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More-Than-Human Histories

Abstract

This article continues and extends a conversation between environmental history and the broader environmental humanities, outlining and defining an approach to more-than-human histories. Engaging with more-than-human and multispecies approaches in a range of fields within the broader environmental humanities, we point to a nested set of commitments that shape these research agendas. More-than-human histories as articulated here take on three of these commitments in particular: co-constitution; the presencing of multiple species and multiple voices; and situated politics and ethics. These commitments offer meeting points for environmental history and the broader environmental humanities, which can bring them into closer dialogue with a range of mutual benefits as well as raising some challenges for each. The article concludes with a consideration of the methodological implications of this approach, pointing to ways in which a more-than-human approach might allow environmental historians to uncover new sources and approach familiar ones from new angles.

In the last two decades, the field of environmental humanities has emerged and rapidly grown in response to multiple and mounting "environmental" challenges. While the term "environmental

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humanities" is increasingly used to refer to an interdisciplinary field with cross-cutting conversations and concepts and experimental approaches and methods, in some contexts it represents an "umbrella" for environmental sub-disciplines in the humanities and social sciences, such as environmental history, more-than-human geography, ecocriticism, and environmental anthropology.[1] Environmental humanities, in both of these forms, has brought environmental subdisciplines into closer proximity, thereby fostering cross-fertilization between them. This has, in turn, helped to create new research, educational, and institutional landscapes.[2]

As an interdisciplinary field, the environmental humanities has argued against narrow framings of problems as "environmental" and equally narrow framing of their "human dimensions" within policy arenas and behavioral sciences.[3] It seeks to challenge human exceptionalism, instead situating humans as participants in manifold ecologies, with histories of, and possibilities for, becoming-with nonhuman beings shaped by our changing, diverse, and entangled lives. It has also sought to articulate the joint value of approaches from various disciplines within the humanities and social sciences in generating "thicker" understandings of the many pressing problems, which are inescapably both social and environmental. At the same time, it has participated in refiguring the relationship between science and society, both engaging with the sciences and situating them as particular sets of expertise with cultural histories and political ramifications, rather than channeling an unfiltered "nature."[4]

As one of the older and most established environmental subdisciplines in the social sciences and humanities, environmental history has occupied a substantial part of the space under the environmental humanities umbrella. Although not always intentionally contributing to the field, some environmental histories have become influential in shaping its interdisciplinary oeuvre.[5] As a subdiscipline, environmental history intersects with the environmental humanities through a variety of topics and approaches.[6] In recent years, environmental historians have also made notable contributions to the debate on the Anthropocene as a key interdisciplinary concept of our time.[7] Beyond this, the field's potential and actual engagement with fostering an interdisciplinary environmental humanities has been somewhat implicit, though recent work has begun to change this situation. For instance, Hannes Bergthaller and colleagues have sought to foster connections between environmental history and ecocriticism; Dolly Jørgensen and colleagues have brought environmental history and science and technology studies (STS) into more explicit dialogue; and the work of literary scholars including Rob Nixon, Tony Hughes-d'Aeth, and Katie Ritson has highlighted the value of literary studies approaches for environmental historians.[8]

Within this context, this article continues and extends a conversation between environmental history and the broader environmental humanities, outlining and defining an approach to what we call more-than-human histories. More specifically, we argue that a valuable opportunity for environmental history lies in more explicit engagement with two interrelated areas of inquiry that have flourished as part of the environmental humanities: interdisciplinary more-than-human scholarship and multispecies studies. There have been numerous calls for environmental historians to more fully and explicitly engage with these literatures along with the scholarship in which they are grounded.[9] Some environmental histories have incorporated aspects of this work, although often implicitly.[10] Here, we are not presenting more-than-human and multispecies scholarship as a corrective to approaches within environmental history but, rather, gesturing toward some of the opportunities that greater dialogue between environmental history and this scholarship might hold. Historians' preference for narrative is not a barrier to such a dialogue. Indeed, the kinds of historical stories we choose to tell can be enriched by cross-disciplinary reflection upon our premises, assumptions, and methodological decisions.

More-than-human histories, as articulated in this article, take on three key commitments derived from the more-than-human and multispecies studies literature: co-constitution; the presencing of multiple species and multiple voices; and situated politics and ethics. These commitments are framed as meeting points for environmental history and the broader environmental humanities (where some scholars are already gathering), which can bring them into closer dialogue with a range of mutual benefits as well as raising some challenges to each. Each of these three commitments are present, often germanely, in some existing environmental historical scholarship, but we are proposing an approach that combines and foregrounds them. We conclude with a consideration of the methodological implications of this approach.

"NATURE," "CULTURE," AND RELATIONALITY

In 1946, R. G. Collingwood declared that "there is and can be no history of nature, whether as perceived or as thought by the scientist." Since the field's consolidation in the 1970s, environmental historians have broadly sought to rescue "nature" from the condescension of posterity and give it an active role in historical events.[11] Many early environmental historians were committed to a realist understanding of "nature," in which the nonhuman world could be objectively apprehended, mainly through the deployment of biological and earth sciences. The tension between this approach

and emerging constructivist perspectives surfaced prominently in a 1990 roundtable in the *Journal of American History*. There, Donald Worster outlined a definition of—and program for—environmental history, focused on the interactions of human societies with a nonhuman world of "autonomous, independent energies that do not derive from the drives and intentions of any culture."[12] The "natural" and "cultural" were separate spheres, in Worster's view, and the "natural" could be known with the aid of science. Worster's respondents, including Richard White and William Cronon, countered this view by emphasizing the social construction of both nature and science. As White memorably put it, "historians thought ecology was the rock upon which they could build environmental history; it turned out to be a swamp."[13] Others pointed to social and environmental differences as key as well as the importance of understanding the way in which different groups of people have understood their surroundings—in terms such as "nature" and "food"—as "elaborate cultural constructs."[14]

