Received: 17 April 2025 | Revised: 7 July 2025 | Accepted: 28 October 2025

DOI: 10.1111/1745-5871.70044

SPECIAL SECTION ARTICLE

Geographical Research WILEY

Assemblage, archive, and ancestor: Developing more-than-human historical geography with salmon

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Funding information
This research was supported by a University of Bristol Postgraduate Studentship. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Abstract

This article develops concepts and methods for a more-than-human historical geography. It does so in response to the concept of the more-than-human archive that has begun to emerge in cultural–historical geography and the environmental humanities. Cultural–historical geographers interested in the more-than-human archive have argued that animals, plants, rocks, and other ecological phenomena have important agencies that are overlooked by culturally dominant anthropocentrism. I argue, however, that this literature has often relied upon ungeographic theories and methods of history that downplay the role of spatial politics in shaping the temporal rhythms of the more-than-human world. The ungeographic ontologies, epistemologies, and methodologies informing more-than-human archive literatures have resulted in the archive, a Eurocentric construction with a violent genealogy, being incorrectly taken as an unproblematic metaphor for narrating historical geography. To develop a more critical spatial–historical reading of the more-than-human, I turn to my own research on Atlantic salmon. I propose three conceptual figures of more-than-human historical geography based on my encounters in the salmon rivers of southwest Britain: the assemblage, the archive, and the ancestor. This tripartite conceptualisation of more-than-human historical geography evidences the difference a more-than-archival, spatial–historical approach makes to the way we understand ecological politics.

KEYWORDS
archives, ecological politics, historical geography, more-than-human, salmon, speculative methods

1 | INTRODUCTION

This article develops empirically grounded theories and methods for a more-than-human historical geography. It does so in the context of recent theorisations of 'more-than-human archives' that have begun to flourish across cultural–historical geography, anthropology, and the environmental humanities (Becker, 2024; Bruno, 2023; Ogden, 2021; Patchett, 2021). Through an interrogation of this nascent literature, which spans a range of positivist and interpretive methods, emerges my central argument: that there is a need for more clarity regarding the divergent more-than-human historical–geographical ontologies currently glossed as archival and more precise methods of spatial–historical research. In the wake of my critique, I develop three conceptual figures that represent different ways of narrating more-than-human historical geography. I name these figures the assemblage, the (geomaterial) archive, and the ancestor. I argue that what is at stake in this article are the forms of socio-ecological politics that our historical–geographic logics and methods inaugurate.

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The conceptual arguments I make emerge from a specific context. Between 2020 and 2024, I examined the collapse of Atlantic salmon populations in the River Severn and the River Wye, two rivers located in the borderlands of England and Wales (Figure 1), through field-based qualitative research methods. The Severn and the Wye are historically significant salmon rivers that have recently been classified as 'at risk' by the statutory bodies responsible for their management (Environment Agency, 2023), meaning that "salmon numbers are below minimum levels to support sustainable populations" (Environment Agency & Natural England, 2024, np). Since the late 2000s, state and non-state organisations have attempted to prevent the iconic salmon's extirpation (local extinction). Major conservation initiatives, such as the construction of fish ladders, have been launched on the rivers, and the regulation of salmon fisheries and other industries impacting the river has become increasingly tight. Yet salmon remain critically endangered. The case of Severn–Wye salmon thus mirrors wider drifts towards "extirpation despite regulation" (Collard et al., 2020, p. 1).

As I have argued elsewhere (Read, 2024, 2025), the limited successes of mainstream biodiversity conservation projects on the Severn and the Wye are a consequence of ungeographic and ahistorical conceptualisations of salmon. Dominant conservation practices on the rivers treat salmon as a timeless and static species that can be managed through technocratic and abstract scientific logic, rather than as place-based creatures who emerge within dynamic multispecies geographies. Salmon conservation actors have especially failed to account for the colonial and racial capitalist historical geographies that continue to shape the 'sociogeomorphologies' of the Severn and the Wye (Ashmore, 2015). These rivers played critical roles in the British Empire, the Severn as an industrial transport corridor and the Wye as an elite tourism destination influencing the development of Romantic landscapes aesthetics. The challenge, therefore, is to develop critical modes of more-than-human historical geography that can challenge the ahistorical and aspatial logic that remains prominent in British environmental politics and biodiversity conservation.

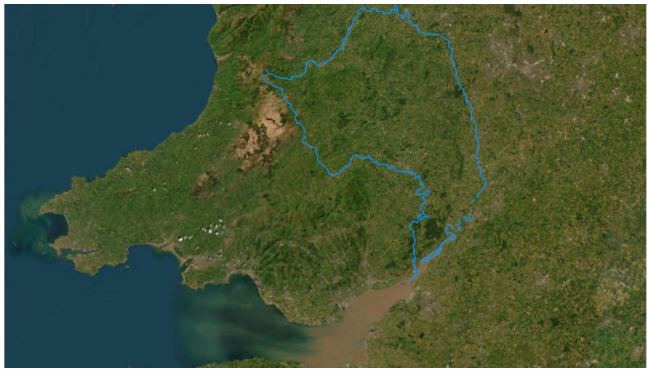

FIGURE 1 The courses of the River Severn (top) and River Wye (bottom) in Wales and England. Made using ArcGIS.

Key insights

Cultural and historical geographers interested in the more-than-human have argued that animals, plants, and other ecological phenomena have important historical–geographical agencies that are overlooked by societally dominant anthropocentric perspectives. Recently their work has begun to coalesce around the concept of the more-than-human archive. I argue that the archive is a problematic shorthand for more-than-human historical geography because it is a Eurocentric invention that emerges from violent historical geographies. The purpose of this paper is, therefore, to create a more specific theorisation of the diverse concepts and methods we can draw on to do more-than-human historical geography. It argues this is important because different historical–geographic approaches have different political affordances.

