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Extinction and Its Interventions in the Americas

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Abstract

This forum argues that environmental historians ought to pay more attention animal extinction—the disappearance of a lineage of life—than they have to date. Examining the pre-and post-extinction contexts of charismatic terrestrial vertebrates in the Americas certainly underscores the power humans have had over other animals and their habitats. Yet, the contingencies and unexpected results of conservation efforts merit no less attention. Indeed, by uncovering important nuances in the extension of human power, they provide insights into the conditions critical to avoid extinction. As environmental history has long shown, abstracting the human from the nonhuman world distorts the history of both. Thus, leaving extinction to other disciplines misrepresents what historians can offer and how societies can address ongoing crises of extinction. In this forum, historians partner with scientists in collaboratively composed essays, negotiated across stylistic conventions and subject orientations, to highlight the latent promise of such partnerships. In doing so, they engage spatial and temporal scales that clearly illustrate the significance of deep history and historicize extinction by calling attention to the power, production, and scales of species decline.

[End of Abstract]

Forum Introduction

The path of extinction is often painted in black and white terms: Animals are abundant, humans encroach, animals disappear. Even if this cadence may be largely true, it elucidates little about efforts intended to prevent extinction and the interventions that disrupt such a cycle. Rendering extinction as an inevitable process masks contingencies and opportunities which merit greater analysis; this is where historians have the most to add. Saving animals from extinction rarely follows simple trajectories because animals are unpredictable and because action must be taken with incomplete data. Take for instance the vicuña, a smaller, wilder cousin of the llama native to the high Andes Mountains. After a peak of some two million animals continentwide when the Spanish arrived in South America in the sixteenth century, the population reached a nadir of fewer than 6,000 animals by the early 1960s. Disease, indifference, and competition for grazing land provided some explanation for the decline. Consumption proved more notable: Extremely soft and warm, vicuña wool generated a luxury fabric valued at five times the cost of cashmere. The lack of effective harvesting restrictions led to rapid depletion, sacrificing vicuña to fashion. Scientists, bureaucrats, and communities stepped in to stave off the decimation by ending international trade in 1975 and setting up a refuge in Peru.¹

Intervention worked. The reserve's population increased tenfold in a decade—rising from fewer than 2,000 animals to more than 20,000. The strategies seem obvious enough in retrospect. Stop the killing. Give them a place to live. Monitor their habits and habitats. Sooner than anyone imagined, however, vicuña crowded their small reserve. Where there were once too few vicuñas, there soon were many. In solving one problem, the intervention created others that demanded new solutions. What was to be done? Start culling—that is, strategically eliminating—animals recently on the verge of extinction? Relocate the animals at enormous expense and risk? Let them waste away, starving in drought conditions? Reintroduce extirpated carnivores? Experts had assumed that the reserve and restrictions would stop the

decline; no one anticipated the vicuña would reproduce so rapidly as to outstrip the reserve's resources in a generation. Scientists running the vicuña project could not fully predict longer term outcomes. Such are the complexities of intervening in extinctions.

Ecologists and paleontologists argue that we are on the brink of the sixth mass extinction. In the past five centuries, nearly one thousand species of animals and plants have been recorded as extinct. Recent estimates suggest that 41 percent of described amphibians, 26 percent of mammals, and 13 percent of birds currently face the threat of extinction.² At current rates, the world could witness a mass extinction—defined as the disappearance of the majority of species—over the next few hundred years, a blink on the geological timescale.³ The earth has experienced only five similar events. If the sixth mass extinction takes place, it would be unique. Not only would it occur faster than any of the previous five (which unfolded over tens of thousands to millions of years), but there would be no doubting its cause: humans.⁴ Historians recognize that while this calculation has general resonance, “humans” alone as culprits are not a useful shorthand for understanding the ways extraction, colonialism, and empire have shaped how different human societies have contributed to extinction. Reductively framing the issue as a collective human problem obscures power differentials and masks the heterogeneity of differently timed agricultural and industrial developments.