As historian Paul Sutter argued in 2013, this analytical tension was resolved in favor of "the thorough troubling of 'nature' as a category of analysis," which he characterized as a turn to "hybridity" as an organizing principle, and the abandonment of the notion of an asocial "nature."[15] This perspective enabled environmental historians to expose concepts like "wilderness" as normative, culturally specific, and expressive of power relations rather than as given biophysical facts.[16] In terms of David Demeritt's typology of social constructivism, this approach involved mainly "construction-as-refutation." This is a kind of deconstructive challenge to commonsense understandings of nature that seeks to show how these understandings are socially produced, often through the influence of hegemonic power, and how they contrast with "actual" nature (often established with reference to science).[17] While of enduring value, these approaches do not fundamentally challenge ontological distinctions between "nature" and "society": environmental historians may, in Sutter's terms, now approach all environments as nature/culture "hybrids," but their parentage is readily discernible and, indeed, often the real subject of our stories.

Environmental history is still often defined as a field centered on the interactions between "nature and humans" and "society and the environment" over time.[18] While environmental historians conventionally acknowledge that humanity is "part of" or "embedded in" some version of "nature," they often continue to think and write as if "nature" and "humanity" are ontologically distinct. For example, a recent textbook places "humanity" within "the community of life" in an ecological sense, but the title of the chapter on urbanization ("the great divorce of culture and nature") and the claim, for example, that "human efforts were affecting the environmental systems of the

Earth" prioritize "the human" and "the environment" as ontologically discrete categories.[19] To the extent that environmental histories continue to reinscribe a nature/culture divide, this can be understood as partly the outcome of an ongoing, often activist, commitment to writing in a way that is accessible by peers and public alike and in a language in which "nature" and "environment" are persistently positioned as objects acted upon by human subjects (and occasionally vice versa). This linguistic intractability, along with the fact that the immediate roots of environmental history as a subdiscipline of history lie partly in 1960s and 1970s environmental politics rooted in concepts of "wilderness," confers an obligation on environmental historians to explicitly and deeply interrogate the nature/culture divide. Yet, despite the field's diversification in sites, methods, and topics, and a trend toward more theoretically informed, self-reflexive work, relatively few environmental histories adopt relational approaches or consider the political and ethical implications of such theoretical framing.[20] As Gregg Mitman noted in his response to Sutter, "as a field deeply committed to relationality, environmental history is also a field deeply resistant to embracing a relational ontology in which things exist not in themselves," but are only visible and knowable through "changing material, social, and symbolic relations between and among human and non-human actors."[21] Such approaches have critically informed scholarship at the heart of the environmental humanities and, we argue, provide an opportunity for environmental historians to move beyond social constructivism. One avenue for doing so is through producing the kind of more-than-human histories that we outline here.

Relational approaches have diverse roots. Feminist STS scholars like Donna Haraway, from the 1980s, and Karen Barad, from the 2000s, were central to developing dialogues between the sciences and humanities and, alongside ecofeminist philosophers such as Val Plumwood, to repositioning the sciences as cultural and political, embedded within discourses of race, gender, and class, rather than being objective or neutral conduits of a "nature" that is separate from humans. Haraway's concept of "situated knowledges" and her radical decentering of the human, Barad's "agental realism," and Plumwood's critique of dualisms have all come to underpin notions of co-constitution.[22] Relational approaches also have roots within the interdisciplinary social sciences. Marxist geographer David Harvey, for example, has advocated a process-oriented ontology within which "elements, things, structures and systems do not exist outside of or prior to the processes, flows, and relations that create, sustain or undermine them."[23] Another approach emphasizing relationality is the Actor-Network Theory, elaborated by the STS scholars Bruno Latour and Michael Callon and the sociologist John Law.[24] In 1993, Latour proposed that the ontological separation of society and nature was a

relatively recent innovation, reliant on cultural processes of purification and translation. These were developed in defiance of the messy reality that the world is not really organized like this and that there are only object-discourse-nature-society assemblages.[25] Approaching the problem from the contemplation of Indigenous ontologies was David Abram, who introduced the term "more-than-human world" in his 1996 book *Spell of the Sensuous*, to refer to our immersion in a sentient greater realm.[26]

In the first decade of the twenty-first century, cultural geographers including Sarah Whatmore, Nick Bingham, and Steve Hinchcliffe developed and refined approaches to the thoroughly entangled nature of humans and nonhumans in "more-than-human" and "multinatural" geographies.[27] These approaches sought to understand landscapes as "co-fabricated between more-than-human bodies and a lively earth," while also understanding "the human" as similarly co-fabricated.[28] For Whatmore, there is no externalized "nature" or "environment" with which humans interact; the only relationships are "in here."[29] Political theorist Jane Bennett similarly proposed that "humans are always in composition with nonhumanity, never outside of a sticky web of connections or an ecology [of matter]."[30] Philosopher Thom van Dooren and anthropologist Deborah Bird Rose argued that a recognition of the "liveliness" of the world gives regard not only to the lives of others but also to the rich, co-constituted meanings in and of these lives formed through multiple sets of relationships.[31] At the same time, anthropologists like Anna Tsing, Heather Paxon, and Hugh Raffles developed modes of ethnographic enquiry that drew on and brought together existing work in animal studies and history, STS, and environmental studies.[32] Anthropologists Eben Kirksey and Stefan Helmreich noted that these studies centered fungi, microbes, plants, and animals in a new way—as organisms that we humans "live with"—and proposed possibilities for acts of "biocultural hope" that refigured bio-power in solidarity with nonhumans.[33] In 2010, they claimed that multispecies ethnography had "arrived on the anthropological stage."[34] While temporally attentive approaches are central to all of this scholarship, it has generally been slow to engage with the work of environmental historians.