Novel theorisations of more-than-human entities as archives offer one potential avenue for developing such critical theories. In recent years, animals and other ecological phenomena have begun to be invoked as archives that record more-than-human histories by scholars within geography (Bruno, 2023; Patchett, 2021), anthropology (Ogden, 2021; Swanson, 2022), and environmental history (Becker, 2024). These scholars have resisted deeply ingrained anthropocentric assumptions that posit 'nature' as a timeless backdrop for the dramas of human history, and non-human ecological phenomena (animals, plants, and rocks) as passive entities with little agency in the construction of space. More-than-human archival work has thus become particularly significant within the context of the so-called Anthropocene, where the catastrophes of climate and ecological breakdown evidence the 'feral' historical–geographical agencies of multispecies worlds (Tsing et al., 2024, p. 1). In short, more-than-human archival literatures offer an emergent mode of doing historical geography that could be mobilised to inform critical socio-ecological politics on the Severn and the Wye.

However, until now, the notion of the more-than-human archive has remained an evocative and diffuse term rather than a robustly theorised historical–geographic concept. It has thus been invoked in different and often conflicting ways. On the one hand, this diversity is a testament to the analytic potential of the more-than-human archive. Yet, at the same time, this divergence creates imprecision and, more importantly,

political uncertainty, given that our politics is shaped by how we narrate history and geography (Ekers & Loftus, 2013). There is thus a need for a closer theorisation of the historical–geographic ontologies and methods that make up the burgeoning more-than-human archive literature. Scholars interested in the historical–spatial agencies of more-than-human beings must be specific about the conceptions of history, geography, and temporality that drive their research and the attendant ethical and political stakes therein. 'Archive' cannot be a sticking plaster that conceals the critical differences of varied historical geographies.

A critical parsing of the varied more-than-human historical geographies that are subsumed within the term 'archival' is especially vital because archives have been extensively critiqued as gendered, raced, and classed sites of exclusion. In developing accounts charged with the archive's romantic 'allure' (Farge, 2015 [1989], p. 1; see also Derrida, 1995), emergent more-than-human archival literature has often had an uneven engagement with decades of critical archival scholarship that has theorised the ambivalent operations of archival power. Consequently, it has been insufficiently geographic—that is, it has been lacking in a rigorous 'spatial historicism' that articulates a "geographical, territorial apprehension of … history and society" sensitive to the cartographies of entrenched power (Said cited in Ekers & Loftus, 2013, p. 16).

Over the course of what follows, I offer a vision of how more critical spatial–historical modes of more-than-human historical geography might be developed. I begin in Section 2 with an overview of the emergent concept of the more-than-human archive, before turning to critical archival studies in Section 3 to highlight the risks of an overly metaphorical invocation of the concept. I thread reflections on my empirical work with salmon throughout this discussion before focussing on it in more depth in the paper's second half. In Section 4, I detail how a close empirical engagement with Severn–Wye salmon pushed me to develop three figures representing dynamic historical geographies. The next three sections discuss these three figures in depth, with particular attention paid to laying out the different methods of approach I employed to access each of them. In Section 5, I discuss the figure of the *assemblage*, which develops a biogeochemical reading of salmon as records of material historical geographies. In Section 6, I discuss the figure of *archive*, which conceptualises salmon as 'geomaterial' entities embodying historical geographies of capitalist political economy (Barua, 2019, p. 651). In Section 7, I discuss the figure of the *ancestor*, which mobilises 'undisciplined' speculative and non-secular methods to advocate for anticolonial and abolitionist politics on the Severn and the Wye (Hussein, 2023, np).

Through the contingent empirical situations of salmon in the Severn and the Wye, I thus articulate three critical modes of more-than-human historical geography that speak to broader socio-ecological conjunctures. Of course, these modes of doing historical geography have their own analytical limitations, which I will discuss as the argument unfolds. But by offering three dialogically articulated figures, my 'diagrammatic' sketch of Severn–Wye salmon's historical geographies extends the more-than-human beyond the archive's tight grip (Deleuze, 2006 [1988]; Barua, 2024). By working across the borderlands of cultural, historical, and political geography, I bring into view the different kinds of ecological politics that are at stake when it comes to how we narrate the spatial and historical agencies of the more-than-human.

2 | MORE-THAN-HUMAN ARCHIVES

Conceptualisations of more-than-human beings and entities as archives have proliferated across cultural–historical geography and the environmental humanities. Fleeting evocations of more-than-human entities—including lakes, rivers, gardens, soils, bodies, weather systems, and more—began to appear from the late 2000s (Engelmann, 2023; Tinsley, 2008; Tsing, 2015). But what was once a passing aside is now crystallising at the foreground of scholarly analyses. Recent discussions of the more-than-human archive include historian Lukas Becker's examination of an 'oil archive' that is "embedded in the landscape, in social practices, in human bodies, and even in the geology of the earth" (2024, p. 385); anthropologist Laura Ogden's sensuous ethnography of an 'archival earth' replete with "traces of existences" (2021, p. 24); and cultural–historical geographer Merle Patchett's (2021) tracking of the labour histories archived in bird feathers taken from fashion artefacts (see also Bruno, 2023; Goffe, 2019; Nassar, 2021; Swanson, 2022). Excitingly, much of this scholarship has yet to appear in journals: one place where the concept of the more-than-human archive is prominent is in the programmes of geographical conferences, such as those run by the Royal Geographical Society–Institute of British Geographers (the conference from which this special section emerged), the American Association of Geographers, and the Institute of Australian Geographers.

More-than-human archival literatures can be situated within the broader post-humanist turns of cultural–historical geography and the environmental humanities. Rallying against anthropocentric conceits of history and geography being shaped most significantly by humans, more-than-human archival literature advocates for 'hybrid' historical geographies articulated across human/nonhuman domains (Patchett, 2021). This advocacy has become urgent amid the dramas of the

Anthropocene, which, as Dipesh Chakrabarty (2009) has influentially argued, is marked by a set of crises in the relationships between past/future and human/nonhuman. The literature cited earlier builds on Chakrabarty's identification of a collapse of the "age-old humanist distinction between natural history and human history" and his claim that ecological phenomena are agentive and dynamic actors of crucial historiographical concern (ibid, p. 201). Put simply, more-than-human archival literatures fundamentally rework dominant assumptions about nature, history, and geography, shifting away from representations of nature as a timeless backdrop trapped within the container of space and towards an understanding of more-than-human entities as active historical–geographical agents.

