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Perspectives on Conservation Humanities

Edited by
Graham Huggan

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Guest Editor

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Editorial

What Are Conservation Humanities? Preliminary Reflections on an Emerging Paradigm

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It is increasingly acknowledged that one of the primary tasks of the humanities today is to engage with environmental issues: all the more so in light of the Anthropocene, which underlines significant—indeed transformative—human influence on the planet, even as it reiterates that humans are themselves shaped by ecological processes, at least some of which are beyond their control (N. Clark 2010; T. Clark 2015). Perhaps more to the point, the humanities have a key role to play in addressing a global environmental crisis that is increasingly being recognized in social, cultural, and political as well as scientific terms (Heise 2016, p. 25). As historian of science Sverker Sörlin suggests, scientists of different stripes have long since accepted that science alone is insufficient to solve environmental problems; rather, the very idea of "environmentally relevant knowledge must change" (Sörlin 2012, p. 788). This has led to a shift from environmental crises being seen primarily or even exclusively as scientific problems to them being seen as *behavioural* and *conceptual* problems, some of them seemingly intractable, and all of them requiring detailed attention to their "political, social, cultural, affective, and rhetorical forms" (Heise 2016, p. 24).

This has led, in turn, to the emergence of new cross-disciplinary paradigms within humanities scholarship, most notably *environmental humanities*, which Ursula Heise, among others, sees as having been catalyzed by a further crisis, this time an epistemological one, which requires the challenging of "conventional ways of framing environmental questions and institutionalizing academic research on them", with implications for recalibrating the relationship between sciences and humanities themselves (Heise 2016, p. 24; see also Bird Rose et al. 2012; Emmett and Nye 2017; Holm et al. 2015). Heise, accordingly, sees environmental humanities not so much as a particular method or approach but rather as a broad conceptual frame for looking at certain questions and problems bound up in historical as well as contemporary human relations to the planet: mounting environmental degradation, mass species extinction, accelerated climate change. This underlines the importance of studying the different *narratives* within which these relations are currently being and have previously been framed; it also implies that one of the urgent tasks of environmental humanities is to "enrich environmental research with a more extensive conceptual vocabulary", which might allow it to engage more fully with "fundamental questions of meaning, value, responsibility and purpose [at] a time of rapid, and escalating, change" (Bird Rose et al. 2012, p. 1).[1]

The inherent catholicity of environmental humanities—the field's more-or-less stated refusal to pin itself down to any single philosophical standpoint or methodological approach—may be enabling in some ways, but it comes at the cost of definitional precision.

As practitioners within the field freely confess, there is something "as yet rather nebulous" about environmental humanities (DeLoughrey et al. 2015, p. 3), even if there is general agreement that its main role is to produce critical and philosophical work around "human agency, social and cultural formation, social change, and the entangled relations between human and non-human worlds" (Bird Rose et al. 2012, p. 2). The same might be said for a similarly mixed-discipline, mixed-method field that is congruent with if not entirely subsumed by environmental humanities: *conservation humanities*. Environmental humanities is traceable back to the emergence, in Britain and North America but also other parts of the English-speaking world, of a cluster of post-1990s paradigms defined by interdisciplinary research and designed to train a humanities lens on some of the major social and environmental problems of our times (Heise 2016, p. 21). Conservation humanities is of still more recent vintage. Yet to acquire the still-tentative (if increasingly secure) institutional footing of environmental humanities, it is something significantly more than a figment of the academic imagination, but something significantly less than a recognized sub-field in its own right. In one of the few direct contributions so far to the articulation of the new paradigm, Nathan Bennett and his associates draw attention to what they call "the transformative potential of conservation through the social sciences, arts and humanities" (Bennett and Roth 2019, p. A6; see also Bennett et al. 2017; Carruthers-Jones et al. 2024). The humanities, Bennett et al. argue, *can* play a key role in conceiving "a more socially just, culturally appropriate and, indeed, beautiful way of achieving conservation", but little if any evidence is given that they *have* been playing this role, or that they supply a genuine working alternative to the kind of instrumental, solutions-driven research that, however creatively imagined, can often end up consolidating the conservationist status quo (Bennett and Roth 2019, p. A8). As with certain types of defence of environmental humanities—as is often the case with emerging constellations of this kind, the short manifesto is a dominant genre—Bennett et al.'s welcome appreciation of the value of the humanities in attracting attention to the cultural, political, and ethical ramifications of conservation is not necessarily matched by a consideration of the practical implications these might have *for* conservation; following Chris Sandbrook et al.'s similarly broad-brushstroke distinction between social science research "on" conservation and social science research "for" conservation (Sandbrook et al. 2013), there is significantly more evidence of the former than of the latter, although the two are inevitably entwined.

Equally problematic is the tendency in work of this kind to pigeonhole "science" and/or "scientific experts" as being obsessively concerned with measurement to the detriment of other, qualitative forms of interpretation and analysis. A case in point is Sörlin's aforementioned piece, in which he contends that "we cannot dream of sustainability unless we start to pay attention to the human agents of the planetary pressure that environmental experts are masters are measuring but that they seem unable to prevent" (Sörlin 2012, p. 789). Or consider Holm et al.'s (2015) manifesto "Humanities for the Environment", which at one level calls for greater dialogue between arts and sciences as well as between academics and "the stakeholders of global change" (978), but at another risks driving a wedge between arts and sciences by making the kinds of sweeping claims that few scientists would want to endorse, and that some of them might not be prepared to countenance: "Science offers empirical 'certainties' whereas the humanities are better equipped to consider decisions and options based on social uncertainties and contingencies" (990); "Science stops short of investigating the main driver of planetary change—the human factor" (979); "While the sciences may observe and analyze change, they are not organized or structured to create social policy and influence humans to change values and opinions" (981). Advocacy vehicles of this sort, especially if polemical in intent, are licensed to exaggerate for the

purposes of making their claims, but even so, the need to combine insights from sciences and arts that is integral to most visions of both environmental and conservation humanities is not best served by deploying the kind of rhetoric that sifts and separates them—a point to which we will need to return.

Perhaps the greatest challenge, though, in working towards some kind of provisional definition of conservation humanities revolves around the inherent difficulty of defining both conservation *and* the humanities. Let us offer some preliminary reflections on conservation first before going on to consider the role that the humanities might play in conservationist thought and action, as well as what meanings are embedded in the humanities themselves. A landmark text in defining modern conservation is Michael Soulé's (1985) essay "What Is Conservation Biology?", which emerged in the same year as other key developments in establishing conservation as a formal discipline, such as the coining of the term "biodiversity" and the establishment of the Society for Conservation Biology as a global body for conservation professionals (Holmes et al. 2017). Soulé sees conservation biology as a crisis discipline which, in aiming to supply principles and tools for preserving biological diversity, combines pure and applied knowledge. Conservation, for Soulé, is thus inherently interdisciplinary, building on different natural sciences, but also some social sciences, in order to tackle the variety and complexity of conservation challenges. He then goes on to propose a series of functional postulates about how the natural world works, as well as normative postulates about the ecological goals of conservation. From this point in the mid-1980s, we see a rise in the stature and profile of conservation, with notable increases in the number, size, and power of international conservation NGOs: a significant development within an international conservation order that emerged at the turn of the twentieth century (Adams 2003).

While Soulé's attempt to define conservation has been influential, it has several limitations. For one thing, it is remarkably unreflective about the context in which it emerged, presenting conservation as the logical conclusion of both scientific developments and rapacious human destruction of the natural world. Its distinctly Malthusian tone, positivist view of science, and utilitarian view of social science mark it as emerging from a late twentieth-century North American perspective. (His ideas of interdisciplinarity were also much more conservative than those of others, such as Bennett et al. (2017).) It obviously speaks from a position of privilege and power within universities, learned societies, and influential NGOs, yet this remains largely unacknowledged. Conservation needs to be seen, instead, as having a long and culturally differentiated history that significantly pre-dates the emergence of conservation biology as its current lead discipline, and it is bound up with entrenched systems of power and privilege that are not always readily owned up to or systematically understood.

For another, even the so-called mainstream represented by western academia, government, and large, well-connected NGOs is far from homogeneous, and the views associated with it do not always correspond to Soulé's archetype. Conservation may be principally about "setting the terms of the engagement between people and nature" (Adams 2003, p. 209), but these terms are not particularly likely to be agreed upon by all parties, and they may involve disagreements that lay bare the social as well as ecological injustices that conservation ostensibly makes it its business to address. Thus, while conservation has achieved some measure of success in, for example, saving high-profile species or creating national parks and other protected areas, it is has demonstrably "failed to keep pace with the very destruction that [originally] fuelled its growth" (Adams 2003, p. xiii).[2] This has led to various attempts at critical redefinition. One notable attempt is Kareiva and Marvier's (2012) proposal to update Soulé's original postulates in order to enable greater emphasis

on human modified environments rather than supposedly pristine nature, greater consideration for human development and poverty alleviation, and greater critical engagement with capitalism and corporations.

This and other similar manifestos for the "new conservation" sparked an ongoing series of at times antagonistic exchanges in the pages of conservation journals over what conservation should be, and how it should be done, albeit authored largely by white, male western conservationists based in elite universities (Holmes et al. 2017). Disagreements have often revolved around the relative merits of conservation measures that focus on nature for its own sake versus their anthropocentric counterparts, which tend to conserve for human well-being, and on the increased use of market-based mechanisms such as payments for ecosystem services. There continues to be a wide range of views among conservationists on these issues, though there is also considerable consensus on key topics (see, for example, Sandbrook et al. 2019), as mainstream conservation engages in more or less constant soul-searching over what it is, what it is trying to accomplish, and how. These debates also show the importance of the humanities to conservation insofar as they reveal both explicit and tacit assumptions about the meaning of "nature" and the social and cultural values ascribed to it (see below).