Relational views of the world converging in more-than-human and multispecies approaches, see the past and the present as dynamically co-constituted by multiple organisms, including plants, animals, and fungi, as well as by elements and forces, from water to minerals. Here, human meanings and understandings of the world are inseparable from the sets of relationships from which they arise, both shaping and being shaped by these. Embedded within specific sets of relationships and ways of knowing, our understandings are always situated and partial, as Haraway has influentially argued, yet guide our actions

and help to shape worlds.[35] The way we and others understand the world matters.

CO-CONSTITUTION

"More-than-human" is not a synonym for "nature" or "nonhuman" but, rather, a term that highlights the primacy of relations over entities (including the "human"). Our first principle for more-than-human histories is therefore co-constitution—that organisms, elements, and forces cannot be considered in isolation but must always be considered in relation. Histories are essential to more-than-human and multispecies scholarship as co-constitution is fundamentally a historical process. Situated more-than-human relationships and knowledges also emphasize the particular, placing critical importance on empirical research, such as that which is generally conducted by historians.[36]

The dynamic roles of other organisms are evident in a number of environmental histories, some of which have become important reference points for more-than-human and multispecies scholarship.[37] However, such histories typically understand (notable exceptions like Harriet Ritvo's work notwithstanding) their nonhuman subjects as ontologically stable and knowable through un-interrogated sciences such as disease ecology, meteorology, and ethology.[38] Going beyond an important operationalizing of nonhuman historical agency, Timothy LeCain has engaged with a "new materialist" agenda that foregrounds the ways in which "humans are the products of an infinitely generative partnership with the things that surround us."[39] We argue along similar lines for more-than-human histories that are attentive to the perpetually changing set of social, symbolic, ontological, and material relations through which historical actors—human and nonhuman—are co-constituted.

One example from our own work shows how the ontological instability of nonhumans co-creates histories and landscapes together with nonhuman actors, as shifting understandings alter the way people act in relation with particular nonhumans. This example focuses on changing and uncertain scientific understandings of malaria, and the role of particular mosquitoes in transmitting this disease to humans, by taking up the history of an irrigation region in southeastern Australia in the period from 1919 to 1945.[40] These histories were co-created with mosquitoes, *Plasmodium*, and other nonhumans as people responded to their behavior, relationships, and possible threat of disease in new ways, together shaping possibilities for life and death, including for the mosquitoes.

With land in the newly established Murrumbidgee Irrigation Area of New South Wales being given by the government to veterans

following World War I and II, state health agencies became concerned that local *Anopheles annulipes* mosquitoes would transfer malaria from infected former soldiers, who had picked up the disease while on duty overseas, to other "healthy" people in what were idealized as white, civilized farming settlements. Emerging scientific evidence of the life cycle of malaria parasites in the late nineteenth century, and, later, the role of mosquitoes in spreading other diseases like yellow and dengue fevers, changed people's relationships with these insects and with watery places in many regions around the world. Previously in Western science, malaria had been associated with miasmas, which are odors arising from swamps and similarly "unhealthy" places. Demonstrations by British and Italian scientists of the role of *Anopheles* mosquitoes as a vector in transmitting malaria from infected humans to uninfected humans led Australian public health authorities to reassess the possibility of outbreaks of these diseases among human populations locally. These possibilities were made more complex and dynamic because of changing regional waterscapes as well as the transnational movements of people who might be carriers. In the Murrumbidgee Irrigation Area, with so little known about the specific kind of *Anopheles* mosquito in the region and a general understanding that these kinds of mosquitoes were responsible for transmitting malaria, government mosquito eradication programs were undertaken. These included spraying DDT within people's houses in the period immediately after the end of World War II. More generally, the partial knowledge of *Anopheles annulipes* shaped human protective behaviors, a mosquito-defensive culture, and the management of swamplands and irrigation areas, with cascading consequences for both human and nonhumans.

No malaria outbreak occurred, and further scientific studies cast doubt on the efficiency of *Anopheles annulipes* as a malarial vector. Yet, as scientific knowledge of *Anopheles annulipes* remains incomplete, an outbreak in New South Wales is still sometimes mooted and often linked to increased immigration from countries with high rates of malaria.[41] These and other concerns about mosquito-transmitted diseases like dengue fever and the Ross River virus continue to shape wetland and irrigation management practices and a culture of defense against mosquitoes. The link made by scientists between immigrants from particular places and malaria may also have unintentionally reinforced racial stereotypes. People, mosquitoes, and parasites have together co-constituted this past and, indeed, the present; it is impossible to consider each in isolation. Changing and unstable scientific understandings of mosquitoes have guided the actions of government agencies and local residents—from eradication programs, to irrigation and wetland management practices, to social stigmas—further shaping these relationships.[42] Malaria made humans ill before science made the parasite visible, but, in the

context of the upheaval and mass mobility associated with war, the knowledge—and fear—of a potential outbreak of the disease materially changed human interactions with mosquitoes, irrigation settlements, and local swamps even though *Plasmodium* was barely present. In this history, there is no "nature," whether socially constructed or biophysically given; rather, there are knowledges, organisms, landscapes, institutions, and mobilities that come together in contingent ways to produce particular configurations of life and death.

