countries in the global South on the brink of collapse. Efforts to deal with the extinction crisis cannot focus on rewilding the global North alone, nor should they focus exclusively on interdiction of the global traffic in wildlife. An anti-capitalist movement against extinction must also address the fundamental economic and political inequalities that drive the slaughter of megafauna. The extinction crisis should be framed in the context of a new wave of extractivism that is denuding many poor nations, shunting their minerals, flora, and fauna to consumer markets in industrialized nations. This new extractivism should be seen for what it is: a fresh wave of imperialism that is decimating poorer nations by removing the biological foundation of their collective future.[125]

What would be the shape and fundamental goals of an expansive anti-capitalist movement against extinction and for environmental justice? It would have to commence with open recognition by the developed nations of the long history of ecocide charted in this book. Such an admission would lead to a consequent recognition of the biodiversity debt owed by the wealthy nations of the global North to the South. Building on the demands articulated by the climate justice movement, the anti-capitalist conservation movement

must demand the repayment of this biodiversity debt.[126] How would this repayment take place? As REDD demonstrates, states in the global South cannot always be counted on to disburse funds received from the North in a just manner; indeed, at present they collude all too often with resource-exploiting corporations by displacing genuine land stewards such as indigenous and forest-dwelling peoples. The climate justice movement's call for a universal guaranteed income for inhabitants of nations who are owed climate debt should serve as a model here. Why not begin a model initiative for such a carbon and biodiversity-based guaranteed income program in the planet's biodiversity hotspots? Of the twenty-five terrestrial biodiversity hotspots, fifteen are covered primarily by tropical rainforests, and consequently are also key sites for the absorption of carbon pollution. These threatened ecosystems include the moist tropical woodlands of Brazil's Atlantic coast, southern Mexico with Central America, the tropical Andes, the Greater Antilles, West Africa, Madagascar, the Western Ghats of India, Indo-Burma, Indonesia, the Philippines, and New Caledonia. They make up only 1.4% of the Earth's surface, and yet, according to E.O. Wilson, these regions are "the exclusive homes of 44% of the world's plant species and more than a third of all species of birds, mammals, reptiles, and amphibians."[127] All of these

areas are under heavy assault from the forces of enclosure and ecocide. A universal guaranteed income for the inhabitants of these hotspots would create a genuine counterweight to the attractions of poaching, and would entitle the indigenous and forest-dwelling peoples who make these zones of rich biodiversity their homes with the economic and political power to push their governments to implement significant conservation measures.

Where would the capital for such a guaranteed income program for biodiversity hotspots come from? There is certainly no shortage of assets. As Andrew Sayer has argued, the 1% have accumulated their increasingly massive share of global wealth by siphoning off collectively produced surpluses not through hard work but through financial machinations such as dividends, capital gains, interests, and rent, much of which is then hidden in tax havens.[128] Indeed, if we consider the massive upward transfer of global wealth that has taken place over the last half century, it would be fair to say that never before was so much owed by so few to so many. One way to claw back some of this common wealth would be through a financial transactions tax of the kind proposed by James Tobin. Such a Robin Hood tax, of even only a very small percentage of the speculative global capital flows that enrich

the 1%, would generate billions of dollars to help people conserve hotspots of global biodiversity. Such funds could also be devoted to ramping up renewable energy-generating infrastructures in both the rich and the developing countries.

Yet a universal guaranteed income in recognition of biodiversity debt should not be a replacement for existing conservation programs. Instead, such a measure should be seen as an effort to inject an awareness of environmental and climate justice into debates around the extinction crisis. Biodiversity debt would thus augment existing conservation programs while militating against the creation of conservation refugees. In addition, rewilding and de-extinction, despite their significant flaws, may have a place in an anti-capitalist conservation movement, but only if they are reframed in terms of the history of ecocide. Rewilding, for instance, should not be undertaken in the global North without a commensurate pledge of economic assistance for conservation and rewilding of areas in the global South, whose present depleted state is often a direct product of the North's extractive industries, from plantation slavery to the latest round of land grabs. Similarly, de-extinction may be employed judiciously, for example to reintroduce extinct versions of genes into species that have lost a dangerous amount of genetic diversity. Such