Further diversity exists outside of this self-authorizing mainstream. Some of this can be found in critical NGOs or in academia, for example Bram Büscher and Stephen Fletcher's energetic 2020 manifesto (Büscher and Fletcher 2020), which uses Marxism-inspired critiques of human-nature dualism, the colonial legacy of conservation, and the neoliberal financialization of nature to make the case for an alternative form of "convivial conservation": one that fosters positive ways of living with nature and aims to reduce reliance on market forces. Jamie Lorimer's *Wildlife in the Anthropocene: Conservation after Nature* (2015) similarly sees mainstream conservation as predominantly reactive, "seek[ing] to preserve a fixed Nature from modern, urban, and industrial society by enclosing it in National Parks" (Lorimer 2015, p. 5). Lorimer's is a more nuanced view of the "new conservation" than Büscher and Fletcher's, seeking a more creative, experimental approach to conservation than he sees as having been hitherto the case. For Lorimer, "post-natural" conservation recognizes the entanglement of the human and the nonhuman, embraces multiple natures, and appreciates the ubiquity and affective power of wildlife. This kind of conservation is human-centred to the extent that it involves a complex "set of embodied [. . .] processes of 'learning to be affected' by the environment", but it is also posthuman (or, perhaps better, posthuman*ist*) in the sense that it supports the view that the lives of human beings are enmeshed with those of other living creatures, and that such human/nonhuman assemblages, in involving agencies other than the human, also potentially question the very nature and exceptionality of the category "human" itself (Lorimer 2015, pp. 5, 189–90; see also Bird Rose et al. 2012).

Finally, other views of conservation come from myriad cultures around the world, particularly those of Indigenous peoples, with distinct ontologies of nature and culturally specific ethics of care. Mainstream conservation increasingly values such approaches, for example, in its official recognition of Indigenous reserves and sacred sites as protected areas, alongside more traditional national parks (UNEP-WCMC and IUCN 2021). Still, there is work to be done in accommodating the different ontologies of nature involved, and significant tensions remain between conservation projects and the territorial, cultural, and livelihood goals of Indigenous peoples, at least some of which are the residue of insufficiently worked-through legacies of conservation in the past.

Broadly speaking, conservation can be seen as a set of ideas, practices, and institutions that work to slow or reverse the decline of biodiversity. Much of this decline is human-

caused, seemingly opening the door to humanities approaches. But as Ursula Heise wryly remarks, "the new environmentalist interest in the human [has hit] the humanities at a moment when humanist interest has shifted, at least partly, to the posthuman" (Heise 2016, p. 27). It is also surely not coincidental that the increasing recognition of a global environmental crisis that has led to the emergence of new paradigms such as environmental and, more recently, conservation humanities has been concurrent with continuing debates around a *crisis of the humanities*, though such debates have long since come to acquire a familiar ring to them, and some of the positions taken up (or attributed as being taken up) in them are as overdrawn as those outlined in Büscher and Fletcher's melodramatically described "great conservation debate". These debates do not require extensive discussion here, but generally speaking, they centre on international attempts to defend the public value of the humanities against a background of declining student numbers—though not in all humanities subjects alike—and a global neoliberal knowledge economy in which "applied" knowledge is favored over "pure" or curiosity-driven knowledge, and the humanities—misleadingly lumped together as a single entity—are increasingly assailed (see, for example, Bate 2011; Nussbaum 2010; Perloff 2013; for a useful overview, see also Keen 2014).

Some of the most prominent examples have come from the US, though there are other instances worldwide, especially in the UK, where—to cite just one of several possible examples of the genre—the humanities have been scrutinized against a "background of intense public debate about successive British governments' incremental retreat from the idea that the state should bear most of the economic cost of higher education"—in other words, within a fraught national context in which the role and perceived affordability of university humanities study comes to stand in metonymically for the embattled university itself (Small [2013] 2016, p. 2; see also Collini 2012). In the work from which we have just been quoting, Helen Small's ([2013] 2016) study *The Value of the Humanities* (originally published in 2013), the humanities are first *defended* in terms of their general contribution to the knowledge economy; in terms of their specific contribution to the good workings of democracy; and in terms of being inherently valuable, as mattering for their own sake (Small [2013] 2016, pp. 4–6; see also Nussbaum 2010). They are then *defined* as the study of "the meaning-making practices of human culture, past and present, [with a particular focus] on interpretation and critical evaluation, primarily in terms of the individual response" (Small [2013] 2016, p. 29).

These characteristics seem, at first glance, to be largely unexceptionable, but they also beg several questions. What do the humanities have to say to the nonhuman world, both the world we humans shape, but also the world that shapes us? What uses are to be made of interpretation and evaluation? To what extent can the humanities adapt to an increasingly collaborative research agenda? What disciplines are included within the humanities, and how might they contribute to transdisciplinary synthesis and cross-disciplinary exchange? Similarly, if the humanities, as Small sees them, tend to place "greater faith in interpretative than in positivistic thinking, [paying] attention to the perceiver in ascertaining even the most philosophically secure of knowledge claims" (Small [2013] 2016, p. 29), then one must ask whether this subjective influence is true as well, at least to some degree, of the social and natural sciences, and whether this is particularly true of such crossover disciplines as geography and anthropology, which operate on the fuzzy boundary between humanities and social sciences, and which generally look to maintain a balance between text-based (interpretative) and experience-based (empirical) work. Lastly, one must question whether the humanities, if their perceived exceptionalism rests in large part on their capacity to promote and develop critical thought, are alone or superior in that regard; whether critique

is the most useful tool at their disposal; and whether critique, like other methodologies, has its own limits—not least in terms of laying the foundations for practical conservation work.

This last issue is worth looking at more closely. Critique has itself been subject to critical scrutiny over the past few years, with its practitioners being routinely accused of hubris and hyper-rationalism; of "chronic negativity [and] a pervasive pessimism of thought" (Anker and Felski 2017, p. 11; see also Felski 2015). Many of these critiques of critique are indebted to Bruno Latour's earlier, by-now-infamous 2004 article "Why has critique run out of steam?" which argued that critique had become entrenched, particularly in humanities and social science disciplines, and that as a result it had lost the capacity to account in a full and useful manner for the objects it sought to describe (Latour 2004; see also Latour 2007). Redford (2011) makes a similar point about the way the social sciences and associated humanities disciplines have engaged with conservation). Critique's principal methods—the dismantling of assumptions and suppositions made in relation to particular objects (especially literary and other cultural texts); the exposure of hidden meanings and biases within them; the revelation of a broader "political unconscious" at work—have, Latour later suggests, become self-fulfilling objectives, leading to a predictable string of familiar commentaries on equally familiar topics (racism, sexism, colonialism, and so on) and demonstrating an obstinate "woodenness" in their prescribed "definition of what sorts of agencies populate the world" (Latour 2007, p. 55).

One need not agree with Latour to see the limits of critique or to note its paradoxical tendency to obstruct the very forms of social intervention that it imagines itself as making possible. Humanities-based approaches to environmental issues may still benefit from critique—for example, of the abiding entanglements of conservation with capitalism and colonialism—but as Ursula Heise archly remarks, "if environmental humanists want to make good on their claims that their scholarship is relevant to environmental science and activism and to the public sphere at large, critique alone will be about as solid a foundation as Arctic sea ice is to polar bears" (Heise 2016, p. 28). Similarly, humanities-based work on conservation needs to go beyond those kinds of critique which are "as likely to stymie activity as to kindle it" (Heise 2016, p. 28). What is needed, in other words, is creative work that supports conservation initiatives worldwide without necessarily being directly involved in them, or mistaking advocacy for activism; while likewise needed is a more engaged approach on the part of humanities scholars to working together with scientists—especially natural scientists—in pursuit of common conservation goals. Collaborative work of other kinds is also called for, not least with the general public. Here, conservation humanities potentially has several important roles to play, i.e., in the imaginative construction of alternative, counterfactual scenarios, and other possible worlds (Holm et al. 2015, p. 983); in the effective communication of sound scientific knowledge; and in advancing understandings of how and why people are emotionally, as well as intellectually, invested in the things they are. As Holm et al. suggest, language and culture, narrative and imagination—the foundation stones of humanities research—are also the basis for human action, while value and ethics, the specialist domains of many humanities scholars, act as guides to the choices we make, including those we make on behalf of others' lives (Holm et al. 2015, p. 981). This is not to suggest that these domains "belong" to the humanities and to humanities scholars alone, any more than it is to suggest (with due apologies to Pope) that the proper subject of conservation humanities is mankind. In fact, as we have already implied, conservation humanities can be seen, at least in part, through a posthumanist lens in which human beings are understood as part of a *shared* world: as members of "multispecies communities", with significant responsibilities towards species—the distinguishing term "species" is itself

anything but transparent—other than themselves (Bird Rose et al. 2012, p. 3; see also Lorimer 2015, pp. 67–71).[3]

To sum up so far: conservation humanities is an emerging paradigm that exists within the larger multi- and interdisciplinary field of environmental humanities, and which aims at using humanities-based methods—textual and discourse analysis, philosophical and historical enquiry, ethnographic fieldwork—to shed light on contemporary conservation issues and problems, paramount among them today's alarmingly intensifying levels of biodiversity loss. Defining conservation humanities as a *paradigm* rather than a *field* is not just a reflection on the fact that its academic status has yet to be fully established. It also suggests that its main value, at least at this preliminary stage, lies in *conceptualizing* conservation problems rather than in seeking the kinds of direct evidence that might help to *solve* them, and indeed, it shares environmental humanities' general suspicion towards top-down, solution-driven approaches that fail to "address local ecological knowledge [or to] confront unequal distributions of wealth" (DeLoughrey et al. 2015, p. 16).

These suspicions are also shared of course by many working conservationists, and it arguably does not require humanities scholars (or social scientists) to point out that "the apparently neutral and science-based vision of conservation is a culturally embedded one", or that conservation professionals are "power actors in the international system", whether they like it or not (Duffy 2010, p. 8). Nor does it take humanities scholars (or social scientists) to ask tricky questions about some of the key concepts that inform current conservationist philosophies. Is "biodiversity" synonymous with cultural diversity, and is "diversity" a good thing in and for itself? Do we all benefit equally, or in the same way, from "ecosystems services"? Is "sustainability" a necessary brake on runaway economic development, or rather a convenient crutch for continued economic growth? There is a further danger here, shared by conservation and environmental humanities alike, that humanities scholars may find themselves drawn into conversations with natural science without necessarily understanding what it is that natural scientists do, and without necessarily consulting them on their actions. As has been pointed out often enough, institutional barriers still exist that prevent or at least significantly hinder the kinds of cross-disciplinary dialogues that are needed to address major environmental challenges; and when such encounters do happen, mutual misunderstandings and residual prejudices can easily turn them into dialogues of the deaf (Adams 2007; Agrawal and Ostrom 2006; Pooley 2014; Redford 2011). It is also true that humanities scholars, by and large, could do much more to improve their basic standards of scientific literacy, and that grand pronouncements about "science" are not necessarily matched by a willingness to engage with scientists themselves.