Environmental historians are well-positioned to inform understandings of extinction, but doing so in a way that might help us stave off sixth great extinction requires us to partner with scholars in other disciplines. Working in conversation with scholars from other disciplines places historical methods at the service of additional lines of inquiry and forges new ground in disciplinary convergence.⁵ History offers robust analytical expertise and valuable empirical evidence to other disciplines that take extinction seriously. Historians ably chart individual lives or events and analyze long-term processes such as colonialism and nationalism that have profound connections to the forces that have pushed so many species to the brink of extinction. There is some consensus on the growing set of factors that contribute to wildlife decline—from habitat loss, introduced species, pollution, population growth and overconsumption to water scarcity, ocean bycatch, soil degradation, oil and gas development, and climate change. There is less agreement on the relative conjunction of such pressures, the particular drivers and amplifiers of each, and how they might combine into particular patterns in specific places and, thus, reveal the potential for specific interventions. Extinction, as a subject of history, often appears tied to charismatic megafauna or flagship species.⁶ Moreover, species decline and loss have shaped human historical trajectories. While debates may continue over the drivers of extinction, convening conversations about the intersections between species and societies and offering to learn alongside our colleagues in adjacent disciplines will allow us to more fully plan effective interventions.

On the surface, extinction might seem a classic topic or traditional staple of environmental history yet this flagship journal has only published three research articles with extinction in the title. To be sure, extinction has appeared at least in passing in many of the journal's articles, but only six have positioned extinction as an essential part of their arguments by noting it in their abstracts. Compared to other common themes, conservation (fifty-five articles), climate (twenty-five articles) or even energy (fifteen), six articles about extinction seems surprisingly few.⁷ While some monographs centering on extinction have been published since 2000 (including by contributors to this forum), they are few and far between. A recent survey of global environmental history had to rely almost entirely on non-historians for its section on biological diversity and decline.⁸ Environmental historians frequently mention extinction, but they do so typically when discussing other topics. Extinction still lacks close scrutiny from the field. Historians' sustained interest in extinction could reinforce the “environmental turn” in the humanities and expand engagement with what John McNeill has called the “grimy and greasy realities” of the Anthropocene.⁹ Writing additional histories of extinction may also help position history as an asset to other disciplinary approaches.

This forum emphasizes the importance of extinction and models how historians can contribute more to understanding it—through collaboration and co-authorship. To some extent, environmental historians have always relied on scientific evidence to build their narratives, but they rarely directly collaborate with scientists. The advantage of doing so is twofold. First, it helps historicize scientific findings, which are often thinly grounded in history's attention to change over time and context. Second, it makes environmental history more scientifically rigorous and thus able to reach beyond and find reception outside communities of historians.¹⁰ All contributors to this forum wrote their essay with an expert from another field. Collaborations created new avenues of inquiry, pushing authors to work beyond disciplinary boundaries. Nancy Langston and Kathleen Brosemer, for instance, at first tried to keep inside their disciplinary boundaries but quickly realized that the historian had deep scientific knowledge and the scientist historical and Indigenous insights. They recognized that it is difficult to clearly demarcate where the history stops and biology begins. Peter Alagona and Alexis Mychajliw, by contrast, grappled with the challenges of applying scientific data,

such as paleontological techniques like radiocarbon dates, to a historical question about the differences between Spanish and Mexican practices in California. By inviting the co-production of knowledge, we hope to normalize collaborative exchange, emphasize the process of negotiation, and strategically modify how we express historical insights.