The analytical promise of this fresh, emergent literature for my examination of salmon is clear. Unlike the dominant biodiversity conservation actors working on the Severn and the Wye, more-than-human archival literature takes seriously the creative historical–geographic capacities of animals like salmon. This literature could thus be pivotal in developing conservation politics anchored in the relational geographies of the two rivers, which is fundamental for the development of a deeper politics of human and nonhuman justice. However, there are two critical points where this literature needs deeper analysis. First, there is a lack of methodological clarity about how to research more-than-human archives. The sheer diversity of work that can be said to fall under the remit of the archive is staggering, with the scholars explored above using a suite of different methods that range from the positivist to the interpretive. While methodological diversity can be a good thing, it also means that the more-than-human archive as a concept lacks coherence. Second, there needs to be more emphasis placed on the historical *geographies* of the archive as a method and an institution. As it stands, these geographies of the archive remain largely unexamined in this literature, and it is taken for granted that the archive is an appropriate and unproblematic metaphor for narrating more-than-human historical geographies.

A lack of geographical specificity is a result of the (often-unacknowledged) intellectual genealogy of the more-than-human archive. While the concept is flourishing within fields like cultural–historical geography, the epistemological and methodological underpinnings of how it is used are often more profoundly indebted to the fields of environmental history, archaeology, and the palaeoecological sciences (Braudel, 1949; Cronon, 1996; Crosby, 1972; Ingold, 1993; White, 1995). In the epistemology of these fields, the archive is constructed as a *record* that can be summoned up as falsifiable proof to confirm or reject historical hypotheses. Such an approach can be seen in biophysical historical methods such as dendrochronology (tree-ring dating), palynology (pollen and spore analysis), and ice core analysis (Holm et al., 2019; Lewis & Maslin, 2015; Sörlin & Isberg, 2019), which remain some of the most prominent invocations of the more-than-human archive. More-than-human bodies, entities, and the traces they leave become forms of unstructured archival documents: non-human writings that "unsettle the sense that nonhumans are always merely written up" (Hinchliffe et al., 2005, p. 647).

The problem here is that the fields shaping the ontologies, epistemologies, and methodologies of the more-than-human archive inaugurate a form of historicism that prioritises temporality over space. The more-than-human archive is reduced to a quasi-positivist record that can be used to arbitrate history. Of course, this is not entirely negative: discerning historical fact is a crucial part of historical–geographic research (Clayton, 2025), and biophysical and archaeological methods are particularly important for retrieving more-than-human histories that have been excluded from the written record. However, without a lively historical–*geographic* analysis that attends to the spatial politics of the archive itself, there is a danger of violently flattening and reducing more-than-human life. I now turn to critical archival studies to bring the geographies of the archive into relief.

3 | CRITICAL ARCHIVE STUDIES

Initially an offshoot of archival science (Schwartz & Cook, 2002), the field of critical archival studies has solidified since the early 2000s as an interdisciplinary project spanning the social sciences and humanities. A key function of the field has been to bring into view the historical geographies of the archive, both as a method of research and as a particular form of institution (Stoler, 2002). This historical–geographic work has largely been carried out through recourse to the philosophy of Michel Foucault.

Foucault defines the archive as "the law of what can be said" and "the system which governs the appearance of statements … that which determines that all these things said do not accumulate endlessly in an amorphous mass, nor are they inscribed in an unbroken linearity, nor do they disappear at the mercy of external accidents" (Foucault, 2013 [1972], p. 245–246). In this sense, the archive is closely associated with Foucault's notion of the 'episteme'—the regularities in a society that "make it possible to grasp the set of constraints and limitations which, at a given moment, are imposed on discourse" (ibid, p. 211). The archive for Foucault is thus a central part of the liberal European power/knowledge relations that he sought to map. In a Foucauldian framework, archives are a central part of a geography of power: states, corporations, and other institutions use archives to performatively

construct the histories they claim to be merely recording and use these constructed histories to reinforce their spatial and territorial claims. Any history located beyond the archive is not able to meaningfully penetrate the epistemes and discourses that constitute liberal European governance.

Following Foucault, critical archival scholars have mapped the archive as part of a geography of exclusion and violence—an infrastructure of raced, gendered, and classed differentiation (Stoler, 2002). Decades of careful archival scholarship have sought to rework the archive, particularly towards feminist, postcolonial, and queer ends (Cvetkovich, 2003; Farge, 2015[1989]; Halberstam, 2005; Hartman, 2019; Lorimer, 2005; Tinsley, 2008). These authors have challenged the historiographical norms and geographical imaginaries that govern archival research, with scholars pointing to the importance of innovative archival reading strategies for attending to the historical geographies that were mostly ignored by the archive's ostensibly panoptic gaze. Others, including archival practitioners, have focussed on challenging the logic and curatorial impulses that govern the archive (DeSilvey, 2007; Patchett, 2019). These scholars bring into view the everyday archival labours of accessioning, cataloguing, conserving, retrieving, and researching documents that underpin archival ontologies (Stratford, 2022)—indeed, as a former trainee archivist, it was often drilled into me that archivists are 'gatekeepers' of history and, I would add, geography—by seeking alternative and experimental forms of archival craft.

There are overlaps between more-than-human and critical archival literatures (Bruno, 2023; Patchett, 2019; Tinsley, 2008). Indeed, more-than-human archival literature is one iteration of critical archival studies that builds on examinations of the archive's exclusions to consider its anthropocentrism (Chen, 2012). However, what has often been lost in more-than-human archival literature is close attention to the ways archives have been central to the construction of colonial and racial capitalist historical geographies. Figuring more-than-human beings and entities as archival often rests upon an unexamined assumption that looking at nonhuman histories will automatically result in more critical and accurate ecological analyses. Yet, as environmental philosopher Michelle Bastian argues, what matters is not the scale of our temporal frameworks but "what kinds of relation are afforded or not" (Bastian, 2024, p. 405). In other words, it is not enough to merely gesture to an archival perspective as a self-evident good or to turn archival documents into historical 'monuments' stripped of geographical context (Foucault, 2013[1972], p. 155). A more-than-human historical *geography* must examine, in order to undo, the power/knowledge relations that constitute archival ontologies.