That said, conservation science—which is itself a cross-disciplinary field—stands to benefit from the kind of humanities work that sheds light on culturally shaped human attitudes and behaviours towards nonhuman animals and the natural world, that offers insight into the shifting meanings of these relationships, and that reflects on the socially and culturally differentiated regimes of value within which they are inscribed. Such work draws on some of the classical aims of humanities research, which are usefully summarized by Jonathan Bate as follows: (1) to establish the historical grounding for contemporary debates; (2) to demonstrate their educational benefits; (3) to exhibit "a healthy scepticism toward easy solutions"; and (4) to reinforce the value of "long life and what ethical obligations we might have to future generations, to other species, or indeed to the planet itself" (Bate 2011, pp. 2–3). However, as should be clear by now, conservation humanities is as much a challenge to conventional understandings of both conservation and the humanities as an attempt to draw them together. Early evidence indicates that conservation humanities may have most to offer the type of "new conservation" which, in

Jamie Lorimer's words, proceeds "without recourse to a lost Nature or a universal Human" (Lorimer 2015, p. 191), and may have more in common with posthumanist understandings of human/nonhuman consubstantiality than with humanist conceptions of a hierarchically ordered world (for further reflections on the posthuman and/or posthumanism, see Braidotti 2013; Ferrando 2019; Wolfe 2009).[4] This suggests, in turn, that conservation humanities looks set to follow environmental humanities' lead in "unsettling" traditional approaches to the humanities, though it could be argued against this that the humanities (along with the Enlightenment humanism that inspires them) have never been settled, while ethical responsibility toward the other—one of humanism's few historical constants—is a founding premise, perhaps *the* founding premise, of the environmental humanities knowledge domain (Bird Rose et al. 2012, p. 3).

Similarly uncertain is the question whether these "new humanities" research clusters have the potential to effect meaningful change, or whether the understandings and knowledge they derive can be turned into practical action. It is difficult to disagree with Holm et al. that the "human sciences—the mixed bag of academic disciplines in the humanities—are a fertile resource of insight into human motivation, creativity, and agency" (Holm et al. 2015, p. 981), or with Adams that the success of conservation initiatives worldwide depends on the capacity of such insights to change the way people perceive and act upon the natural world; that conservation, at its most basic level, is about the working through of everyday choices in human lives (Adams 2003, p. 209). However, while the operationalization of conservation humanities research may be a legitimate goal, to date it remains a largely aspirational one. This is not to say that conservation humanities is condemned to play a subsidiary role in confronting conservation problems, still less to suggest that these problems be ceded to the more "practically oriented" science disciplines; indeed, it is the humanities' very commitment to complexity—their awareness of the inherent slipperiness of language; their attentiveness to the multiple subjectivities, both human and nonhuman, involved in conservationist decision-making—that makes them such useful partners in contemporary conservation debates.

The special issue that follows consists of seven, loosely connected pieces written at different times over a three-year period from early 2022 to late 2024. All of the essays engage, to a greater or lesser extent, with conservation humanities, though not all of them agree on what the term means or even whether it is viable. Indeed, as the issue's guest editors we have made the deliberate choice to feature a lead-off piece, by the distinguished US-based literary scholar Ursula Heise, which sharply questions (a) whether conservation humanities is a field (or paradigm) at all, and (b) whether, even if it is, it is an emerging one. As Heise reminds us, humanities researchers have been interested in conservation issues for a very long time, but many of them, especially in the past few decades, have taken issue with "conservation"—along with the sometimes destructive practices it fosters—as a deeply problematic term. Heise proposes "multispecies justice" instead as a much better lens through which to imagine how an interconnected, more-than-human world might be seen in terms of "cultures and communities of justice"—cultures and communities that are historically situated, but also reach out across the geopolitical boundaries within which they are artificially constrained.

A broadly "multispecies" approach is also taken by the leading Australian-based philosopher Thom van Dooren in the essay that follows, though van Dooren is perhaps more willing to accept than Heise is that conservation can successfully be mobilized in the interests of justice for the different ecological actors concerned. Van Dooren's chosen focus is on conservation behaviour, a relatively new research field in which, in his words, "the sciences of animal behaviour are being put to work to achieve conservation outcomes". For

van Dooren, as for Heise, humanities perspectives are useful insofar as they help shed light on the ideas, understandings, and meanings that underpin human/animal relations and their overlapping existences. He recognizes, at the same time, that there is an urgent need to interrogate not just which particular conservation practices and outcomes are the most effective, but what it is that we (whoever "we" may be in any given instance) are trying to conserve.

This last point is also emphasized in the following collaborative essay by Sarah Raymond, Sarah Perkins, and Greg Garrard, which its co-authors frame as an attempt to combine 'qualitative' humanities and "quantitative" social/natural sciences research as well as to reflect critically on the problems associated with ascertaining conservation status: that which is considered to be worthy of conserving, by whom, and why. Raymond et al. select two relatively recent pieces of North American conservation legislation, Canada's Species at Risk Act (SARA) and the US Endangered Species Act (ESA), to illustrate the complexities at work in classifying endangered species—complexities merely intensified in transboundary regions where different sets of national principles and procedures apply. Conservation efforts are hampered, they suggest, by conspicuous discontinuities, both within and across national borders, in conservation policy, as well as by a continuing lack of transboundary cooperation in ascertaining the conservation status of species either known or thought to be at risk. An interdisciplinary approach, they contend, works best in shedding light on these problems: one that benefits from both the kinds of statistical analysis favoured by biologists/ecologists and environmental humanities' more text-based, interpretative work. For them, as for both Heise and van Dooren, conservation is as much a cultural as a technical/managerial issue, and a humanities approach can help in revealing the cultural biases hidden in supposedly objective scientific accounts.

Culture is similarly to the fore of the Australian-based ethnographer/filmmaker Natasha Fijn's moving account of her ongoing work for the Plumwood collective, a grass-roots conservation and heritage organization dedicated to carrying on the work of one of Australia's conservationist icons, the late Val Plumwood, who changed her name so as to "merge" with Plumwood Mountain, ancestral grounds of the Walbunja people as well as her own New South Wales forest home. Fijn's is a consciously subjective approach, based on her recent experiences of working for the organization, and using these experiences to reflect on conservation humanities as both a theory of ecological stewardship and a day-to-day practice of environmental care. For Fijn, as for her mentor Plumwood, conservation humanities may act as a source of conceptual critique, but it must go beyond critique—a view also echoed in Raymond et al.'s work. Above all, she argues, conservation humanities' task should be to adopt a holistic (non-dualistic) approach that combines theory and practice, and which sheds light on the multiple connections that link culture to the so-called natural world.

For Fijn, Plumwood Mountain is an idyll of a kind, but also a real-world place that requires careful maintenance. A different kind of idyll, fastidiously debunked in Kenneth Toah Nsah's piece, consists of the hyper-romanticized view of the African continent as the "last Eden on Earth". For Nsah, this view has historically been used to plunder African resources. In more recent times, this has been happening under the rubric of "sustainable development", which he sees as often little more than a pretext for co-opting African nature into neoliberal capitalism. Nsah sees "conservation" as a similarly Janus-faced term—one not necessarily malign in its variegated practitioners' intentions, but one all too easily manipulated to suit the interests of (*inter alia*) transnational corporations, many of them operating in cahoots with the state. For Nsah, as for Heise, literature is a particularly useful tool in revealing the type of conservation work that acts as a cover for profit. Literature

and literary criticism, he convincingly suggests, have the "capacity to critique, to engage with complexity, and to point to new or different possibilities and futures"—all of which turns out to be the case in his analysis of four recent Congolese literary works. These works, and the conservationists/conservation agencies they feature, all claim to have "green" credentials, but as Nsah discloses, these credentials frequently operate as masks for continuing western incursions into Africa—even as their bearers set out their case for why African nature needs to be "saved". Although Nsah's essay only glancingly refers to conservation humanities, it implies that one of that field's principal aims should be to draw attention to marginalized perspectives that potentially enrich conservation debates.

Climate change hovers around the edges of much of the work contained in this issue, from Heise's contribution to Fijn's to Nsah's. In the Swedish-based historian Tirza Meyer's essay, it is brought front and centre in the shape of a climate-induced "invader", a species of deep-sea jellyfish that arrived in the Norwegian fjords around 1980 and has been multiplying ever since. Meyer is interested in the extent to which the jellyfish incursions constitute a conservation problem or not, and if so, what to do about it. In analysing the history of these incursions since the 1980s, she draws attention to various attempts to "fix" the problem, from culling the jellyfish to turning them into a sustainable food resource. However, following Nsah, Meyer is sceptical of what the term "sustainability" might mean in such contexts; while, following van Dooren, she is critically minded to ask in whose particular interests "conservation" serves. Some conservation efforts, she suggests (following both of them), may merely add to the suffering that humans continue to inflict upon each other as well as upon animals, while "techno-fix" approaches—especially those harnessed to sustainability—look primarily to benefit those interested in short-term economic growth. Meyer criticizes this ideological short-termism and the solutions-based rhetoric that frequently accompanies it. One of the main goals of conservation humanities, she concludes, should be to complicate this rhetoric and the technologies attached to it; while another should be to recognize—as, in their different ways, do all of the essays in this special issue—that responsibility for addressing conservation and other environmental problems does not rest with scientists alone.

The issue's final essay, by Jonathan Carruthers-Jones, George Holmes, and Roger Norum, returns to a theme that cuts across most if not all of the essays contained within it: even if it can be agreed upon what conservation humanities is and what its main objectives are, what are the practical applications of its researchers' work? Like Meyer, Carruthers-Jones et al. recognize that conservation problems do not always require defined solutions, but also like her (and, one would imagine, like all of the contributors to this issue), they see conservation as posing urgent challenges that require practical action of different kinds. Academics can clearly help with this, but they are still largely trapped in their disciplinary silos, while humanities research in particular is still often marginalized, seen—not least by some social/natural science researchers—as lacking impact in the so-called real world. Carruthers-Jones at al.'s piece argues to the contrary by highlighting its co-authors' empirical work in data-driven acoustic monitoring: an integrated set of humanities and social/natural science methods which seeks to account for often fragile ecologies (in their case, those attached to the sub-Arctic and high-mountain landscapes of Finnish Lapland and the French Pyrenees, respectively) and the human values embedded within them.