MULTIPLE SPECIES AND MULTIPLE VOICES

Closely related to co-constitution is an emphasis on multiple species and multiple voices. In engaging with particular sets of more-than-human relationships and situated knowledges, these kinds of approaches emphasize diversity and multiplicity in many forms. This emphasis on diversity has underpinned Thom van Dooren and colleagues' rationale for, and definition of, multispecies studies as "being precisely about multiplying differences and modes of attention, about the specificity of lived natural-cultural entanglements in thick contact zones, with their own very particular histories and possibilities."[43] This has included human bodies, along with those of other organisms as multispecies sites, laden with multiple meanings—an approach enabled and encouraged by the broader movement within the social sciences and humanities to destabilize the rational Enlightenment (human) subject and admit embodiment, emotion, and affect as crucial lines of scholarly inquiry.[44] As van Dooren and colleagues go on to argue, attention to diversity means that we must examine "how specific worldings come to matter, and to matter differently, for given beings."[45] This emphasis on the particular, with multiple species, perspectives, and voices, demands our attentiveness to issues of justice and inequity in multispecies worlds, and there is much potential to extend this perspective to historical issues.

As the "human" is always co-constituted by multiple, diverse relations, it is crucial that we do not homogenize the human but continue to pay close attention to differences in human experiences.[46] At the same time, we must acknowledge that questions of race and gender are deeply entangled in multispecies worlds. For historians, thinking in the multiple is not just about constructing single histories from multiple organisms, perspectives, and voices but also showing the way we all inhabit histories differently (including different organisms), sometimes in ways that clash. Historians who bring animals into their narratives are considering their differing perspectives—for example, Timothy Mitchell, in his history of irrigation under British rule in Egypt, asks: "Can the mosquito speak?" He proposes that

historians need to make "this issue of power and agency a question," even if it cannot be easily resolved.[47] Historian Concepción Cortés Zulueta argues that "nonhuman animal testimonies" can reveal "yet another side to some stories, a nonhuman side that mostly we have not taken into account."[48] Ways of framing narratives and histories to consider multiple, more-than human perspectives is a key area in which historians can make important contributions to interdisciplinary discussions.

In southeastern Australia, historical narratives of long-nosed fur seals in the Coorong lagoon may be very different depending on who you talk to now. They may also vary dramatically depending on which human and multispecies perspectives are considered historically. In the late eighteenth and early nineteenth centuries, these and other seals were hunted almost to extinction. Legally protected by state and federal governments since the mid-twentieth century, their numbers have increased over the last few decades, and they have become the center of a heated debate. Their pre-sealing presence in the area and their historical population numbers have become the battleground for their management, with widely differing views over these histories between scientists, on the one hand, and Ngarrindjeri Aboriginal people and fishers, on the other. While scientists argue that the population of seals is still recovering from the sealing era and that they are inhabiting their former ranges as their numbers grow, the Ngarrindjeri people and fishers argue that the seals were never before present in the area in these numbers and that they are harming other wildlife—including animals that are important in Ngarrindjeri kinship relationships—as well as reducing fishers' catches. Seals have been biting into birds' throats and chests, maiming or killing them; they similarly maim fish within fishers' nets. Yet, for these seals, this area represents a relatively safe place for the winter haul out; humans who injure or kill them are liable to be fined up to AUS $100,000. Fishers in the Coorong have commented that the seals behave brazenly, as though they are aware that the fishers cannot harm them. The seals pull on the nets as fishers try to bring them into their boats, and, occasionally, the seals climb aboard the boats. Fishers remark that "they know we can't do anything."[49] The dynamic response of the seals to changing management regimes, as they are emboldened in the absence of human violence against them, undermines rationales based on pre-sealing conditions and baselines.[50] There is no "culture" and "nature" here, just particular kinds of people and seals, each with their own perspectives and interests in complex and unfolding relation. And there is room to experiment with ways of telling more-than-human histories.

SITUATED ETHICS AND POLITICS

Positioning humans within co-constituted and diverse human and more-than-human worlds has a range of ethical and political repercussions.[51] Here, we have called these repercussions situated ethics and politics, as they arise from the understanding that we are all embedded within particular sets of relationships that together shape our collective worlds. These not only encompass, but also move beyond, a portrayal of the past as always more than human and include different kinds of ethics and politics that can have implications for historical approaches. Ways of responding to, and incorporating, these kinds of ethics and politics are perhaps something with which environmental historians might more extensively experiment. Crucially, the success of such endeavors hinges on researchers resituating not just their research subjects, but also themselves, within a relational ethics and politics in which their values and actions inform the historical questions that they ask and the kinds of historical practices with which they engage.