Beyond the methodological call for interdisciplinary cooperation, this forum examines terrestrial vertebrate species—those most likely to be noticed by human populations—to confront the history of extinction and the various interventions intended to prevent it. These include large mammalian predators (California bears and Mexican wolves), reptiles (Cuban crocodiles, American alligators, and Galápagos tortoises), and birds (common loons and passenger pigeons). These extinction and near-extinction stories chronicle human-caused economic, political, cultural, and environmental change. A variety of agents—from Indigenous peoples to politicians to scientists, urban dwellers, farmers, and affected species themselves—shaped, accelerated, and opposed these processes. Of these examples, the ones most at risk proved to be either super-abundant (the passenger pigeon) or super-rare (the short-faced bear), or predators targeting what can otherwise be commodified (wolves and loons). All faced pressures of extractivism and all have deep cultural resonance. The moments where extinction did not happen are those where historians have the most to add. Showing the contingencies that halted what seemed inevitable open opportunities for further interventions.

The Americas offer a compelling geographical area in which to understand extinction because iconic animals such as the passenger pigeon have disappeared, while others, such as the Mexican wolf, find themselves on the brink (Figures 1 and 2). Species like the Andean vicuña and the American alligator have been, at least for the moment, saved. Proposals for de-extinction of other animals such as a Galápagos tortoise species provide new frontiers for thinking about extinction's limits. Terrestrial vertebrate extinctions in the Americas have geographically skewed north. Most have taken place in North America or on islands. Continental North America, inclusive of Mexico, has lost around 270 animal species since 1500. In the Caribbean, Cuba and Hispaniola have been particularly hard hit with about twenty-six species lost combined. The same estimate puts twenty-eight vertebrate extinctions in continental South America with Brazil topping the list. Ecuador is second with eight extinct species with most of them in the Galápagos islands.¹¹

<<Figure 1 about here>>

<<Figure 2 about here>>

Seen holistically, the Americas experienced punctuated historical processes of extinction: the decline of large mammals at the end of the Pleistocene epoch, the introduction of plantation economies by Europeans, the integration of industrialized processes of extraction and commodification which set the ecological and evolutionary—not just social and cultural—histories of the hemisphere on different trajectories. These interventions—biophysical and political—reordered landscapes creating remnants and hybrids traceable not only in historical documents, including codices and diaries, but also in pollen counts, lake cores, and DNA tables. The vicuña and other camelids encountered by conquistadors had significantly more variability and range of phenotypes than today's species and breeds; bottlenecks of the populations due to European livestock diseases and population declines resulted in traceable hybridization.¹²

Environmental historians claim familiarity with competing timescales—deep history, ecological cycles, political cycles, climate cycles, and revolutionary cycles—and have demonstrated the ways sociocultural interpretations of timescales shape resource use decisions, whether in the Dust Bowl, the Little Ice Age, or the Columbian Exchange. Yet, reconciling social histories or economic chronologies with the exponentially greater timescales applied to Big History (ie. history since the Big Bang) proves challenging.¹³ The five previous extinction events—known as the Big Five—fall onto the timeline of Big History, so one might assume they exist beyond the training and familiarity of most historians. Paleontologists explain that the Big Five mass extinctions include events that resulted in the disappearance of an extraordinarily high percentage of life on earth within a geologically short interval of time—typically 75 percent or more in less than two million years.¹⁴ And yet, macro timescales have limited utility for environmental historians eager to understand the political nature of the present extinction events. There are important insights from paleontologists—for instance, it hasn't been lost on historians that the predicted sixth extinction coincides in geological terms with what has been called the Anthropocene, the human age.¹⁵ Alagona and Mychajliw's article on the 50,000-year history of bear species in Southern California exemplifies the strength of incorporating

various timescales. Their work also showcases how collaboration between environmental historians and scientists can lead to new questions and methods (the combination of archival documents with stable isotopes from museum specimens) that in turn lead to novel, more reliable answers.