Carruthers-Jones et al.'s work echoes Raymond et al.'s in calling for a mix of qualitative and quantitative approaches, and in making the case for interdisciplinary research across both arts and sciences as the basis for practical conservation work. As in Raymond et al.'s essay, especially, but also in the other essays that feature in this issue, the question is raised

of what *counts* as humanities research. The question might be better rephrased: does it matter what counts as humanities research? If conservation humanities is to develop further into a *bona fide* academic field, it will clearly require (a) an extended understanding of the humanities in more-than-human contexts, and (b) a radical questioning of what separates so-called arts from so-called science disciplines, and of what constitutes academic disciplinarity itself. Finally, it will involve (c) a renewed commitment to joining theory and practice for the purposes of addressing conservation issues and problems that require empirical as well as text-based approaches without necessarily favouring the one set of approaches over the other. Conservation humanities, seen in all of the above ways, can do much more than just defensively seek to justify its own existence; it can help debunk the still-powerful myth that humanities scholars are ivory-tower theorists, and that there are few if any practical applications of their work.

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Notes

1 See, for example, the lead-off essay in the first issue of the leading journal in the field, *Environmental Humanities*. The essay doubles as a mission statement for both the journal and the field, rejecting the idea of the humanities as an appendage to the sciences or a set of communication tools for communicating scientific findings to the general public, and seeing the primary task of environmental humanities instead as being to develop a conceptual vocabulary for addressing such urgent environmental issues as air and water pollution, extinction, and accelerated climate change. Since then (2012), the journal has been true to its task, and one of its features is a living lexicon designed to provide up-to-the-minute commentaries on key terms. While this is a salutary move, and the journal generally has maintained high standards, it is noticeable that the conceptual language it uses is distinctive rather than lexically diverse. To call it jargon would be too harsh, but certain words and terms loom large in many of its featured essays: "multispecies", "ontology", "entanglement", "naturecultures", "response-ability", etc. At least some of these terms owe to key figures in the field, notably Donna Haraway, whose use of neologism is a feature of her work, as well as to the cluster of theoretical developments that shelter under the umbrella of the new materialism (see, for example, Bennett 2010; also Coole and Frost 2010). It is thus typical of the field that Bird Rose et al.'s early appeal to enlarge the conceptual vocabulary of environmental research is punctuated by terms that have since become all too familiar: "How are human identities and responsibilities to be articulated when we understand ourselves to be members of multispecies communities that emerge through the entanglements of agential beings?" (Bird Rose et al. 2012, p. 3).

2 The view that conservation has largely failed is a widespread one, spawning polemics such as Rosaleen Duffy's and Alexander Wilson's as well as more measured assessments such as that of Bill Adams, who argues that the global conservation movement has become "entrenched in its thinking", and that it needs to "think again about the things that make conservation important, and what this 'nature' is that we fight so hard to sustain" (Adams 2003, p. 170; see also Duffy 2010; Wilson 1991).

3 The idea that we live in a "multispecies" world has become a critical orthodoxy in environmental/ conservation humanities as well as the cognate field of human–animal studies. The term "multispecies" (usually unhyphenated) refers to a shared method as much as to a shared world, in which theorists and practitioners attempt systematically to break down what Val Plumwood (2002) calls the "hyperseparations" that have historically regulated human–animal relations, reinforcing the boundary between them and consolidating ideas and illusions of human mastery over the natural world. Multispecies assemblages of different kinds have also been integral to new materialist thought. For some reflections on possible meanings and uses of the term, see Kirksey (2014); also Van Dooren et al. (2016). For further reflections on the insufficiencies of the singularizing term "species", see also Lorimer (2015).

4 It is difficult to know what *counts* as evidence insofar as (a) conservation humanities is so new and (b) much of the work that might potentially be allocated to it is claimed by environmental humanities, which is the more established field. Two possible contenders are Lorimer's aforementioned *Wildlife in the Anthropocene* (Lorimer 2015) and Thom van Dooren's *Flight Ways* (Van Dooren 2014), the latter a philosopher's narrative account of how some endangered species are drawn inexorably into extinction events. Probably the most prominent examples, though, are the works of Donna Haraway, if only because they have been so

influential in the fields of environmental humanities and human–animal studies and because the vocabulary they use has been richly mined by others (see Note 1 above).

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humanities

Article

Conservation Humanities and Multispecies Justice

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Abstract: This article argues that biodiversity conservation is primarily a social and cultural issue and only secondarily a scientific one. It explains the proxy logic of narratives about endangered species, which typically serve as proxies for community identities and the changes communities have undergone through processes of modernization and colonization. Polar bears, whose endangerment is interpreted differently by North American and European audiences, on the one hand, and by Inuit communities, on the other, serve as an example of how endangered species narratives not only involve culture but also, more specifically, issues of multispecies justice. Conservation humanities needs to engage with the two central problems that multispecies justice has identified and grappled with: conflicts between the interests of disadvantaged human communities and nonhuman species and conflicts and trade-offs between the interests of different nonhuman species. The essay argues that adopting the framework of "multispecies justice" rather than "conservation" will help to overcome some of the impasses of interdisciplinary collaboration in environmental studies in the past.

Keywords: multispecies studies; multispecies justice; conservation biology; conservation humanities; biodiversity; endangered species; biodiversity narrative; environmental humanities

1. The Changing Stories of Polar Bears: Conservation and Culture

Polar bears have had it. Or at least that is what it has seemed like to North American and Western European publics between the mid-1990s and the mid-2010s. Polar bears seemed not to be faring well materially: with images of polar bears forlornly stranded on melting ice flows or foraging hungrily in human trash heaps, they became prime icons of the ravages of climate change. White-furred predators in Arctic landscapes of ice and snow, they seemed perfectly adapted to their habitat until rising temperatures and diminishing sea ice in the Arctic summer made access to their preferred prey, ringed and bearded seals, more difficult. Davis Guggenheim and Al Gore featured an animated polar bear in their climate change documentary *An Inconvenient Truth* in 2006, and for two decades, polar bear mothers with their cute cubs, emaciated polar bears looking for food, and polar bears perched on icebergs with a melancholy gaze appeared again and again in the brochures, calendars, and annual reports of environmental organizations, connecting abstract statistics about rising average temperature with a gripping animal-interest story.

Polar bears seem to offer a typical example of how nonhuman species figure in conservation narratives. But they don't—not quite. For one thing, the International Union for the Conservation of Nature (IUCN), which maintains the IUCN Red List of Threatened Species, the most frequently used database for conservation efforts around the globe, classifies *Ursus maritimus* as "vulnerable"—that is, in a less serious category of endangerment than "endangered" or "critically endangered", and declares its overall population trend to be "unknown" (https://www.iucnredlist.org/species/22823/14871490, accessed on 23 December 2023). The Polar Bear Specialist group observed in its 2015 assessment that of the nineteen populations of polar bears, one had increased, six were stable, three had decreased, and that data were not sufficient to assess the population trends in the remaining nine populations (https://www.iucnredlist.org/species/22823/14871490#population, accessed on 23 December 2023). While this assessment does not indicate any

optimism about polar bears in the scientific community, it is rather less stark than public discourse about the species would lead an average citizen to believe.

The symbolic function of polar bears as highly visible victims of the "slow violence" of climate change (Mooallem 2013; Nixon 2011) also makes them somewhat less than typical of endangered species at large. Contrary to the common but erroneous idea that climate change and biodiversity loss are simply two different sides of the same ecological coin, most species to date are at risk because of habitat loss and pollution rather than rises in average temperatures. When polar bears were listed as threatened under the *Endangered Species Act* of the United States in 2008, they became the first species to be listed because of climate change, which caused considerable difficulties in the legal process, according to then-Secretary of the Interior Dirk Kempthorne: "'The polar bear poses a unique conservation challenge . . . With most [species], we can identify a localized threat, but the threat to the polar bear comes from global influences on sea ice'" (quoted in Greenemeier 2008). While the legal acknowledgment that polar bears are at risk from climate change bolsters the popular perception that climate change is the leading driver of biodiversity loss, the fact that they were the very first species in this category confirms on the contrary that in the global spectrum of species decline, they are—as yet—in a minority.

As icons of global ecological crisis, polar bears are also unusual in another sense. Public discussions about biodiversity loss and conservation typically focus on species that are associated with a particular cultural community's identity, past and present—whether that community is a nation-state, a geographic, cultural region, or Indigenous. Endangered or extinct species acquire their cultural meanings through a multistep proxy logic whereby select species assume a central role in narratives that reflect on the way in which a particular community has been changed through modernization, colonization, or a combination of both, and what the community has lost in the process. The Potawatomi philosopher Kyle Powys Whyte, for example, has made this point eloquently in his discussion of *Nmé* (lake sturgeon) and *Manoomin* (wild rice) in their significance for Anishinaabe culture; Bengal tigers and pandas are powerful proxies for national identity in India and China, respectively; and the extinct thylacine has become a touchstone for remembering a history of violence against Tasmanian Aboriginals and native species that many Australians today recall with shame and regret.[1] Polar bears do not function culturally in the same way: rather than highlighting the losses a particular cultural community has experienced, they allegorize global change and loss. At least they function in this way for large parts of the North American and Western European public, though not necessarily for other observers, as I will discuss shortly.