Such a shift in methodology and epistemology is especially urgent given that archival ontologies are one of many historical ontologies that could be appealed to for building more-than-human historical geography. There are diverse ways of narrating more-than-human historical geographies that do not make recourse to the archive and its Eurocentric genealogy. Black, Brown, and Indigenous epistemologies, which have been displaced and marginalised by Eurocentric power/knowledge relations (including archival ontologies), have long attended to more-than-human historical geographies through diverse kinship relations, storying and knowledge practices, and legal orders (Daigle, 2018; Kimmerer, 2013; Norgaard, 2019; Todd, 2022). To merely widen archival ontologies to include more-than-human beings and entities without foregrounding these diverse more-than-archival approaches comes uncomfortably close to reinforcing the colonial logic that has long pervaded posthumanist scholarship (Liboiron, 2021; McKittrick, 2021; Todd, 2016).

The critiques of this section make clear that the archive must not stand in for historical geography as if it were one and the same thing. The archive, as a central ontological plank of Eurocentric liberal governance, emerges from violent and power-soaked geographies. The archive must therefore not be fetishised, in the sense of obscuring the origins of its production. These critiques thus point to the limitations of mobilising more-than-human archival literature to articulate the historical geographies of Severn–Wye salmon. A more precise and nuanced reading of more-than-human historical geography is needed to build on and extend the initial critical promise of the more-than-human archive. I now turn to my fieldwork encounters with salmon to articulate visions for a different more-than-human historical geography.

4 | SEVERN–WYE SALMON

Salmon in the Severn and the Wye are in a perilous state. As I outlined in the introduction, recent state and non-state biodiversity conservation initiatives have deployed various engineering technologies and legislative tactics to save Severn–Wye salmon, yet their numbers continue to fall (Environment Agency, 2023). As a geographer working between cultural–historical and political geography, I was drawn to make several critical assessments of salmon conservation on these rivers during my fieldwork. In interviews, I noticed how fisheries scientists and conservation workers deployed the biopolitical language of abstract salmon 'populations' and how this fed into their search for technocratic and managerial 'win–win' solutions (Biermann & Mansfield, 2014; Srinivasan, 2017). Analysing grey literature, I could see that Severn–Wye salmon conservation fits within a wider era of neoliberal conservation that is guided by the economic logic of growth and accumulation (Adams et al., 2013).

Most striking were the historical geographies of colonialism that underpin contemporary material arrangements in these rivers. The Severn and the Wye were, in different ways, imperial rivers. Although it is often assumed that the British Empire has come to an end, its legacies are ongoing worldwide and shape the 'socio-geomorphologies' of rivers (Ashmore, 2015: p. 149). The Severn was an 'artery' of colonial trade and industry (Zeiderman, 2025: p. 1). Making the Severn a colonial transport corridor required the construction of infrastructure such as weirs and canals, which straightened and fragmented the river and destabilised many of its ecological communities, including salmon (Read, 2025). The Wye became a space of leisure and recreation after the Napoleonic Wars, which were partly driven by intra-European competition for colonial territories in the Americas, cutting off British political and economic elites from their habitual tours of the Continent (Lerwill, 2021). Wealthy men began flocking to the Wye, which had recently emerged as the model for Picturesque landscape aesthetics (Gilpin, 2013 [1794]), to fly-fish and glide along the water on a pleasure boat, earning it a reputation as a 'Gentleman's river' (Wylie, 2008). Land along the Wye became extremely valuable and was rapidly enclosed within the hands of a few wealthy landowners (Williams, 2011). One legacy of this enclosure is highly extractive models of agricultural land management that pollute the Wye and drive salmon decline (Read, 2024).

Salmon themselves guided me towards this spatial–historical perspective. Salmon are renowned for their charismatic intergenerational—that is, historical–geographic—memories. Through their dynamic capacities to know and remember, salmon undertake a journey that can be up to 4000 miles long: they travel from their upriver natal grounds to the depths of the Atlantic, travelling along routes that have been forged by generations of salmon life coming before them. They are then able to return to the same square metre of river that they hatched in, completing a cycle and passing on their individually modified memory to a new generation. I was inspired by the deeper sense of history and territoriality articulated by salmon. I began to be curious about the expansive ways that salmon swimming up and down the Severn and the Wye memorialise and materialise historical geographies that dominant human perspectives might dismiss as irrelevant or unimportant (Figure 2).

Driven by these curious encounters, I developed three conceptual figures that theorise the varied historical geographies of Severn–Wye salmon: assemblage, archive, and ancestor. These salmonid spatial historicisms evidence that more-than-human history is not a flat and undifferentiated terrain: more-than-human history is a historical *geography* of politics and power. This is a significant shift from both vague metaphorical invocations of the more-than-human archive and more positivist archival methods because it points us more forcefully towards the need for a critical spatial politics, one which opposes the entrenched forms of colonial and capitalist power that prevent multispecies flourishing. In the next three sections, I take assemblage, archive, and ancestor in turn to examine how they advance and complicate conceptualisations of more-than-human historical geography.

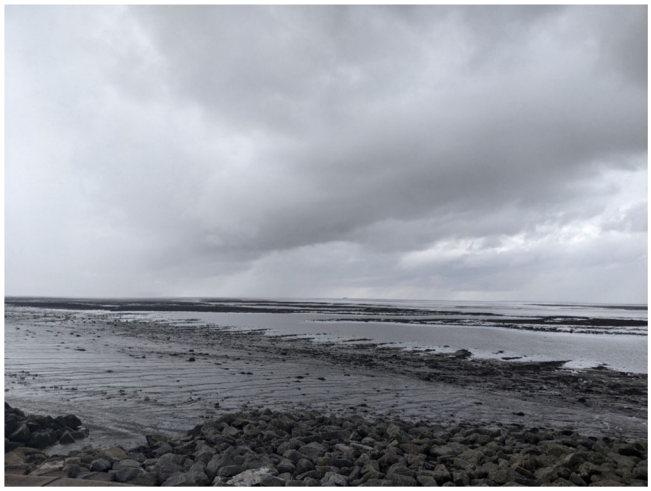

FIGURE 2 The Severn Estuary, where the Wye and the Severn meet, September 2021. Image author's own.