Plumwood has argued that a radical decentering of humans rests on resituating humans in ecological terms and, at the same time, resituating nonhumans within ethical terms.[52] More-than-human geographer Franklin Ginn has noted that "[i]n a time of anthropogenic, geological-scale shifts and mass extinction, learning to live less destructively and more ethically with nonhumans is clearly a pressing task."[53] This reassessment of relationships with nonhumans needs to be extended beyond those that are valued by people as being useful as companions or as charismatic to also include "awkward" and "unloved" creatures, like slugs and ticks.[54] It must also entail critical reflection on the values shaping past and current responses to competing claims to life—for example, between squirrels and gardens or tigers and villagers—and how these might be reimagined within particular sets of relationships.[55] As Natalie Zemon Davis reminds us, historians have a crucial role to play in showing us that, however hopeless our present predicament seems, change is possible.[56] Historical stories are a means by which to show the diversity of possibilities for (more-than-)human experience, including the possibility of different values and relationships in entangled multispecies worlds.

While there are no easy answers, more relational approaches do not need to lead to a sort of "free-for-all" approach nor to a description of complexity and vibrancy in and of itself as an end goal. Within more-than-human and multispecies scholarship, a number of scholars have argued that a consideration of entanglement and mixed consequences forces us to take responsibility in arguing for some worlds over others.[57] Ginn and colleagues propose that we need to ask "who lives well and who dies well under current arrangements, and how they

might be better arranged."[58] Restorative justice, as well as contemporary understanding, requires that we extend this question to the past. Historians might consider not only how specific sets of relationships have been formed and carry particular historical legacies but also how better sorts of relationships might be sustained over time. As historian William Cronon has argued in a different context, they can also raise new sorts of questions through which to reconsider the past, present, and possible futures.[59] The way in which current politics and concerns frame historical research and narratives is fraught, but it is something historians have frequently considered, often at length. Further, environmental historians are good at navigating a productive tension between the past and the present.[60]

Multispecies and more-than-human approaches further expose a range of inequities rooted in essentialist and hierarchical ideas of race, gender, and class as well as species. Such approaches often provide new perspectives on these kinds of inequities and show them to be not just social or environmental but also part of contested biocultural terrain.[61] Rather than detracting from important histories of colonization, race, and gender, such approaches can refocus attention on them. For example, the historian Gregg Mitman's work on the documentary film *The Land Beneath Our Feet* shows the way disease, medical practices, flows of global capital, and land rights converged in shaping social and environmental inequities in Liberia.[62] In Australia, the historians Heather Goodall and Alison Cadzow have examined the way the Georges River in Sydney helped to facilitate the activism and continued presence of Aboriginal people in the area, as they resisted British colonization and racist government projects of assimilation.[63] More-than-human histories can develop and extend such approaches to reveal an array of power relationships and hierarchies that are nuanced and particular, homogenizing neither *Homo sapiens* nor other species.

Narratives, which are central to historians' craft, can convey connectivities and multiple causes that are essential to more-than-human histories, and such skills are key contributions to more-than-human and multispecies studies.[64] Yet, inevitably, we must focus on particular sets of more-than-human relationships and subjects. Here, there is an ethics and politics to consider too since, in illuminating some subjects, we consign others to the shadows. A positioning of research that considers which perspectives are being foregrounded and which are being ignored, along with which worlds are being argued for and why, is important; it is something that historians have long considered and which can be extended to a more-than-human approach to histories.[65] In fact, Kristin Asdal has argued that a key contribution of Haraway might be to provoke historians into asking of their work, and with not only human actors in mind, "to whom are we giving voice and agency, and at whose expense?"[66]

Environmental historians have long sought to draw attention to the agency of the "other-than-human world." Yet, by drawing clear demarcations—between nature and culture and often also heroes and villains—they have tended to reinscribe the dichotomies they were seeking to overturn. More-than-human histories instead emphasize multiple relations and voices and, at the same time, attend to which relations and lives are remembered and which are forgotten.

Consider, for example, the historical entanglement of cockatoos, foresters, plantation pines, and the human water managers and consumers in Perth, a city located on the Swan Coastal Plain of Western Australia. State foresters established pine plantations on the outskirts of the growing settler city in the 1920s to provide a local source of softwood timber; the plantations were expanded through into the 1970s.[67] That decade saw the beginning of a significant step decline in rainfall caused (as later became apparent) by anthropogenic climate change.[68] At the same time, the city's human population was rapidly expanding on the back of a mining boom. Water managers seeking to augment supplies for urban customer-citizens looked to the abundant groundwater reserves of the deep sand "mounds" to the north and south of the city center. The northern Gnangara mound was home to the pine plantations, and, as the human population continued to grow, the pines were increasingly regarded as thirsty competitors for a human water supply.[69] The government made an agreement with a company to harvest the pines for the production of laminated veneer lumber (LVL), bringing economic benefits as well as reducing the pines' claim on the groundwater resource, as the rainfall continued to decline.[70] This is a sound—albeit brief—environmental history, but it leaves out some key nonhumans, rendered sporadically visible or invisible according to their habits—changing with a transformed landscape—as well as the shifting knowledge and interests of foresters, politicians, and ornithologists.