The proxy logic of narratives about endangered species and conservation is crucial to understanding their public resonance. Nonhuman species attract the attention of scientists and conservationists for a wide range of reasons, but when they become the object of public attention and debate, they tend to follow a typical pattern. The species that attract public attention are usually animals, not plants, fungi, or bacteria; they are typically vertebrates, while insects and mollusks rarely come into the limelight; and among vertebrates, they tend to be birds or mammals more frequently than reptiles, amphibians, or fish. These select species—often referred to as "charismatic megafauna" among conservationists—come to stand in for all animal and plant species. But species themselves, as even conservation scientists concede, are themselves proxies for the more abstract notion of biodiversity, which also includes diversity at the level of genes and ecosystems (Grenyer et al. 2006; Balvanera et al. 2014). Biodiversity tends to be culturally interpreted as a positive value in and of itself, an important dimension of what we value about nature more generally understood. In addition, the dimensions of nature that a community values are typically connected to how the community understands its own identity and its experiences of change and loss through modernization or colonization (see Figure 1; Heise 2016, pp. 19–54). In other words, public discussions and support for conservation cannot be dissociated from the cultural meanings that the species and ecosystems to be conserved have for particular communities. Or, to put it more strongly, when and where conservation becomes more than

a set of scientific research projects or an object of advocacy on the part of environmental interest groups, it is fundamentally an issue of cultural values and meaning.[2]

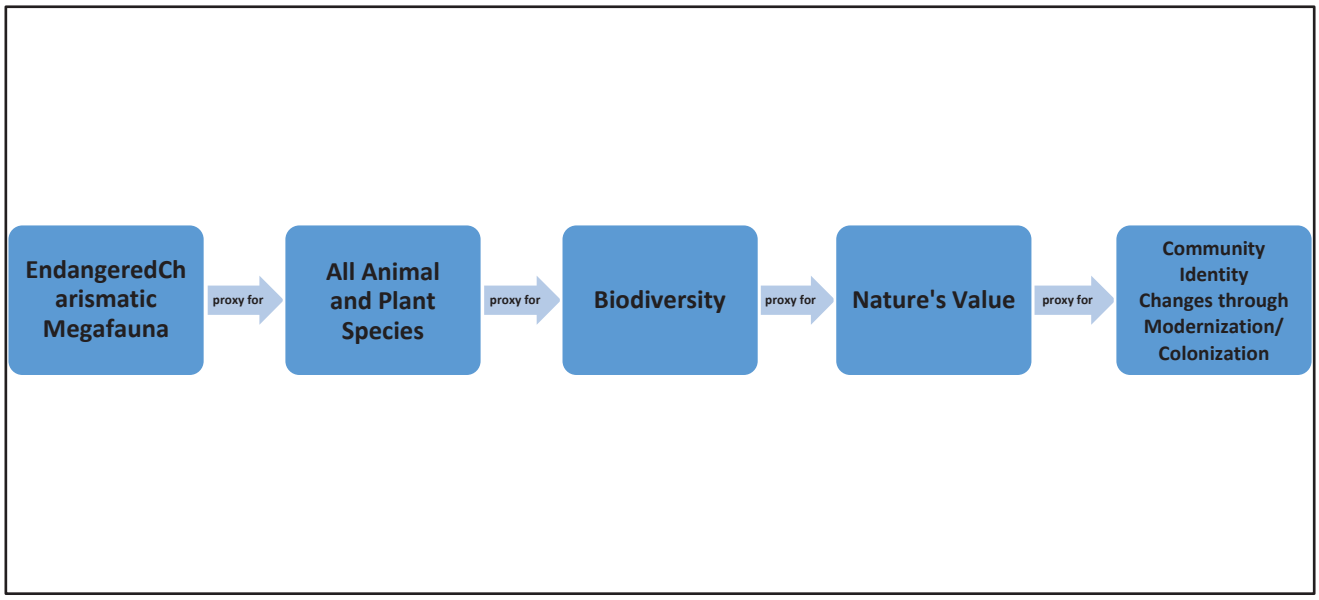

Figure 1. The Proxy Logic of Endangered Species Narratives.

This cultural logic of conservation is manifest in the case of the polar bears once we move beyond their perception by mainstream North American and West European media and citizens. Inuit individuals and communities with first-hand knowledge of polar bears and their habitats have been reluctant to accept the designation of the bears as threatened. The writer Roy Scranton, in an account of a cruise to the Arctic, reports that the Inuit elder Larry Audlaluk told travelers: "I want to dispel a notion about polar bears . . . I hear a lot about polar bears, a lot about what people down south think about polar bears. I want to tell you that polar bears are very healthy. There are very many polar bears, far too many of them. The ice hasn't affected our polar bears. The polar bear is just fine." (Scranton 2018, loc. 229). Scranton interprets this statement as evidence of a conflict between global environmental concerns and local economics: whereas European and North American conservationists want to preserve polar bears, Inuit are interested in preserving the income they derive from hunting bears and using or selling their pelts (Scranton 2018, loc. 255).

A much more complex narrative emerges from Zacharias Kunuk and Ian Mauro's *Qapirangajuq: Inuit Knowledge and Climate Change* (2010).[3] In this hour-long documentary featuring interviews with members of four Inuit communities in the Canadian Arctic, the camera focuses on the interviewees' accounts, mostly in Inuktitut, of their experiences of climate change. With regard to polar bears, two narratives emerge. Some interviewees assert, similarly to Audlaluk in Scranton's account, that polar bears are not endangered but on the contrary more numerous and more visible than ever before. "Those who believe the polar bear is in decline and place it on the endangered species list, they don't understand, in my opinion. Polar bears cannot be in danger. Even if at sea for a long time, they are not in danger. Because their natural environment is the sea", one interviewee says. Others indicate that they have witnessed signs of trouble: they report that polar bears have died because of overdoses of tranquilizers administered by wildlife biologists, that their hearing has been damaged by frequent helicopter noises, and that some have drowned because of the tracking collars that they were fitted with as part of the monitoring efforts. To the extent that polar bears are at risk, these interviewees assert, the cause is the intervention of "southerners" in general and wildlife biologists in particular, rather than changes in the bears' habitat.

These observations are often accompanied by expressions of contempt for biologists whose knowledge, in the interviewees' perspective, is gleaned from labs and books and ignores the lived experience of Inuit people. Noah Metuq, an interviewee from Pangnirtung, remarks with a disdainful smile that "Scientists say with great authority: 'Polar bears are in decline and will go extinct'. When I am out hunting, I never see these scientists. Not even one!" An energetic elderly woman, Rita Nashook, is even more explicit in her anger at southern intruders:

> I'm a protector of animals, a real animal activist! When animals are mistreated, I'm reminded of my late grandmother's teaching: "Unless you're going to kill an animal, do not cause it harm". Inuit are lectured: "They're endangered animals, you must not hunt them!" Inuit do not endanger animals! It's Southerners meddling with caribou, polar bears and whales that endanger wildlife! This handling and tagging is what harms animals! Wildlife biologists are the ones endangering wildlife! Then they suspect Inuit overharvesting as the cause. We are told: "You must not touch protected animals". Inuit do not endanger animals, nor do they cause needless suffering. We love our animals.

What resonates in this and a range of other comments is resentment at scientists and environmentalists who, unawares or not, repeat colonial gestures that the Inuit communities have come to know and resist for generations: the imposition of political power, authority, and knowledge from outsiders without interest in or the intent to understand and integrate local knowledge, language, and lived experience into their accounts. One may or may not agree with the interviewees' assessment that polar bears are not at risk or that the only risk they face is scientific monitoring. But it is clear that conservation, in this context, cannot succeed without awareness of the region's colonial history and respect for knowledge systems outside the natural sciences—without, in other words, the understanding that polar bears are, for Inuit communities, exactly what other endangered species are in other cultural contexts: proxies for cultural communities whose identities and ways of life have been irreversibly changed by colonization and modernization.

What this case study makes clear, in addition, is that conservation is, in many contexts, a matter of justice—in this case, the entanglement of conservation with a history of colonial oppression. I will argue in more detail shortly how the project of conservation humanities converges and conflicts with the multispecies justice framework. But shifting considerations of justice also matter for the case of the polar bear in another sense: polar bears have receded in prominence since the mid-2010s as problems of human justice have moved to the forefront of climate discourses. The geographer Mike Hulme already pointed out in 2009 that one of the discourses of climate change, which he calls "the lament for Eden", is predicated on a perception of climate as a last resort of wildness and that the loss of that wildness is construed as a diminishment of humans as well as a realm beyond them. In this context, "the polar bear—that hackneyed icon of climate change—ends up not just worrying about its own survival but is made to carry a huge additional weight on its shoulders, the weight of human nostalgia" (Hulme 2009, p. 344).

While this kind of lament has of course not disappeared, the emphasis of public discourses about climate change has shifted to questions of geopolitical justice (who causes greenhouse gas emissions and who suffers the gravest consequences of climate change in the present) and transgenerational justice (how climate change will affect those now young and those yet to be born). These forms of justice have taken on increased prominence with youth activists and movements such as Greta Thunberg, Elizabeth Wanjiru Wathuti, Extinction Rebellion, and the Green Generation Initiative, to name just a few. Similarly, how we might envision a "just transition" from current to future energy regimes that does not disadvantage the same poor communities that have borne the burden of progress in the past have moved to the forefront and, to some extent, displaced the concern over nonhuman species affected by climate change, as have the increasingly frequent and visible natural disasters that have been triggered by climate change in recent years. Polar bears as cultural icons of climate change, therefore, may be past their prime.

But that does not mean that their symbolism has stopped resonating entirely: members of Extinction Rebellion have dressed up as dead polar bears as part of their public demonstrations (Nugent 2020), and an article on young people's climate despair on the *Vice* website shows a young person sitting depressed on an ice floe, with the same iconography earlier used for polar bears (Pearl 2019)—a good example of the shift to questions of transgenerational human impacts as well as the enduring power of polar bear symbolism.[4] This does not imply that polar bears should no longer be considered in a framework of multispecies justice that includes their relations to both Inuit communities and conservationists. They should—as should other species.