5 | ASSEMBLAGE

In this section, I discuss how a focus on the entangled relationships that make up salmon bodies prompts me to conceptualise salmon as a biogeochemical assemblage. I situate my theorisation of the salmonid assemblage as one mode of a more-than-human spatial historicism with specific political affordances and limitations. This section thus forms the first part of my call for deeper theorisations of more-than-human historical geography that clarify the methodological and conceptual vagueness of more-than-human archive literatures.

All bodies are arguably what geophilosophers Deleuze and Guattari (1988) would call 'assemblages'—arrangements in motion and change (Lorimer, 2015; Nail, 2017). Bodies are histories of entanglement, a material record of intertwined biogeochemical processes. But as a keystone migratory species, the biogeochemical entanglements of salmon are particularly promiscuous and pronounced. Salmonid metabolisms are varied and wide-reaching, stretching across habitats that range from upstream gravel beds to mid-Atlantic foraging grounds. The story of these metabolic geographies is etched in the bodies of salmon; for example, salmon flesh is a pink–orange colour because of carotenoids, which are molecules that

salmon obtain through their deep-sea diet of crustaceans (Cooking Sections, 2020). Otoliths, the bones that grow in salmon ears and that help their navigational faculties, store all kinds of information about the phenomenological worlds that salmon craft and move through (Swanson, 2022). In short, salmon are processual arrangements that emerge from a dynamic interweaving of more-than-human earthly forces.

This conceptualisation of salmon as a dynamic biogeochemical assemblage starkly contrasts with the dominant practices of biodiversity management on the Severn and the Wye. Despite their deep understanding of salmon ecologies and their appreciation of the complex range of issues that salmon face, in practice, most conservation officials working on the Severn and the Wye target salmon as a discrete species that can be managed through specific interventions. This perspective has led to conservation projects that only address the surface of the problem of salmon decline—such as banning certain forms of fishing or modifying barriers to migration—while failing to consider the broader relational ecologies that have resulted in polluted and ecologically barren rivers. It is in this context that the assemblage becomes a vital tool for disrupting assumptions about salmonid temporalities and spatialities. While assemblage theory has often been critiqued for its *lack* of historical analysis and its flattening of geographies (see for example Kinkaid, 2020; Povinelli, 2021b), I argue that assemblage thinking can be deployed to articulate a critical historical–geographic perspective because the concept of the assemblage opens space and history to a 'chorus' of more-than-human actors (Lobo & Parsons, 2023, p. 129). On the Severn and the Wye, the assemblage becomes a vital mode of more-than-human historical geography that allows me to map the diverse relationalities that constitute salmon.

The figure of the assemblage can be encountered through various historical–geographic methods. For encountering salmon assemblages, one could use the scientific techniques of otolith and scale analysis that anthropologist Heather Anne Swanson (2017) has explored. Analysing salmonid biomaterials with laboratory instruments such as microscopes and extracting their isotopic information allows salmon scientists to access the historical geographies of an individual salmon, indicating its "interactions with food sources, temperature, photoperiod, other fish, and even the minerals of nearby rock formations" (ibid, p. 90). Observing the colour of salmon flesh can also uncover its historical geography: differential consumption of carotenoids means salmon display slightly different shades depending on the location of their ocean foraging grounds, with a deeper pink indicating a more abundant ocean diet (Cooking Sections, 2020). However, these methods of scientific analysis are not entirely appropriate for my research sites. Stringent conservation regulations on the Severn and the Wye prohibit the removal of salmon from the river, and there are no hatchery or conservation laboratory programmes working on salmon. This has resulted in limited opportunities to access and examine salmonid biomaterials. Furthermore, while scientific methods are increasingly popular for salmon and wider multispecies scholars, I am reluctant to reinforce the assumption that abstracting animals like salmon from their assemblages and bringing them into the laboratory space is a privileged site for understanding their historical geographies.

I prefer methods of landscape ethnography that permit an oblique view of the biogeochemical historical geographies of salmon assemblages. Landscape ethnography methods have been popularised in the last decade as 'arts of noticing' (Tsing, 2015) and 'rubber boots methods' (Andersen et al., 2023). Broadly, they merge traditional ethnographic methods of participant observation with thick descriptions of natural history and practices such as walking and drawing. Deploying these methods in the Severn and Wye watersheds allows me to see salmon's histories without dissecting their bodies with laboratory instruments. Think, for example, of the riparian forests that have arisen in part through salmon's function as a metabolic pump that transports marine nitrogen to freshwater ecologies (Wölfle-Hazard, 2022). When a salmon dies or is eaten by a predator, it releases a dense wash of nutrients that reaches riparian soils and renders them extremely fertile. The forest ecologies that would have once lined the shores of these rivers have been fragmented by agriculture, resource extraction, and urban development. Patches, however, remain, such as the Forest of Dean, an ancient woodland on the banks of the Wye. To look at these forests reveals the biogeochemical record of a salmon assemblage.

Observing a salmon body directly is challenging because Atlantic salmon are notoriously shy underwater creatures and are limited in numbers in the Severn–Wye Rivers (Swanson, 2022). More active and inventive 'arts of *tracking*' are thus required to notice salmon assemblages (Du Plessis, 2022, p. 50, emphasis added). For this, secondary tagging data that track the migratory journeys of Severn–Wye salmon are available (Swain, 1982). Although these data are now several decades old, it still underpins local understandings of the salmon assemblage and its biogeochemical historical geographies. For instance, Mark, a local fisherman I interviewed, cited these data to offer a hypothesis that Severn–Wye salmon are evolutionarily distinct from most other salmon populations in the UK. While most salmon populations in Britain migrate to feeding grounds off the shores of Norway, several populations from the southwest, including the Wye and the Severn, migrate much further west to foraging grounds near Greenland, where they interact with North American Atlantic salmon. For Mark, the varied foraging behaviours of salmon indicate a significant historical

separation of Britain's salmon populations. He theorises that during the last glacial maximum, ice sheets prevented southwest salmon from migrating north, necessitating their adaptation and resulting in their distinct characteristics: Severn–Wye salmon are famously large and are known to spend multiple winters at sea, unlike smaller populations of one-winter-at-sea salmon.