By the 1940s, the pine plantations had attracted large flocks—up to 6,000 birds—of Carnaby's black cockatoo. Foresters had been observing—and sometimes shooting—the birds, which were at first seen as a threat to plantation seed stock but were soon regarded as allies that helped the foresters access cones and the seeds therein: as one forester put it, "we have them working for us."[71] The cockatoos usually travelled seasonally between inland woodlands, where they nested in old tree hollows, and the coastal plain, where they foraged on the banksia sandplains and marri woodland. However, their inland habitat was being cleared for wheat farming. Some of the birds became resident in the pine plantations, dependent on the abundant energy-rich pine nuts for food. Due to the accelerated clearing of their historic habitat, Carnaby's black cockatoo was declared endangered by the mid-1980s. The foresters now had other seed sources so that alliance ended, but a growing band of amateur ornithologists took up the birds' cause

when the decision to remove the pines also deprived the resident endangered cockatoo population of its home and food. Since at least 2008, four relevant government departments had recognized the importance of the pines to cockatoos, but none of them had factored it into management decisions.[72] The national ornithological organization Birdlife Australia was only able to insert the cockatoos into the public narrative of pines, LVL, and groundwater in 2014, when harvesting was already underway.[73] Some respite for the cockatoos was achieved in 2017 following a state election, when the incoming government allocated funds to preserve the Gnangara pines by subsidizing the use of pines from elsewhere in the state to meet the LVL agreement requirements. However, in 2019, the harvesting resumed.[74] In this context, there is an urgent need for this particular history that makes co-created pasts visible, tracing the threads that link the fate of a particular population of endangered cockatoos to softwood plantation trees and human urban water consumers within a specific bio-political context. Rather than presenting the story as a case of endangered species versus resource extraction, this more-than-human history—including its "false start"—highlights how different actors in the story are made visible in relation to each other and to the history's audience. It does not seek to demonstrate that the "natural" is really "cultural," or to reassert a biophysical reality, but, rather, to engage in another conversation entirely; it shows how the relationships we consider relevant change our stories' ethical purchase. In a more-than-human world constituted by specific sets of relationships, scholarly (and more widely social) categories of thinking and organization around anthropocentric areas like "forestry" or "water management" are unlikely to capture the relevant range of participants and, thus, are woefully inadequate for present needs.

A decentering of the human has further created an imperative for what Anna Tsing has called the "passionate immersion in the lives of the nonhumans being studied."[75] This is an argument for a genuine curiosity about the lives and particularities of nonhumans that repositions researchers and audiences alike within these relationships, as we learn "to understand and care a little differently."[76] Relatedly, Catherine Johnston, drawing on the work of anthropologist Tim Ingold, has advocated (in relation to scholarship on nonhuman animals) for "responsible anthropomorphism," as "a way of knowing about and knowing with animals not based on our shared sentience, our shared place in the world or any other such abstract philosophical argument, but on our actual relationships, our day-to-day living and working."[77] This poses difficulties for historians, insofar as we cannot be a fifteenth-century reindeer herder or even a nineteenth-century urban gardener. However, we can use our skills of historical analysis and empathy to develop an attentiveness to the lives and needs of nonhumans beyond their representational roles. Perhaps this can

help to answer some of the fraught questions about nonhuman agency in environmental history or provide a different set of concerns altogether, showing the way behaviors and lives of particular organisms help to shape the worlds that they inhabit in specific and consequential ways. It can draw historians into literatures not only on the rich lives of animals but also of plants, while attending to the social framing and ethical underpinnings of these specific philosophical and scientific works.[78]

A further set of politics concerns what the philosopher Michelle Bastian has described as intervening "into habitual ways of both living in and understanding the world in order to denaturalize the common-sense feel of conventions and open them up so that things may work differently."[79] For example, the philosopher Vinciane Despret has sought to denaturalize dominant assumptions about animals as concerned solely or mostly about competition for food and reproduction. She considers the work of particular ethologists who show that sheep are far more complex and interesting if given the opportunity to be so—in this specific example, to show their dynamic social worlds, which include cooperation and kinship relationships.[80] Here, she investigates the ontologies of ethologists as well as the worlds of sheep, paying particular attention to how the different approaches of ethologists coproduce different understandings of sheep. Despret asks of us all: "What would animals say if we asked them the right questions?"[81] Historians are good at making seemingly familiar and taken-for-granted ideas and categories seem strange by tracing their specific histories and meanings, an important contribution to interdisciplinary more-than-human and multispecies studies. One way of doing this is through a genealogical approach (in Michel Foucault's sense) where often dominant and taken-for-granted categories of understanding the world—like forests, flyways, and wetlands—are shown to be deeply historical and contingent and, at the same time, incredibly consequential.[82] Cronon, drawing on Roderick Nash, influentially did this for "wilderness," tracing the multiple roots of this idea and some of its consequences, including the erasure of Indigenous people's long associations with these places.[83] Donald Worster revealed the historical formation of ecological ideas, while Paul Warde, Libby Robin, and Sverker Sörlin have produced a history of "the environment."[84] Elsewhere, Warde and Sörlin have noted that such a history cannot be linear as there are multiple historicities at play.[85] These ways of understanding and organizing the world have emerged with and against other species with cascading consequences for humans and many other beings. We might then also regard these kinds of ideas as being co-created with other biota, like particular trees and birds, importantly often in asymmetrical relations. In illuminating the more-than-human elements of particular concepts, genealogies can show how things might have been and

may yet be otherwise in ways that not only denaturalize categories that have often been framed as ahistorical but also expand our sense of political and ethical commitments into a closer consideration of multiple species as well as cultures. Can some of the multiple historicities within genealogies be other than human?

METHODOLOGICAL IMPLICATIONS

What does a more-than-human approach mean for the way historians actually go about their research? What might it mean for how we think about archives that have been understood as created by humans and giving insight into human affairs? Do we need new methods, and what might these be? As noted above, histories are central to some of the key commitments of more-than-human and multispecies studies, and so grappling with these kinds of methodological questions can also provide important contributions to interdisciplinary projects.