2. Between Animals: Conservation and Justice

The questions of justice that have in recent years dominated debates about climate change in many regions have also inflected humanistic engagement with conservation. The concept of multispecies justice is rooted in a variety of intellectual strands that range from posthumanisms and new materialisms to environmental justice, multispecies ethnography, and Indigenous cosmologies.[5] Environmental justice emerged as a concept in the United States in the 1980s and was studied with a focus on environmental racism there (see Bullard [1990] 2000; Pulido 2017). Political ecology, as it was formulated in the 1990s, brought Marxian strands of thought to bear by investigating the co-production of both nature and culture by capitalist processes of production—focusing, in other words, on the causes of environmental injustice rather than the consequences which the environmental justice movement foregrounded.[6] The "environmentalism of the poor", as theorized by Ramachandra Guha and Joan Martínez-Alier in the late 1990s, made visible environmental movements in the Global South that had long combined struggles for social justice with those for environmental conservation (Guha and Martínez-Alier 1997). While some scholars continue to distinguish "environmentalism of the poor" conceptually from "environmental justice", others—myself included—use "environmental justice" to refer to movements around the globe that address environmental injustice in its various forms. Scholars such as David Pellow and David Schlosberg expanded environmental justice theory in the early twenty-first century, Schlosberg particularly by linking environmental to other theories of justice and emphasizing four basic dimensions: distributive, participatory, recognition, and capabilities justice (Schlosberg 2007).

In the early twenty-first century, anthropologists, ethologists, geographers, and philosophers in Australia, Belgium, France, Italy, and the United States moved to integrate the study of human with nonhuman forms of cognition, behavior, and sociality under such labels as "étho-ethnologie", "ethno-éthologie", or "anthropo-éthologie" (Lestel et al. 2006; Despret 2006), "transspecies theory" (Wolch et al. 1995), or "zooantropologia" (Marchesini and Tonutti 2007). The term "multispecies ethnography" was proposed in 2010 by Eben Kirksey and Stefan Helmreich as a way of foregrounding the entanglement of human societies and cultures with many nonhuman species (Kirksey 2014) and found one of its best-known applications in Anna Tsing's research on matsutake mushroom cultivation, harvesting, distribution, and consumption across cultures and continents (Tsing 2005, 2011, n.d.). The multidisciplinary study of human and more-than-human socialities is now commonly referred to as "multispecies studies" (Kirksey et al. 2016).

Multispecies justice arose in my own research on narratives about species at risk as a way of thinking about environmental justice, together with multispecies studies (Heise 2016). As Celermajer et al. have highlighted, "[a] basic democratic principle is that those affected by a policy or action should have a say in the decision-making process, but human decisions undemocratically exclude a wide range of the affected" (2021, p. 130), namely nonhumans who are not usually considered part of political communities or communities of justice. This entails

> a critical stance vis-à-vis those characteristics that are to count as criteria for moral considerability as a subject of justice. Those traditionally proffered, like agency, subjectivity, and the capacity to critically reflect and think, turn out to be—not

> coincidentally—those associated with the human individual. Multispecies justice insists on the need to account for other beings with their own radically diverse life projects, capacities, phenomenologies, ways of being, functionings, forms of integrity, and relationalities . . . Multispecies justice redesigns justice away from the fiction of individualist primacy toward an ecological reality where . . . human and nonhuman animals, species, microbiomes, ecosystems, oceans, and rivers—and the relations among and across them—are all subjects of justice. (Celermajer et al. 2021, p. 127)

Envisioning what multispecies justice would look like in practice is, of course, an enormous undertaking: "to understand the types of relationships that humans ought to cultivate with more-than-human beings so as to produce just outcomes" (Celermajer et al. 2021, p. 120). This project involves the rethinking of the subject and the reinvention of political and legal procedures and institutions all the way to the acknowledgment that justice itself is a term whose definitions and practices vary greatly between cultures.

In the context of biodiversity conservation, multispecies justice engages two more concrete but no less thorny areas of research, activism, and decision-making. The first of these concerns scenarios in which the interests of particular human communities conflict with those of other species—scenarios that environmental activists and conservationists ran into head-on starting in the 1970s and 1980s. In South Asia, sub-Saharan Africa, and Latin America, for example, conservation organizations from the Global North frequently found themselves at loggerheads with local communities whose hunting and harvesting practices were impeded or prohibited when wildlife refuges, national parks, and other protected areas were created in what came to be called "fortress conservation", which in some cases led to the erosion of livelihoods and displacement (see, among many others, Agrawal and Redford 2009; Dowie 2009; Hanes 2017). In the United States, efforts to conserve the habitat of the spotted owl in the 1980s and 1990s led to extended conflicts with the timber industry and workers who perceived their jobs to be threatened for the benefit of a nonhuman species (Yaffee 1994). Today, cities across the United States contend with the opposing imperatives of building more affordable housing, creating green spaces in underprivileged neighborhoods that often lack them, and preventing sprawl that destroys natural habitats.[7] While some of these conflicts have found partial solutions, others persist unabated and will require solutions in which multispecies justice involves significant trade-offs between justice and injustice.[8]

The second major area of multispecies justice concerns in conservation involves precisely such trade-offs between different nonhuman species. Limited conservation budgets need to be allotted to some species and ecosystems at the expense of others. Native species, in many contexts, are granted greater moral consideration than non-native species, even though the non-native species often find themselves in new habitats through no agency of their own, but through human interventions. Choices sometimes need to be made between different native species: for example, when the elephant population in Kruger National Park in South Africa increased from 9000 in 1995 to 20,000 in 2008, culling was proposed as a way to limit the damage the elephants were inflicting on the vegetation, a proposal that was met with vehement resistance from animal rights activists (van Aarde et al. 1999). In a different vein, conservation initiatives themselves often inflict damage on either the endangered species themselves or on related species that are considered expendable (Van Dooren 2014; Chrulew 2017). In these and many other cases, including those where harm to a species arose unintentionally, multispecies justice thinking forces decision-makers to consider the lifeways of all involved—a challenging task even where animals of different kinds are concerned, but even more so when plants, fungi, bacteria, and other living organisms are included, as multispecies justice theorists believe they should be. As an emergent paradigm, this is the task that conservation humanities must also grapple with.

3. Beyond Conservation?

But are conservation humanities really an "emergent" paradigm? As even my brief overview here has shown, the humanities have long been deeply immersed in research on biodiversity and its decline. Conservation of landscapes, ecosystems, animal and plant species, and the cultures and ways of life associated with them have been concerns of environmental anthropology, history, literary studies, and philosophy for decades. Efforts to conserve individual species and fears about their extinction go back to the nineteenth century; research into mass extinctions in Earth's past in the 1970s and 1980s by paleobiologists David Raup and Jack Sepkoski led to concerns on the part of biologists such as Paul Ehrlich, Norman Myers, and E.O. Wilson that another mass extinction might currently be underway, with humans as the driving force. The coining of the term "biodiversity" in 1984 signaled how much large-scale extinction had become a focal issue for environmental movements in a variety of regions. Environmental humanists in various disciplines took up the topic to explore the definitions and values attached to biodiversity, the historically evolving cultural contexts that generate concern for particular landscapes and species, the politics and legal frameworks associated with conservation, as well as the narratives and images in which such cultural concern for the more-than-human world expresses itself. In the 2010s, with mounting concern over the loss of biodiversity as well as bioabundance, strands of research emerged that sought specifically to build on the interdisciplinarity of the environmental humanities, such as extinction studies and multispecies studies (Rose et al. 2017). Unlike other subfields of the environmental humanities, such as energy humanities or oceanic/blue humanities, the claim of conservation humanities, therefore, cannot be that it opens up previously unexplored areas of research or that its objects of research have been deprived of the scholarly attention they deserve.

Rather, the goal of conservation humanities, if the few existing publications on the paradigm are a guide, is "mainstreaming the humanities in conservation" (Holmes et al. 2021). After reviewing a selection of the published work on biodiversity in such disciplines as anthropology, cultural geography, history, literary and media studies, and philosophy, Holmes et al. observe that "these approaches have rarely been integrated into conservation science" and that "engaging with the humanities can make conservation science—-and practice—-better, and vice versa, by bringing in new questions, methods, and ways of thinking" (Holmes et al. 2021, p. 2). They concede that "[t]his may not make for comfortable or easy conversations, given that humanities research has both the capacity and the tendency to challenge key concepts, unspoken assumptions, and shibboleths in conservation" (Holmes et al. 2021, p. 2). They conclude that "[c]alls to incorporate more humanities research into conservation bodies and decision-making structures may not be new, but they need heeding more than ever" (Holmes et al. 2021, p. 4). These are conciliatory and encouraging assertions that few environmental humanists, myself included, would at first sight disagree with.

Yet I would argue that these proposals leave in place "conservation" as the major framework for thinking about the futures of species and do not engage with the reasons why humanistic and social science research on biodiversity has to date been largely ignored. Neither do they consider why a range of environmental humanists and social scientists have moved from conservation science to extinction studies, multispecies studies, or multispecies justice as framing concepts. The problem is not only that a good deal of research in environmental humanities is focused on specific communities, places, and scenarios that are difficult to generalize in ways that science finds usable nor that environmental humanists have been insufficiently concerned about linking their research to actual policy proposals—though both of these are admittedly serious obstacles. The main problem is that so long as "conservation" remains the framing term by means of which changes in biodiversity are understood, the problem remains in essence a scientific one, and scientific institutions and researchers have little reason to engage with research outside the sciences. But if, as I have argued, "biodiversity, endangered species, and extinction are primarily cultural issues, questions of what we value and what stories we tell, and only secondarily issues of science"

(Heise 2016, p. 5), the language of "mainstreaming" or "integrating" humanities approaches into the scientifically defined project of conservation is misguided. If "[a]nthropogenic biodiversity loss is, by definition, a human and social issue" (Holmes et al. 2021, p. 1), then it is the natural sciences that need to be integrated and rethought as part of the sociocultural project of multispecies justice.

So long as "conservation" remains the defining concept for the field, it will perpetuate the fundamental asymmetry that has vexed efforts at interdisciplinarity in environmental studies for decades: whereas most humanists and social scientists who research questions of biodiversity (or other issues, from soil erosion to air pollution and climate change) read a great deal of the scientific literature, most conservation scientists have never so much as opened any of the numerous books on the histories, cultures, narratives, and media that shape different communities' thinking about nonhuman species. When humanists are consulted at all in the context of interdisciplinary committees or research projects on an environmental issue, it is typically regarding the question of how to communicate scientific findings to the public: in other words, the environmental humanities are often—intentionally or unintentionally—reduced to the public relations division of the natural sciences, with little thought wasted on the idea that the humanities have research agendas, methods, and findings of their own. When Holmes et al. argue that the worlds of the environmental sciences and the environmental humanities "exist largely in parallel" without much meaningful interaction (2021, p. 2), they are right and yet gloss over a crucial difference: the two worlds are hardly symmetrical in their power to define crucial issues, their funding, or their knowledge of each other's disciplines.