In sum, a variety of historical–geographic methods can be drawn upon to practise my conceptualisation of salmon as an assemblage. Through creative modes of landscape ethnography and varied arts of tracking, I have mapped and visualised the biogeochemical geographies that underpin the processual emergence of salmon. What is significant politically about this historio–geographic mode is its disruption of the power geometries that determine which agencies are counted in the making of history. I have used the assemblage to critique the technocratic and managerial refrains of dominant biodiversity conservation projects on the Severn and the Wye, arguing that their targeted and limited interventions in salmon decline fail to address the wider dynamics unravelling salmon assemblages. The central contribution of the assemblage is the way it opens history and geography to a 'chorus' of more-than-human forces (Lobo & Parsons, 2023, p. 129).

However, not every element of Severn–Wye salmon's historical geographies can be collapsed into the logic of the assemblage. To attempt such an abstraction would be to fall into the trap outlined in my earlier critique of theorisations of the more-than-human archive that take a single concept as a stand-in for history and geography. Indeed, while the assemblage has been crucial for highlighting the chorus of creative and dynamic nonhuman agencies that constitute salmon worlds, it is less helpful in making sense of the power arrangements that structure and constrain processes of assembly. To make such historical–geographic forces clear, I need the figure of the archive—not as an alluring metaphor but as a lens for watching operations of power and hierarchy.

6 | ARCHIVE

It might be surprising that I am conceptualising an aspect of salmonid historical geography as an 'archive', considering I have just spent several pages asserting that the archive is an imprecise concept for theorising the more-than-human. But I am using the archive intentionally to theorise a form of more-than-human historical geography that is structured by power/knowledge hierarchies. My use of the archive is thus more tightly informed by the spatial historicisms of critical archival geographies. At stake in this usage of the archive is a more-than-human historical geography that is sensitive to the ways ecological phenomena, like the salmon assemblages explored in the previous section, are not simply made up of flat material entanglements but constituted by political geographies.

More specifically, I argue that salmon are *geomaterial* archives. Geomateriality is a term first put forward by geographer Noel Castree (2001) and later developed by Maan Barua (2019). For Castree and Barua, geomateriality is a lens for analytically integrating the historical geographies of capital and the more-than-human. The concept emphasises that 'nature' and 'capital' are not separate forms but mutually determined processes that emerge dialectically. It is therefore a refusal of common-sense dualisms that see nature as timeless and static, something that exists in pristine isolation until it is disrupted by human-controlled capital, at which point its natural status is threatened. In conceptualising salmon as geomaterial archives, I am echoing this theoretical perspective and making analytical space for the historical geographies of capitalist political economy that salmon both shape and are shaped by.

Such an analytic move has significant stakes for understanding Atlantic salmon conservation in the Severn and Wye Rivers. It entails not only looking at salmon's material historical geographies but also considering salmon as consequential actors in shaping the historical geographies of ideological worlds. There are (at least) two strategies for bringing salmon into empirical view as a geomaterial archive. The first involves documentary analysis within relevant archival collections that bring the geographies of capitalist political economy and government into view from the vantage point of the Severn and the Wye. Because salmon are often not mentioned in archival documentation of the Severn and the Wye's political economic geographies, this move requires a *motivated reading* of structured archives. This entails a dynamic historical–geographic perspective that refuses the conventional push to fully consume a naturalised archive and faithfully reconstruct its histories. Instead, a motivated reading challenges the geographies that structure the archive and its silences.

Let me illustrate how this spatially motivated reading works with a particular case. One of the key drivers of salmon decline on the River Wye is phosphate pollution caused by agricultural runoff from industrial chicken farms. Breaking away from the sensationalist coverage of this pollution that positioned it as a new event, I was interested in the deeper historical geographies of phosphorus in the Wye and how salmon bodies might be geomaterial archives of the phosphate industry (see Read, 2024). To unpick this historical geography, I turned to the largest UK-based archive of the phosphate industry: the Records of the British Phosphate Commissioners, housed in the National Archives in Kew, London. Here I discovered that, far from phosphate-related ecological crises being a new thing, the historical geographies of the phosphate industry

have long been driven by British imperialism, especially in the Pacific, where the phosphate-rich Pacific islands of Banaba and Nauru were decimated by the phosphate mining industry in the 20th century (Teaiwa, 2014). The archive tells a story of ecological devastation, with the islands hollowed out by the 1980s and their Indigenous populations dispossessed and displaced. Today, Banaba is mostly uninhabited, while Nauru is dominated by an Australian offshore immigration detention facility (Morris, 2023).

In conventional historiography, using this archive to research the historical geographies of salmon in the Severn and the Wye would make little sense. Salmon are not mentioned in these documents at all, and references to the Wye and the Severn are virtually nonexistent, aside from brief references to nearby ports in discussions of phosphate shipping. It was only through my motivated reading that these connections became clear. Salmon and the Wye are not mentioned in this archive because they were deemed irrelevant and unimportant to the politicians, scientists, clerks, and engineers who wrote it. Yet, from a geomaterial perspective, this historical geography could not be more consequential for Severn–Wye salmon. My motivated reading thus analytically integrated the histories and geographies of phosphate, which are artificially separated in the official archive, forcing me to approach the documentary material I was working with in a new light. Through a geomaterial lens, for example, the brief asides to ports in the Severn and the Wye become critical evidence: this shows that the violent colonial geography of phosphate connected these rivers to the Pacific islands of Banaba and Nauru. In short, a spatially motivated reading of documentary archives enables me to recuperate the geomaterial histories of salmon and phosphate that otherwise go undocumented.

As geomaterial archives, salmon are not merely recipients of structural historical geographies but active participants in their ideological (re)production. I therefore also made use of field-based methods of creative observation that foreground salmon's role as a historical–geographical agent driving political economies in the river. Drawing on more-than-human and multispecies ethnography (Barua, 2023; Kirksey & Helmreich, 2010), tools of observation and discussion with participants can be used to surface how salmon shape and are shaped by capital. Observation enables me to glimpse the historical–geographic agencies of salmon and the way that their autonomous world-building activities become enrolled in the reproduction of capitalist political economic accumulation.