In one respect, this may not require a radical shift in sources but, rather, a reconsideration of our approaches to them. Historians have considerable expertise in imaginatively inhabiting past human worlds, and it is not such a stretch to extend this to a more-than-human perspective. Since the social history revolution of the 1960s, the range of historical source materials has been extended, and new techniques have been developed, enabling historians to give voice to the silenced, illiterate, and dispossessed. While the British economic historian R. H. Tawney's 1930 declaration that "what historians need is not more documents but stronger boots" was a general reference to the need for contemporary social awareness, environmental historians have often literally donned boots—or wetsuits, skis, or lifejackets—and immersed themselves in the present manifestation of their subject places.[86] While these are not the same as past more-than-human worlds, fieldwork in places involving re-enactment and witnessing the topography, climate, and perhaps relict ecology can provide, as Jamie Lorimer and Sarah Whatmore put it, a "visceral, material and living archive" that enriches historical inquiry.[87] Similarly, familiarity with pertinent material culture—whether Wardian cases or elephant guns—can provide insights into the embodied and affective dimensions of past shared worlds.

If we take seriously the idea that the world is co-constituted, then we can approach archives as also being co-constituted—that is, that they are not purely about human concerns since nothing is purely anything. This opens up new ways of reading archives for the lives, interests, and needs of nonhuman subjects who have co-created institutions, technologies, materials, and laws. This might be extended to other historical sources from films to photographs and paintings.

These sources are not only made from paper, oil paints, and chemicals, but they have also been co-created by their human and nonhuman subjects. Similarly, Etienne Benson has argued for the inescapability of "the animal trace" in textual and other documentary historical sources. Benson juxtaposes this approach with that of the animal historian Erica Fudge who has argued that, while animals are historical actors, historians can only ever write histories of their human representations as archives are created by humans. Focusing on a photograph of animal footprints in the snow, Benson shows that such traces are material-semiotic nodes; that is, they have been co-created by specific sets of more-than-human relationships and encounters in which representation, experience, and meaning cannot be fully separated.[88] Archives are teeming with multispecies exchanges. It is a matter of practicing the "arts of noticing" and attentiveness to the entanglements of the more-than-human world in examining these kinds of historical sources.[89]

We might also further expand what "counts" as an archive. Some environmental historians have long worked with the data and sources of the sciences—from tree rings to pollen samples—and entire landscapes to understand past ecologies and climates. However, more-than-human histories carry a distinctive mode of approach that seeks to understand these and other sources as material-semiotic nodes and push us to consider an even wider variety of possible archives. Historians and others have been experimenting along these lines. For example, the environmental historian Kirsten Greer has reframed museum collections of bird skins as "avian imperial archives." She has used these to examine the intersections of historical bird ecologies with the collecting practices of military personnel for British Empire natural history museums in multiple places. She shows that these sorts of archives "have the potential to reveal other histories" as they draw us into the lives and deaths of the birds themselves.[90] Greer's study further draws attention to the avian toll of colonial sciences and fascination with birds, bringing us into a situated ethics and politics of past and contemporary scientific practices. Historians might also use sources like whale ear wax, which registers signs of stresses like whaling and climate change, to reconsider these histories from the perspective of the whales while also attending to changing scientific interests and questions.[91]

We might also engage with experimental methods being developed in other fields that respond to this kind of radical decentering of the human. These include multispecies ethnography and ways of doing participant-action research that include nonhuman participants like water as well as close research with, and learning from, the humans whose livelihoods involve deep engagement with nonhumans.[92] This might be particularly useful for historians already undertaking oral histories and interviews, who could experiment along these lines

with different ways of engaging the more-than-human world in their methods. For example, by highlighting how the ethical and emotive dimensions of experience shape the way in which fishers and divers develop an ocean consciousness and respond to marine environmental change, oral histories of these subjects can inform a more embodied ethics of engagement with nonhuman worlds.[93] More-than-human and multispecies research is necessarily experimental. Therefore, as Sarah Whatmore has noted in the context of more-than-human geography, it is essential that researchers are supported in taking risks, including in developing new methods and approaches.[94]

CONCLUSION

More-than-human histories are already with us, building on an extensive tradition within environmental history of serious engagement with the ubiquity and agency of the nonhuman. Here, we have outlined three interrelated commitments that underpin these kinds of enquiry, which together bring environmental history into closer conversation with the broader environmental humanities. First, the notion of co-constitution asks that we abandon our commitment—however residual—to the conceptual division between human and nonhuman, society and environment, and instead narrate the multispecies and multi-natural entanglements present in all historical processes. Second, environmental historians can extend the field's commitment to the particular and to difference, attending to diversity within and across different species, elements, and forces and the consequences of particular multispecies and multi-natural entanglements in different times and places. And, third, there arises from this perspective the need for reflection on the ethical and political consequences of our histories, as privileging some worlds and lives over others. These approaches are already eliciting new and experimental methods as well as repurposing old ones, drawing on what is being called the material turn within the humanities. This article has sought to make these connections more explicit and consider some of the implications, opportunities, and challenges of more-than-human and multispecies scholarship for environmental historians. More-than-human histories, we hope, offer a stimulus for productive conversations within and between environmental history and the environmental humanities.