Because of these foundational differences in framing, what is at issue in researching human and more-than-human relations, many—though of course not all—humanities and social-science researchers who focus on biodiversity loss prefer to approach it in terms of multispecies studies, emphasizing the role that diverse cultural communities play (and those they should play) in shaping the futures of more-than-human species and in being shaped by them, and the considerations of justice beyond the human that inform (or should inform) such futures. Some biologists and ecologists no doubt welcome such a rethinking, but many might not, because it entails that the dominant role of natural science would be diminished. Scientific findings would continue to matter, of course, in determining how ecological changes such as the decline or loss of a species affect overall ecosystem functioning, or what aspects of a habitat enable or disable a plant or animal species from flourishing in what Schlosberg calls "capabilities justice" (Schlosberg 2007, pp. 29–34). But decisions about what the ecosystems of the future should look like and what species should be helped or hindered in their survival would no longer be governed by the concept of "conservation" alone.

"Multispecies justice" not only captures more accurately what research that approaches biodiversity as a social and cultural issue needs to grapple with, it also links this research to paradigmatic shifts in other areas of environmentalism and environmental studies. Theories and activism related to environmental justice, the environmentalism of the poor, and political ecology have been successful over the last three decades in transforming environmental studies in the academy as well as environmentalism in the public sphere. From Bullard's work on toxic waste disposal siting in the 1980s and 1990s all the way to current research on, for example, climate justice, shade equity, green gentrification, and a just energy transition, considerations of environmental justice and injustice have pervasively reshaped parameters of academic study, the mission statements of environmental organizations, environmental activism, and policy. Disciplines such as public affairs, political science, economics, and law may have been more forceful drivers of this change than the humanities. But the steadily rising emphasis on concepts of justice in researching and resolving environmental crises has also revealed the power and impact of humanities research that has long engaged with environmental inequality, narratives, and images that shape ideas about justice and injustice, and creative visions of more just and sustainable multispecies societies.

Perhaps most importantly for considerations of biodiversity conservation, it has also opened a window on those strands of research in the humanities and social sciences that have most energetically questioned concepts of the human subject as separate from the natural world and other species, that have sought to critically reimagine human-animal and human-plant relations, and that have argued for an expansion of communities of justice beyond the human sphere—not least because such an expansion might also allow us to develop a better understanding of justice among humans.

Environmental narratology, the theory and analysis of fictional and nonfictional storytelling about the environment across genres and platforms that range from popular science and documentary films to novels, graphic novels, videogames, and social media, has examined a wide range of narratives that focus on multispecies societies, environmental injustice, and the forms that justice might take. Aldo Leopold, in *The Sand County Almanac*, envisioned the community of justice expanding from humans to other species in what he called the "land ethic":

> All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts . . . The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land . . . A land ethic of course, cannot prevent the alteration, management, and use of these "resources", but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.
>
> In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. (2001, pp. 203–4)

Many theorists and writers after Leopold (Leopold [1949] 2001) have elaborated on the complexities and contradictions that arise when what would now be called a "community of justice" is extended beyond the human. Who should be a subject of justice, on what grounds, and by whom is this determination made? Who should not be, and on what grounds? What principles should guide the resolution of contradictory claims for justice on behalf of humans as well as more-than-humans (see Section 2)?

Writers and thinkers have used a variety of metaphors and allegories, including prevalent proxy narratives, either to foreground how multispecies communities function in the present, or how they might operate in the future. Donna Haraway, after exploring such communities theoretically in her nonfiction book *Staying with the Trouble: Making Kin in the Chthulucene* (2016), veers into speculative fiction with her "Camille" series of stories, which envision genetic mixes of humans with nonhuman species as a way of figuring an ethics of sympathy and care. Sam J. Miller's *Blackfish City* (Miller 2018), set in the fictional Arctic city of Qaanaaq, features characters who are physically and psychologically bonded with orcas and polar bears via nanotechnology, signaling the emergence of new bonds between humans and animals in the face of environmental crisis that go well beyond the familiar polar-bear iconography. Sheri S. Tepper's *The Family Tree* (Tepper 1997) reverses readers' ingrained assumptions about communities of justice when people from a society 5000 years into the future time-travel to the twentieth century—at which point it becomes clear that they are not humans but the descendants of genetically engineered animals who have only experienced "ummini" (humans) as animal-like tools of labor. Starhawk's novel *The Fifth Sacred Thing* (Starhawk [Maya Greenwood] 1993) pictures an ecotopian San Francisco in the year 2048, where nonhumans are represented by humans and take part in decision-making on the city council.

Other narratives go one step further by portraying events through nonhuman voices and nonhuman points of view. Bernard Werber, a French author who has sold more than 30 million books worldwide (Desblache 2017, p. 80), has published novels that narrate events entirely or partially from nonhuman perspectives, such as those of ants and cats. In his ant trilogy, *Les fourmis* (Werber 1991), *Le jour des fourmis* (Werber 1992) and *La révolution des fourmis* (Werber 1996), which is based on meticulous research into ant cognition and

communication, he describes the world from the "point of view" of characters for whom pheromones and haptics are more important than sight or sound. Translation from ant pheromone signaling to human sound language and vice versa eventually becomes possible through technological means and enables new human-ant dialogues. Barbara Gowdy's novel *The White Bone* (1999), similarly portrays an African world of ecological change, poaching, and death entirely from the viewpoint of elephants, a world in which humans turn into "hindleggers".

Other writers reach beyond the world of animals to address the plant world, which has gained increasing importance in the environmental humanities and multispecies studies over the last decade, especially in the work of anthropologists such as Eduardo Kohn (2013) and Natasha Myers (who coined the term "Planthropocene" in 2016), philosophers such as Michael Marder (2016), Paco Calvo and Natalie Lawrence (2023), and botanists and forest managers such as Robin Wall Kimmerer (2013), Peter Wohlleben (2015), and Suzanne Simard (2021). The *grande dame* of environmental speculative fiction, Ursula K. Le Guin, had already explored *"[t]he relation of our species to plant life [which] is one of total dependence and total exploitation"* (Le Guin [1974] 1987a, p. 83; original italics) in the 1970s in stories such as "Vaster than Empires and More Slow" (Le Guin [1971] 1987b), which portrays humans' encounter with a sentient planet-wide plant community, and "Direction of the Road" (Le Guin [1974] 1987a), which features an oak tree as its narrator. More recently, Nnedi Okorafor and Tana Ford's comics series *LaGuardia: A Very Modern Story of Immigration* (Okorafor and Ford 2019) tells the story of Nigerians who migrate to the United States, with bodies composed of both human and plant genes as a metaphor for a national, racial, and cultural hybridization, but also as a meditation on the legal status of plant life.[9] Richard Powers' Pulitzer Prize-winning novel *The Overstory* (Powers 2018) explicitly translates Simard's and Wohlleben's findings on tree communities and arboreal communication into fiction by following nine human characters' encounters with different tree species as well as with protest movements against deforestation in the 1970s. Sue Burke's speculative novels *Semiosis* (Burke 2018) and *Interference* (Burke 2019) feature an intelligent bamboo that humans encounter on an alien planet. Stevland, as the bamboo comes to call itself, gradually discovers human procedures of justice and democracy in all their complexities in the midst of violent confrontations with other species. All of these narratives explore what living organisms count as members of cultural and legal communities, what moral consideration they are granted or refused on what grounds, and what concepts of justice inform ideas and initiatives that shape the lives and deaths of humans and more-than-humans.[10] In other words, they offer narrative frameworks for conservation humanities envisioned as multispecies humanities, laying the conceptual groundwork for more-than-human diplomacy, policy, and democracy.[11]

The somewhat paradoxical term "multispecies humanities" highlights one of the ironies of current interdisciplinarity in environmental studies. Ecologists and biologists today speak more often with confidence about "humans", "the human species", "human interventions", and a global "we" than environmental humanists, who tend to foreground sociocultural differences between human communities and to question the philosophical, social, and legal categorizations that separate humans out from surrounding ecologies in the first place. Multispecies justice theory has been part of this effort:

> Beyond rejecting the belief that humans alone merit ethical or political consideration, multispecies justice rejects three related ideas central to human exceptionalism: (a) that humans are physically *separate or separable* from other species and nonhuman nature, (b) that humans are *unique* from all other species because they possess minds (or consciousness) and agency and (c) that humans are therefore *more important* than other species. (Celermajer et al. 2021, p. 120)

One of the contributions of the humanities to conservation is this fundamental rethinking of humans in relation to other species, and the accompanying emphasis on investigating

and reimagining how more-than-human lives might become part of cultures and communities of justice.

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Notes

1 See Whyte (2017); Schaller ([1993] 1994). For more examples of species that function as proxies for the identity of a particular cultural community, see Heise (2016, pp. 19–54).

2 In their introduction to the anthology *Extinction Studies: Stories of Time, Death, and Generations*, Rose, van Dooren, and Chrulew similarly approach extinction as "an inherently and inextricably *biocultural* phenomenon" (2017, p. 5).

3 I have discussed this documentary and the interviewees' comments on polar bears in more detail in *Imagining Extinction* (2016, pp. 241–44).

4 The illustration is by Annie Zhao.

5 Donna Haraway mentioned the term "multispecies justice" casually in *When Species Meet* (Haraway 2008) and emphasized "multispecies environmental justice" more insistently in *Staying with the Trouble* (Haraway 2016) but did not give a detailed theoretical account of these terms. For a detailed account of the intellectual sources of multispecies justice, see (Celermajer et al. 2021; Tschakert et al. 2020; Kirksey and Chao 2022).

6 I am indebted to Eric Sheppard at UCLA's Department of Geography for this distinction.

7 As an example, see the discussion of conflicting proposals for the restoration of an urban wetlands area in Los Angeles (Heise and Christensen 2020).

8 Fortress conservation, from the 1990s onward, began to be replaced by "community conservation" that seeks to ensure consultation with and benefits for local communities; whether this paradigm shift has improved biodiversity protection results continues to be a matter of debate (see Hutton et al. 2005).

9 The series *LaGuardia* was republished as a single graphic novel in 2019. For a detailed analysis, see (Sullivan 2022, pp. 348–55).