For example, on the Severn, the key driver of salmon decline over the past century has been infrastructural barriers to migration–structures like weirs and canals that block salmon migration. I thus consulted the records of the Severn Navigation Commissioners, archived at the Gloucestershire Heritage Hub, to examine historical geographies of canalisation and improvement on the Severn. However, I also used ethnographic methods to examine how these historical geographies are evolving through the geomaterial agencies of salmon. On the Severn, weirs constructed in the 19th century have recently been equipped with state-of-the-art fish passes to reconnect fragmented salmon ecologies. But these fish passes are not just biodiversity conservation infrastructure: they are also speculative infrastructures of a nascent green tourism industry on the Severn. Conservation workers and scientists I spoke to discussed how salmon are at the heart of visions to transform the deindustrialised Severn into a new hub of leisure and tourism. Cultivating healthy populations of the charismatic and beloved salmon was seen as essential for securing this dream. Healthy salmon populations would draw anglers to the river to fish, or environmentalists to the new fish passes, where underwater viewing windows have been installed to allow a glimpse into the depths of the river. In short then, salmon *matter* to geomaterial histories of capitalist ideology on the Severn. Salmon bodies actively shape historical geographies of capitalism, while also being constituted by this system. It was only through critical modes of observation that such a dialectical understanding of capitalism's historical geographies could emerge.

Thus, taken together, archive and assemblage represent two distinct orientations towards historical geography. While the assemblage opens to a chorus of relational more-than-human bodies and entities, the archive focusses on the dialectic of nature and capital, and the way more-than-humans are systematically shaped and shaped by political economy. The critical differences between these two figures demonstrate the need for conceptual and methodological precision in discussions of more-than-human histories. However, my discussion has yet to 'provincialise' the Eurocentric historical ontologies that both archive and assemblage largely represent (Chakrabarty, 2007[2000], p. 1). To move beyond Euro-modern logics, I now turn away from the assemblage's flat ontological entanglement and the archive's power-saturated disciplinary hierarchies and towards the 'undisciplined' ancestor (hussein, 2023, np).

7 | ANCESTOR

The ancestor, as I theorise it, is a historical–geographic orientation to worlds that can never be fully captured by capital and Eurocentric power/knowledge relations. My figure of the ancestor is indebted to the Indigenous bodies of knowledge that claim salmon, fish and other beings as ancestral kin (Daigle, 2018; Kimmerer, 2013; Norgaard, 2019; Todd, 2022). Salmon themselves are

also key agents in the formation of this figure. As Indigenous thinkers and their allies have pointed out, salmon, as creatures who follow the same migration paths as the generations that came before them, are an embodiment of ancestral historical geographies (Povinelli, 2021b). As I call upon it, then, the ancestor is a deeper mode of examining historical geography, one which insists that salmon are more than abstract biogeochemical assemblages or geomaterial archives of capital.

This specific sense of salmonid ancestralism dovetails with a broader sense of the ancestor as a historical–geographic ontology of origins and descent, a conceptualisation most prominent within diverse anticolonial literatures theorising the 'ancestral catastrophes' of colonialism, capitalism, and slavery (Povinelli, 2021b, p. 3). The ancestor provincialises the historical geography of the archive, which risks totalising capital's histories, by situating it as a specific lineage with traceable origins. Crucially, these lineages of the ancestor are not essentialised or static. While ancestral relations are embodied and grounded and cannot be summoned up overnight (Kanngieser & Todd, 2020; Povinelli, 2021a), abolitionist scholars point to the possibility of "*reselect[ing] our ancestors* in solidarity" (Heynen & Ybarra, 2021, p. 24, emphasis added). Histories within the archive might break free of its tight grip. Furthermore, ancestral histories from outside capital's geomaterial archives are not a romanticised and noble Other (Gibson, 2024); if things can break free of capitalism's geomaterial archive, things can also be drawn in. There is no neat binary.

The ancestor thus insists that there must be anticolonial and abolitionist projects that are focussed on what can be performed to confront and dismantle capital's geomaterial archive. Such anticolonial and abolitionist projects are difficult to imagine for the Severn and the Wye. These rivers, located in the belly of the imperial beast, have rarely, if ever, been understood through such lenses. It is thus necessary to innovate and experiment with different historical geographic sources and methods to fully bring the figure of the ancestor to life within imperial heartlands. Speculative and non-secular modes of research are one possible avenue for experimenting and surfacing the ancestor in the Severn and the Wye.

Speculative and non-secular methods refuse Eurocentric positivist historiographical logics rooted in a binary logic of truth. Such methods have become influential within geography following the rise of decolonial theory (Escobar, 2020), which is itself informed by longstanding forms of Black, Brown, and Indigenous thought that understand the world (and its historical geography) as shaped by spirits and sentient more-than-human lands and bodies (see Alexander, 2005; Gumbs, 2020; McKittrick, 2021). For example, Zoe Todd (2018) develops a methodological orientation to fish as 'witnesses'—sentient, agentive beings who bear witness to colonial injustices wreaked upon the land, even when human memory has been silenced or erased by colonial violence. Another example is Black geographies scholar Tianna Bruno's work on Black ecological memory. Here, Bruno examines Billie Holiday's song 'Strange Fruit' as an exploration of more-than-human memory and the trees that "witnessed the violence of lynching" (2023, p. 1547). These speculative, non-secular methods centre the vitality of Black, Brown, and Indigenous humans and their non-human kin amid regimes of capitalist and colonial enclosure.

Speculative and non-secular modes of research cannot be unproblematically transplanted to my own empirical field. Doing so would fall into the trap of appropriating and decontextualising their critical knowledges. Yet they can be listened to. For example, following the lead of place-based and non-secular decolonial thought, there is scope to take seriously the rich worlds of folklore and mythology that revolve around Severn–Wye salmon. Sacred geographies of salmon were once widespread across the British Isles (Kurlansky, 2020). Many of these historical geographies have faded away over time, but Welsh salmon mythologies were well-documented and remain important within contemporary Welsh culture and identity. The Mabinogion, a 12th-century manuscript made up of earlier oral stories, features an Arthurian legend called Culhwch and Olwen that centres on the Salmon of Llyn Llwy (Davies, 2008). The Salmon of Llyn Lwy is the wisest and oldest of all creatures in Britain. He helps the helplessly lost protagonists of the tale find their way—and even gives them a ride on his back to get them to their desired destination!