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Notes

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3. Rose et al., "Thinking through the Environment," 1; Libby Robin, "Environmental Humanities and Climate Change: Understanding Humans Geologically and Other Life Forms Ethically," *WIRES Climate Change* 9 (2018): n.p., https://doi.org/10.1002/wcc.499; Astrida Neimanis, Cecilia Åsberg, and Johan Hedrén, "Four Problems, Four Directions for Environmental Humanities: Toward Critical Posthumanities for the Anthropocene," *Ethics and the Environment* 20 (2015): 67; Noel Castree, William M. Adams, John Barry, Daniel Brockington, Bram Büscher, Esteve Corbera, David Demeritt et al., "Changing the Intellectual Climate," *Nature Climate Change* 4 (2014): 763–68; Thom van Dooren, "Environmental Humanities," in *The Companion to Environmental Studies*, ed. Noel Castree, Mike Hulme, and James Proctor (London: Routledge, 2018), 418–22.
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15. Sutter, "The World with Us," 96.
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19. J. Donald Hughes, *An Environmental History of the World: Humankind's Changing Role in the Community of Life*, 2nd ed. (London: Routledge, 2009), 30, 181.
20. For example, of the seventeen articles (excluding the forum) published in *Environmental History* in the year from volume 23, no. 4 in October 2018 to volume 24, no. 3, in July 2019, only two stand out as adopting theoretically informed approaches that challenge the nature/culture divide—namely, Evan Hepler-Smith, "Molecular Bureaucracy: Toxicological Information and Environmental Protection," *Environmental History* 24 (2019): 534–60 and William Thomas Okie, "Beauty and Habitation: Fredrika Bremer and the Aesthetic Imperative of Environmental History," *Environmental History* 24 (2019): 258–81. See also Sutter, "The World with Us," 96.
21. Gregg Mitman, "Living in a Material World," *Journal of American History* 100 (2013): 130. Demeritt characterizes such approaches as "constructionism as philosophical critique." See Demeritt, "What Is the Social Construction of Nature," 770. In response to Mitman, Sutter clarified that in his view "nature is history" with "drivers that are both environmental and cultural" but did not more specifically address Mitman's point that the field has been "deeply resistant" to relational ontologies. Paul S. Sutter, "Nature Is History," *Journal of American History* 100 (2013): 145–48.
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25. Bruno Latour, *We Have Never Been Modern* (Cambridge: Harvard University Press, 1993).
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29. Ibid., 602.
30. Jane Bennett, "The Force of Things: Steps to an Ecology of Matter," *Political Theory* 32 (2004): 365.
31. For an in-depth discussion of "liveliness," see Thom van Dooren and Deborah Bird Rose, "Lively Ethography: Storying Animist Worlds," *Environmental Humanities* 8 (2016): 77–94.
32. See, for example, Anna Tsing, "Unruly Edges: Mushrooms as Companion Species for Donna Haraway," *Environmental Humanities* 1 (2012): 141–54; Heather Paxson, "Post-Pasteurian Cultures: The Microbiopolitics of Raw-Milk Cheese in the United States," *Cultural Anthropology* 23, no. 1 (2008): 15–47; Hugh Raffles, *Insectopedia* (New York: Random House: 2010).
33. S. Eben Kirksey and Stefan Helmreich, "The Emergence of Multispecies Ethnography," *Cultural Anthropology* 25 (2010): 545, 552; see also Haraway, *When Species Meet*.
34. Kirksey and Helmreich, "Emergence of Multispecies Ethnography," 545.
35. Haraway, "Situated Knowledges."
36. See also Anna Tsing, "Others without History: Organisms as Agility-shifting Actors in the Trajectory of Capital," Eric Wolf Lecture, Austrian Academy of Sciences, October 2016.
37. For example, Alfred W. Crosby, *Ecological Imperialism* (Cambridge: Cambridge University Press, 1986); Harriet Ritvo, *The Animal Estate: The English and Other Creatures in the Victorian Age* (Boston: Harvard University Press, 1987); Susan Nance, ed., *The Historical Animal* (Syracuse: Syracuse University Press, 2015); J. R. McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620–1914* (Cambridge: Cambridge University Press, 2010).
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39. Timothy LeCain, *The Matter of History: How Things Create the Past* (Cambridge: Cambridge University Press, 2017), 8.
40. The example below draws on O'Gorman, "Imagined Ecologies." Please refer to it for full references.
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42. See O'Gorman, "Imagined Ecologies."
43. Thom van Dooren, Eben Kirksey, and Ursula Münster, "Multispecies Studies: Cultivating Arts of Attentiveness," *Environmental Humanities* 8 (2016): 13.
44. Jamie Lorimer and Sarah Whatmore, "After the 'King of Beasts': Samuel Baker and the Embodied Historical Geographies of Elephant Hunting in Mid-Nineteenth-century Ceylon," *Journal of Historical Geography* 35 (2009): 671; van Dooren, Kirksey, and Münster, "Multispecies Studies"; LeCain, *Matter of History*.
45. Van Dooren, Kirksey, and Münster, "Multispecies Studies," 13.
46. Catherine Nash, "Environmental History, Philosophy and Difference," *Journal of Historical Geography* 26, no. 1 (2000): 23–27.
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50. This is discussed further in a chapter in Emily O'Gorman, *Imagined Ecologies: A More-than-Human History of Wetlands in the Murray-Darling Basin, Australia* (Seattle: Weyerhaeuser Environmental Books, University of Washington Press, forthcoming 2021).
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57. For example, Giraud et al., "Feminist Menagerie"; Castree et al., "Changing the Intellectual Climate; van Dooren, *Flight Ways*; Donna Haraway, *Modest_Witness@ Second_Millennium. FemaleMan_Meets_OncoMouse: Feminism and Technoscience* (London: Routledge, 2018), 36.
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