The animals themselves provide another site for analyzing the power and contingencies of extinctions. Historians, including historians of science, have long argued that categories like species are contested.¹⁶ Species do not exist outside the social taxonomies that produce scientific knowledge itself, as demonstrated by the Galápagos island tortoises examined in Elizabeth Hennessey and James Gibbs' piece. Confusion over the Cuban crocodiles' identity and challenges with creating hatcheries for them further elaborate such shifts as recounted by Reinaldo Funes Monzote and Etiam A. Pérez Fleitas. Moreover, determining the endangerment of a given species is fraught with scientific uncertainty and shaped by political context, as Mark Barrow and Allan Woodward's piece on the listing of the American alligator shows. And yet, species symbolize more than slippery scientific categories. Species extinctions mark an ending for the contributions of a whole suite of animals to larger ecological communities. Charismatic individual stories, like the last passenger pigeon named Martha, have lasting psychological effects that shape public understandings of extinction and its consequences. But, as Dolly Jørgensen and Isla Gladstone demonstrate, familiarity with a narrative does not mean the public can see their own role in the historical processes that lead to extinction. We may—and often do—view the extinction of certain species as a process that seems to play out on a separate rather than shared hemispheric stage. Historians can elaborate in intensive detail on the processes, both human and not, that contributed to an extinction event.

Extraction and commodification shaped the range, distribution, and abundance of terrestrial vertebrate species in the Americas. As Langston and Brosemer show, Indigenous peoples commodified loons in important ways, as the Inkas and other Andeans did with vicuñas. Yet virtually every animal population that has declined or become extinct over the course of the nineteenth and twentieth centuries has done so within the context of global industrial capitalism. Although socialist and communist economies have taken part in the extractive pressures of this capitalist dominated world, the modern extinction crisis in the Western Hemisphere unfolded within a capitalist world centered on profit, consumerism, and extraction.¹⁷ Thus, a historical study of extinctions and near extinctions offers a new lens through which to examine how commodification shaped the environment and where interventions staved off extinction, at least for a time.

Together, the more-than-human stories of this forum illustrate the potential of emphasizing connections across time, space and species. Viewed from the perspective of commodification, the extinction story acquires shared meaning.¹⁸ The modern animal population declines now threatening a sixth mass extinction have fallen into two basic categories: commodification and externalities of economic growth. First are those caused by the transformation of a given species into an object of value. These species declined under industrial commodification's various stages of capture, trade, transformation, and consumption because their market values provided incentive to exploit beyond recovery. The passenger pigeon and vicuña demonstrate this tendency. The second category includes species that avoided commodification through certain biophysical attributes. These tended to be either incapable of commodification or stood in the way of commodifying another species or landscape. Many species that have declined or disappeared belonged to this category; simply put, these species were deemed useless or obstructive to growth imperatives, especially in agriculture. Many predators, such as the common loon analyzed by Langston and Brosemer and the Mexican wolf examined in Germán Vergara and Alberto Lafón's piece, fit this category. The Mexican wolf posed an imminent threat to ranching interests in the southwest, prompting a decades-long, transnational extermination campaign. While the Mexican wolf jeopardized another creature's commodification, the Andean vicuña was itself commodified into near extinction. Habitat encroachment and conversion similarly caused the decline of many wild species.

Comparative species loss and extinction offer new ways of understanding the shared processes leading to the commodification of nature in varied contexts and the importance of diverse attempts to limit market forces. In the Americas, capitalist growth imperatives often lie at the heart of modern extinction events and yet the states that took steps to save species often shared few political similarities. Extinction illustrates industrial capitalism's tendency to create wealth even at the cost of eradicating life and the necessities of intervention on moral and scientific grounds. Extending such arguments into parallel research that considers the ecological context is imperative. Certain species have adapted to and withstood commodification and industrial levels of extraction better than others. Small, abundant, widespread, and short-lived animals that mature fast and produce large litters requiring little or no parental care have generally fared well.¹⁹ On the contrary, large-bodied, slowly reproducing animals that bear few offspring and nurture

them for long periods of time have proven highly vulnerable to the pace of economic growth. Taxa with small geographic ranges and low population abundance have also fared poorly. Scientists now refer to the elimination of large apex consumers as the trophic downgrading of the planet, which may have long-term consequences for fire regimes, carbon sequestration, the spread of diseases, and biogeochemical exchanges between soils, water, and the atmosphere.²⁰ As Alagona's and Mychajliw's piece on Southern California's bears demonstrates, trophic or faunal downsizing has a deep history, one that has accelerated in modern times.