This tale is just one instance of the various Celtic tales about wise and ancient salmon who offer humans knowledge and enlightenment (see Kurlansky, 2020). These are beloved stories in Wales, Scotland, and Ireland, but they are limited to being seen as culturally significant works of art. Yet through the lens of the ancestor, these mythologies become more than aesthetic: they become historical–geographic and *scientific* (McKittrick, 2021). The historical–geographic lens of the ancestor allows the Salmon of Llyn Llwy to be taken seriously because it refuses the secular binary logic that polices what is 'real' (Escobar, 2020). The figure of the ancestor emphasises that through folklore and mythology it becomes obvious that salmon are wise and sacred creatures who are deeply woven into the historical geographies of Britain. In doing so, the ancestor fundamentally challenges the technocratic refrains of conservation science. The non-secular logics of the ancestor make clear that salmon are not an abstract species to be managed, but historical–geographic kin who demand care, respect, and compassion.

Beyond folklore and mythology, building speculative and non-secular modes of historical geography

for Severn–Wye salmon means allowing room to wonder about their unknown stories. There is so much about salmon that is unknown: where exactly they migrate to in the ocean, how they find their way there, and how they can make the journey back to the same patch of river they were born in. What happens when salmon from the Severn and the Wye, those imperial rivers from which so many regimes of enclosure have been launched, meet and mingle with salmon from Turtle Island—the ancestral salmonid kin of Mi'kmaq, Beothuk, Innu, and other Indigenous nations? What would it mean to take these salmon seriously as wise kin and knowledgeable witnesses who have much to tell us about the more-than-human histories of the rivers and lands they move through? Might they point us to cracks and openings in the colonial–capitalist regimes that drive socio-ecological injustice? These are the vital questions that the ancestor and its speculative, non-secular modes of research invite. Such questions cannot be answered by theorised as archival or answered through archival research.

8 | CONCLUSION: HISTORY LESSONS FROM ATLANTIC SALMON

The three figures of assemblage, archive, and ancestor that emerged through my empirical research with salmon have allowed me to demonstrate the complexity of more-than-human historical geographies in action. My empirically grounded spatial historicism has affirmed the analytical, methodological, and ethical possibilities of the more-than-human archive, while also seeking to question and unsettle some of the unexamined assumptions of this field. In this conclusion, I will reiterate the two key insights that have emerged from my critical and empirically anchored reading of the more-than-human archive.

First, we must provincialise and denaturalise archival ontologies. Archives are vital sites in the construction of spatial–historical ontologies and must be scrutinised. Such scrutiny should be applied in a way that remains focussed on the archive's situated historical geographies: the archive is an apparatus charged with the power-laden histories of colonial states, private political–economic enterprises, and various other bureaucratic institutions. It does not permit us to observe history with a neutral gaze; rather, it performatively constructs that which it claims to merely house. Drawing on archival ontologies as a shorthand for history is therefore a deeply problematic move. Such an uncritical turn to more-than-human archives not only risks reinforcing the fictitious 'God tricks' of the archive (Haraway, 1988, p. 581) but also obscures the Black, Brown, and Indigenous cosmologies that have long centred more-than-human historical geographies without recourse to Eurocentric archival ontologies. Provincialising archival ontologies is thus crucial for avoiding the epistemic colonialism that has plagued recent more-than-human literatures (Liboiron, 2021; Todd, 2016).

Running alongside this call to provincialise archival ontologies is my second core argument: historio–geographic methods must be multiplied. Building from a more specific understanding of more-than-human historical geographies as constituted by overlapping assembled, archival, and ancestral ontologies, I have shown that it is not only classical documentary research methods that can be used to access more-than-human pasts. As my empirical research demonstrates, interviews, ethnography, speculative and non-secular methods, and more can all be utilised as historical–geographic research methods that provide an opportunity to encounter and theorise the more-than-human. Indeed, such critical methodological multiplicity is often necessary, given that more-than-human historical geographies are frequently excluded from the partial, anthropocentric gaze of structured archival collections.

Taken together, these dual moves of archival provincialisation and historio–geographical multiplication allow for a more conceptually and methodologically rigorous engagement with the more-than-human. Of course, following Severn–Wye salmon has resulted in a situated understanding of more-than-human historical geographies. Furthermore, my commitment to demonstrating the breadth of different more-than-human histories has meant I have only been able to provide a diagram of how these concepts work in action. More work is thus needed to see how my figures apply to other beings and different territories. Yet what remains crucial about this paper is its attempt to show that the archive must not be taken for granted as a neutral model or method for how we narrate and understand history. The reflexive and critical approaches I have modelled are needed to avoid being trapped by the archive's allure.

ACKNOWLEDGEMENTS

The author would like to thank Aya Nassar and Jessi Lehman for organising the Nature in/and/of the Archive session at the Royal Geographical Society conference in London in 2023. He would also like to thank Marianne Lien, Ursula Münster, Laura Ogden and Þóra Pétursdóttir, who ran the University of Oslo's Ecologising History summer school in Finnmark in 2022, for staging conversations that helped develop several of the ideas in this article. Finally, thanks must go to the two reviewers whose comments and suggestions helped improve the article greatly.

CONFLICT OF INTEREST STATEMENT

The author declares no conflicts of interest.

DATA AVAILABILITY STATEMENT

Research data are not shared.

ETHICS STATEMENT

This research was carried out in accordance with the requirements of the University of Bristol's Ethical Regulations and Code of Practice for Research Degree Programmes.

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How to cite this article: Read, A. (2025). Assemblage, archive, and ancestor: Developing more-than-human historical geography with salmon. *Geographical Research*, 1–14. https://doi.org/10.1111/1745-5871.70044