efforts should, however, be designed to conserve existing biodiversity, particularly in endangered hotspots, rather than to resurrect extinct charismatic megafauna from the grave. Any and all such efforts to work against extinction should be undertaken as acts of environmental solidarity on the part of the peoples of the global North with the true stewards of the planet's biodiversity, the people of the global South. Only in this way can the struggle against extinction help promote not simply forgiveness and reconciliation, but also survival after five hundred years of colonial and imperial ecocide.

The struggle to preserve global biodiversity must be seen as an integral part of a broader fight to challenge an economic and social system based on feckless, suicidal expansion. If, as we have seen, capitalism is based on ceaseless compound growth that is destroying ecosystems the world over, the goal in the rich nations of the global North must be to overturn our present expansionary system by fostering *de-growth*. Most importantly, nations that have benefited from burning fossil fuels must radically cut their carbon emissions in order to stem the lurch towards runaway climate chaos that endangers the vast majority of current terrestrial forms of life. Rather than false and impractical solutions such as the carbon trading and geo-engineering schemes championed by advocates of neoliberal

responses to the climate crisis, anti-capitalists should fight for some version of the contraction and convergence approach proposed by the Global Commons Institute.[129] This proposal is based on moving towards a situation in which all nations have the same level of emissions per person (convergence) while contracting them to a level that is sustainable (contraction). A country such as the United States, which has only 5% of the global population, would be allowed no more than 5% of globally sustainable emissions. Such a move would represent a dramatic anti-imperialist shift since the US is at present responsible for 25% of carbon emissions.

The powerful individuals and corporations that control nations like the US are not likely to accept such revolutionary curtailments of the wasteful system that supports them without a struggle. Already there is abundant evidence that they would sooner destroy the planet than let even a modicum of their power slip. Massive fossil fuel corporations such as Exxon, for example, have funded climate change denialism for the past quarter century despite abundant evidence *from their own scientists* that burning fossil fuels was creating unsustainable environmental conditions.[130] Such behavior should be seen frankly for what it is: a crime against humanity. We should not expect to negotiate with such destructive entities. Their

assets should be seized. Most of these assets, in the form of fossil fuel reserves, cannot be used anyway if we are to avert environmental catastrophe. What remains of these assets should be used to fund a rapid, managed reduction in carbon emissions and a transition to renewable energy generation. These steps should be part of a broader program to transform the current, unsustainable capitalist system that dominates the world into steady state societies founded on principles of equality and environmental justice.

At present, such revolutionary measures seem completely impractical since most of the media, the political parties, and the repressive power of the state are in the hands of the plutocrats. Yet now, more than ever, we cannot let the present state of affairs determine our horizon of hope and sense of possibility. The terminal crisis of capitalism is no longer a prospect—it is a reality that is breaking across the planet like a series of ferocious interconnected storms. Science tells us that this unprecedented climate turbulence will first wash over tropical, postcolonial nations, where decades of structural adjustment have weakened infrastructure, fed urban destitution, and decimated collective solidarities.[131] Already we are seeing climate change-catalyzed conflicts such as the war in Syria devastate entire societies, generating millions of

refugees, thousands of whom have been left in limbo by the refusal of European nations to offer safe harbor.[132] Yet while the global South will be hit first and hardest, the coming waves of climate chaos will wash across the entire globe. As Christian Parenti has argued, there are no safe harbors from this gathering storm.[133] Ironically, continuing with business as usual is now a recipe for increasingly catastrophic disruption of the basic climatic conditions humanity has enjoyed since the Neolithic Revolution. Inaction is now a recipe for dissolution. Simply in order to retain an environment conducive to the continued existence of our fellow animals, plants, and humans, then, we must transform the root conditions of the climate crisis: the unsustainable capitalist system that is driving the sixth extinction. In sum, the only true conservation is a radical conservation.