Most natural scientists who study species loss consider population decline and extinction to be driven by factors such as deforestation, habitat loss, and overhunting. But this work sometimes examines these drivers as ahistorical and self-evident. For instance, research on modern species loss uninformed by historical methods has often overlooked the intertwined economic pressures that turn animals into commodities for a world market. Subsequent scientific recommendations to address these problems thus trend toward the superficial (at least in the eyes of historians).²¹ Consider the suggestion to reduce global deforestation. Few would disagree with the aim and its importance, but abstracting the question from its historical context makes it impossible to understand the causes of deforestation and so to rightly chart a course forward that accounts for those causes. Global deforestation cannot be separated from global markets for forest products or agricultural expansion, which are in turn shaped by cultural ideas and demands. Expansion is incentivized by international markets for agricultural commodities and consumers' desires to be able to eat an orange in any season, to have wine from five continents in their cellars, and to eat meat five days a week. The opaque policies that guide such markets (NAFTA and its kin, the US Farm Bill, Brazilian Land-Grabbers' Law in its several iterations) also play an important role. Without a serious attempt to either regulate or limit those global markets, efforts to curb deforestation will remain localized and ultimately unsuccessful. Historians can offer systematic and detailed accounts of past human activities and examples of actions taken to mitigate forest loss in order to show how those policies have addressed, influenced, or been shaped by economic activity.²² In other words, historians can provide an account of the political economy of deforestation, forest conservation, and extinction in the past.

Another common scapegoat for extinction is population growth. For many scientists, human population growth drives species decline and extinction. There is little doubt that exponential population growth over the last century has greatly impacted animal populations. But this analysis can sometimes veer into facile Malthusianism that posits a seemingly obvious solution: reduce human numbers. As political ecologists have noted, population dynamics are too important to leave to Malthusianists because their model poorly reflects global ecology and changing human behavior. One important critique involves the role of women in the workforce and their increased access to education, nutrition, and decision-making playing key roles in decreasing fertility and population growth.²³ A historical perspective contextualizing population growth, particularly the racist and racialist logic of most appeals to curtail population in the so-called developing world, complicates this diagnostic. Historians can argue and have argued that it is the modern era's unprecedented scale of economic expansion, extraction, and commodification, in combination with the explosion of human populations, that has caused much of the environmental change seen over the past few centuries.²⁴ A smaller global population could continue to have an enormous environmental impact if many lived in societies with economic systems predicated on unsustainable growth like industrial capitalism. Genuine and lasting solutions will need to address in tandem how to reduce human numbers and modify the economic conditions that both shape and sustain those populations.²⁵

The study of extinctions can shed new light on the history of capitalism and industrial economies.²⁶ In studying animal population declines, species near extinctions, and extinctions, environmental historians can trace and even quantify over time the expansion of markets and trade. By using animal population declines and extinctions as proxies, historians can chart in detail the story of how and when a given ecosystem or region became incorporated into expansive networks of trade and commercial exchanges. As such, species loss represents an instrument for assessing environmental change over time and for intervening in those changes.

Animal history is *a part of*, not *apart from*, human history. Other-than-human worlds are being erased—not only changed—in front of our eyes as species become extinct. With their disappearance, humans are losing part of themselves and their history. How does the field of environmental history need to rethink itself in the face of such an existential threat? A good beginning point would be to pay more attention to extinction; a necessary corollary is to develop interdisciplinary collaborations. Indeed, collaboration with other researchers across a range of extinction studies can help environmental historians advance their field and others. We owe the future a more expansive and robust grappling with the multispecies past.

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Notes

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