6: CONCLUSION

The pika is a small, rather cute mammal that looks a bit like a hamster. Pikas live on the rugged slopes of mountain ranges in eastern Asia, the Middle East, and North America. Researchers report that extinction rates for the American pika have increased nearly five-fold in the last decade.[134] Since they depend on cool, high-mountain habitats to survive, pikas have been coping with the higher temperatures caused by climate change by moving up mountain slopes at a rate that has increased eleven-fold over the last ten years. Pikas eventually arrive at the top of their mountains; at this point, they have nowhere left to go to escape global warming. Their desperate plight is a particularly poignant metaphor for the situation in which the animal and plant species of our planet as a whole increasingly find themselves. As the first mammal species to be directly endangered by climate change, pikas are a sentinel species, a warning of the intensification of already catastrophic rates of habitat destruction and extinction resulting from anthropogenic climate change.

Why should we care about the fate of the diminutive pika, or any other endangered species of plant or animal for that matter? Why bother about extinction? Aren't there many other crises, including environmental calamities such as city-destroying hurricanes, to worry about? These questions can be answered in purely utilitarian terms. Human beings depend on other species for our existence. The plants and animals that surround us synthesize the oxygen we breathe, consume the carbon dioxide we emit, produce the food we eat, maintain the fertility of the soil, and return our bodies to the earth after we die.[135] Although many cultures recognize and celebrate this rich interdependency of species, the capitalist system that has come to dominate the world over the last five centuries is grounded in and thrives on dispossession. When viewed through the lens of extinction, it is an economic system and culture founded on a drive to annihilate everything in its path.

But there is a very different answer to the question of why we should bother about extinction. Each species and ecosystem contributes to the richness and beauty of life on Earth. Each is unique and, according to the increasingly influential doctrines of Earth jurisprudence or Wild Law, each is an integral part of the web of life

and consequently has rights that must be recognized and revered.[136] Once a species or an ecosystem is destroyed, it is lost forever. The great wave of destruction that is the sixth extinction radically impoverishes not just the planet but humanity as well. It is an indication that something has gone fundamentally wrong with us. Some might suggest that human beings have been cursed with the capacity to destroy other species wholesale for many millennia. In her influential book on extinction, for example, Elizabeth Kolbert writes that it is our creativity as a species that endangers, but also may save the planet. "As soon as humans started using signs and symbols to represent the natural world," she writes, "they pushed beyond the limits of that world."[137] There is certainly some ground for this assertion: as we have seen, language allowed *Homo sapien*s to organize themselves into lethal hunting bands capable of unleashing a worldwide wave of megafauna extinction in the late Pleistocene era. Yet since then, many human cultures have learned to live in relative harmony with the flora and fauna that surround them. More importantly, the extinctions of past millennia pale in comparison with the decimation of global wildlife unleashed by capitalism during the modern era. Understanding that capitalism is responsible for the lion's share of the sixth extinction helps

us avoid the deeply dystopian idea that human beings are innately destructive of the natural world.

An anti-capitalist perspective also prevents us from attributing ecocide to humanity as a whole. As we have seen, capitalism has unleashed waves of enclosure, imperialism, warfare, and ecocide over the last five hundred years that have benefitted a very small segment of humanity while displacing, immiserating, enslaving, and destroying countless numbers of people, animals, and plants. Everyone is not equally responsible for the destruction of nature, despite Kolbert's suggestion that "if you want to think about why humans are so dangerous to other species, you can picture a poacher in Africa carrying an AK-47 or a logger in the Amazon gripping an ax, or, better still, you can picture yourself, holding a book in your lap."[138] Such a sweeping indictment of an undifferentiated humanity is both historically inaccurate and politically disempowering. Such a perspective offers us no understanding of the structural forces that generate exploitation and ecocide, no sense of how such forces may push the vulnerable to behave in ways that are antithetical to their long-term interest, and no conception of how people in the relatively affluent global North might act in solidarity with those whom

Frantz Fanon called "the wretched of the earth." Such a perspective is truly hopeless.

It has been said that it is easier to imagine the end of the world than to envisage the overthrow of capitalism.[139] I would respond to this aphorism from dark times that it is easier to imagine the end of capitalism than it is to articulate any other genuine solution to the extinction crisis. If capitalism is the ultimate cause and prime engine of the extinction crisis, surely we can only conclude that we may find hope in challenging its baleful power with all means at our disposal. Capitalism is not eternal; it is a specific economic system grounded in a set of historically particular economic arrangements and social values. It came onto the world stage relatively recently, and, one way or another, it will eventually make an exit. The question for us, then, is what kind of end we wish to make. Thinking in anti-capitalist terms can be liberating, triggering myriad constructive projects and emancipatory prospects. Indeed, as Naomi Klein has recently argued, the climate crisis is already stirring up many novel experiments and exciting visions for a new society.[140] But Klein's point is an even more fundamental one: climate science, she points out, has made it blindingly clear that our economic system is

destroying the planetary life support systems upon which we depend. Climate change therefore makes it imperative that we discuss radical transformations in capitalist social relations, a topic that has been largely taboo for the last two decades.

The extinction crisis makes the urgency of the transformation Klein alludes to even more palpable. After all, increasing atmospheric carbon concentrations remain relatively abstract for most people on the planet. In contrast, the wave of extinction that is decimating plants and animals around the planet strikes at the most intimate and potent of human faculties: our ability to imagine. The power of human dreams has historically been closely tied to the generative multiformity of the plant and animal life that surrounds us.[141] Even in the "advanced" capitalist cultures, we encourage our children to learn basic forms of empathy and imagination by giving them toy animals and reading them stories like *The Tale of Peter Rabbit.* We have always used animals and plants to symbolize our most intimate fears, our hopes, and even our greatest loves. As capitalism tears increasingly gaping holes in the beautiful web of life of which we are a part, our capacity to dream, to imagine different, more manifold worlds is radically

impoverished. Every species that is consigned to oblivion is a grave loss to the planet in general and a serious threat to the many people whose lives are intertwined with that species. In addition, however, such losses are the most concrete possible testimony to the ecocidal character of capitalism. In the face of such an irredeemably rapacious and ultimately impoverishing system, we must insist on the human capacity to dream and to build a more just, more biologically diverse world.

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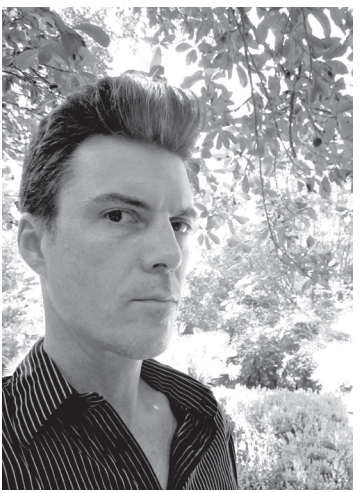

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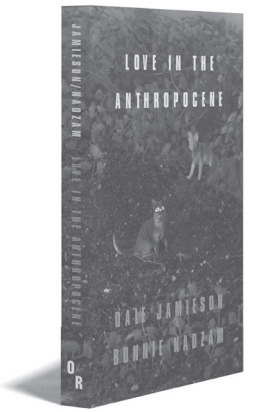

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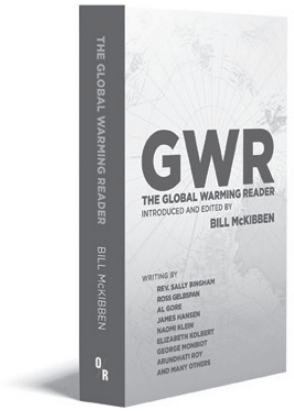

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