10 For a more detailed exploration of multispecies narratives, see (Heise 2016, pp. 202–36; Heise 2024); for multispecies narratives that focus on endangered and extinct species, see (Heise 2016, pp. 162–201).

11 The French environmental philosopher Baptiste Morizot has used the language of "diplomacy" as a tool for re-imagining human-wolf relationships in France after wolves remigrated into the country from Italy in the early twenty-first century (Morizot 2016; the English translation of Les diplomates is aptly titled Wildlife Diplomacy), exploring in particular ways to understand wolf thinking and to communicate with wolves.

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Worlds of Meaning at the Edge of Extinction: Conservation Behaviour and the Environmental Humanities

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Abstract: We are living in the midst of a period of mass extinction. All around us, diverse species of animals and plants are disappearing, often largely unnoticed. However, this is also a period in which, on a daily basis, new and fascinating insights into animal life are emerging as we come to appreciate more about their remarkable perceptual, cognitive, social, and emotional lives. This article explores this strange juxtaposition of loss and knowledge-making and the many challenges and possibilities that it gives rise to. It focuses on the emerging field of Conservation Behaviour in which researchers are seeking to modify or manipulate animal behaviours to achieve conservation outcomes: for example, teaching lizards not to eat toxic prey, or birds to utilise a safer migratory route. The article seeks to bring this approach to conservation into dialogue with work in environmental humanities, including the emerging paradigm of conservation humanities. The article outlines an interdisciplinary environmental humanities approach to conservation behaviour, grounded in work in multispecies studies and philosophical ethology. It then explores four broad thematic areas—agency, identity, ethics, and loss—in which the dialogue between these two fields might prove to be particularly, and mutually, enriching.

Keywords: conservation; biodiversity; extinction; multispecies studies; philosophical ethology; environmental humanities; ethics; loss

1. Introduction

On the South Island of Aotearoa-New Zealand, a group of scientists is engaged in an effort to teach the local cats, hedgehogs, and ferrets to ignore the tasty eggs of the various species of ground-nesting birds around them. These scientists have deployed a carefully planned program of 'olfactory camouflage'. In practice, this involves walking around the landscape while dolloping blobs of Vaseline that have been infused with the scent of birds. As the various predators in the area explore the scent in search of a meal, they gradually learn that this cue is no longer a reliable indicator of food and begin to ignore it (Norbury et al. 2021). When the real birds arrive in the area to start nesting a couple of weeks later, they can do so with far less predation pressure. As a result of this work, the conservation of these birds may one day no longer require people to shoot, trap, poison, or otherwise kill their predators.

All over the world, similar projects are emerging under the umbrella of 'Conservation Behaviour', a field in which the sciences of animal behaviour are being put to work to achieve conservation outcomes. In many cases, researchers are quite literally teaching animals to live in new ways for their own, or others', survival. Over roughly the past two decades, these efforts have included everything from training captive-bred wallabies to recognise and avoid the predators they will encounter after release, to the retrofitting of train tracks with devices that effectively communicate to bears that it is time for them to move out of the way (Griffin et al. 2000; Greggor et al. 2020). In other cases, scientists have sought to develop 'bio-fences' that use scent markers to communicate to wolves, African wild dogs, and other predators that another pack occupies the neighbouring territory and

they should stay away, ideally within a protected area where they are less likely to end up in conflict with local people (Snijders et al. 2019). In yet another fascinating project taking place in Western Australia, scientists are working to teach lizards, crocodiles, and other species not to eat the highly toxic cane toads that are moving into their habitat. Through a program of 'conditioned taste aversion', in which predators are exposed to small toads or cane toad sausages that make them very ill but do not kill them, they learn to steer clear of these animals (Ward-Fear et al. 2020; Aiyer et al. 2022).

Some of the conservation approaches being developed here are providing new opportunities for non-lethal management, while others are increasing survival rates for endangered species. However, this is space of innovation is far from being Edenic. New forms of control, harm, and killing are also emerging. For example, scientists are currently also putting behavioural insights to work to produce more effective traps that can better target those cautious individuals that might warily avoid, and so escape, these devices (Garvey et al. 2020).

Despite their many differences, these projects are united in their effort to develop conservation interventions that take better account of how animals perceive, understand, and navigate the world around them, while often also actively altering and reshaping those ways of being. While there are certainly scattered examples of these kinds of efforts throughout the history of the modern conservation movement, something has changed in recent decades. The origins of the field of conservation behaviour are generally traced by its practitioners to the late 1990s, with a particular growth in momentum over the past ten years during which efforts have been made to create overarching frameworks, systematic reviews, and a sustained conversation with conservation practitioners (Berger-Tal et al. 2019; Greggor et al. 2020).

This article explores a possible role for environmental humanities scholars in grappling with this emerging field. On the surface, conservation behaviour might appear to be a somewhat niche branch of the conservation sciences. It is one, however, that offers a particularly instructive vantage point on a range of pressing questions about how diverse human communities understand, value, and live with other animals in a period that is increasingly being understood to constitute the planet's 'sixth mass extinction event' (Ceballos et al. 2015). Of particular note is the way in which these behavioural conservation interventions potentially interrupt and unsettle a long history in the conservation sciences of largely ignoring animal behaviour, not to mention the broader agentive and creative lives of animals. By and large, conservationists have understood their mission to centre on the preservation of biogenetic resources—genes, species, ecosystems, perhaps landscapes—and have ignored the rest (Caro 2007; Brakes et al. 2019). Where animals or their impacts have needed to be managed, the key mechanism for doing so has generally been to increase or decrease their populations, usually through habitat modification or targeted programs to increase reproduction or survival, or to increase mortality (usually referred to as 'lethal control'). In contrast, changing the behaviours of these animals has rarely been considered as a site for active intervention. Nonetheless, it is important to note that conservation efforts have frequently ended up impacting animals' behaviours and subjectivities in a range of ways, more or less intentional and desirable (Chrulew 2020; van Dooren 2016). As such, what is of particular interest in the field of conservation behaviour is not that its practitioners are intervening in animal behaviours and lives, but that they are doing so *deliberately*, as a central component of their conservation efforts, and that in so doing they are drawn into a host of new questions and possibilities for knowing, conserving, controlling, and reshaping, diverse nonhuman animals and their relationships with a wider world.

In this context, it is significant that over the past five to ten years, some of these behavioural projects have been scaled-up to become landscape-level interventions. While previous applications of conservation behaviour research tended to be small in scope—focusing on things like predator avoidance or migration training for a specific captive-bred population of an endangered species prior to their release—projects like the olfactory

camouflage of ground-nesting birds mentioned above are seeking to intervene in the behaviours of large groups of free-living animals. As Catherine Price, one of the scientists behind this olfactory work, put it to me in an interview, these 'free-ranging applications are the next big challenge for conservation behaviour'. These larger-scale programs create a variety of new difficulties and opportunities. In particular, they must now often grapple with many more of the complexities of the wider world. This includes the responses of a variety of 'non-target' animal species that might become caught up in these efforts in one way or another. Importantly it also includes a broad range of human communities, from hunters and farmers to animal activists and Indigenous peoples, who have their own ideas about how these animals make sense of and navigate the world, as well as their own practices for intervening in animal lives to achieve their desired outcomes.

While there are many ways in which scholars in the environmental humanities might seek to engage with work in conservation behaviour, the particular approach developed in this article is grounded in the fields of multispecies studies and philosophical ethology. This approach is outlined in more detail in the first section of this article. At its core is an effort to study the entangled lives of humans and other animals in a way that attends not only to their biological, ecological, and cultural interactions and relationships, but also to the worlds of ideas, understandings, and meanings that animate and guide them. This is an approach that is necessarily multidisciplinary, drawing the biological sciences (especially the ecological and behavioural sciences) into dialogue with the humanities (especially philosophy, anthropology, and science and technology studies), in specific sites (informed by ethnographic and textual research). This approach sits comfortably under the broad umbrella of the environmental humanities, while also aligning with many of the central concerns of this special issue and the emerging paradigm of 'conservation humanities'.

The second section of this article focuses on four broad thematic areas in which a collaborative dialogue between the environmental humanities and conservation behaviour might be mutually enriching: agency, identity, ethics, and loss. Each of these themes represents a space in which dominant Western scientific and cultural understanding and practices in relation to conservation and extinction might be—and indeed must be—challenged in our current time. Ultimately, I aim to show that a dialogue between environmental humanities and conservation behaviour around these four themes can offer valuable insights for this field of conservation research and practice at this critical point in its emergence, while also generating new understandings of animal life and new possibilities for a shared life in diverse more-than-human communities.

2. The Environmental Humanities and Conservation Behaviour

Conservation humanities, like the broader field of environmental humanities, has a rich and diverse set of disciplinary and interdisciplinary approaches available to it, from history, literature, and philosophy, to anthropology, gender studies, Indigenous studies, and science and technology studies (Heise et al. 2016; Bergthaller et al. 2012; Neimanis et al. 2015). Each of these (inter)disciplinary approaches offers different methods and concepts. As I have argued elsewhere, I am of the view that the environmental humanities should be more than an umbrella that collects up different environmentally focused subdisciplines, leaving them largely unchanged by the process. While there is certainly some value in this, I believe that the field has the most to contribute when it is understood as a gathering ground upon which new interdisciplinary questions, collaborations, and approaches are being imagined and crafted, often in dialogue with the sciences and with broad publics beyond the academy' (van Dooren 2018).

In the area of conservation and extinction, foremost amongst the offerings that the humanities (and the qualitative social sciences) can make is the capacity to draw out the 'thick' worlds of meaning, value, and commitment that animate human life, and to critically interrogate the larger historical, cultural, economic, political, and environmental contexts that ground these realities. This is the central preoccupation of the humanities, and it is one that actively resists efforts to reduce the understandings, actions, and indeed lives

of diverse human beings to the simplistic economic and/or psychological models that frequently guide policy and other decision-making (Rose et al. 2012; Sörlin 2012). The environmental or conservation humanities are, of course, about the application of such an approach to these respective domains. Crucially, however, this does not mean that these fields are focused on the 'human dimensions' of environmental or conservation challenges. Rather, in developing approaches in these domains, the humanities themselves must be unsettled, stretched, and redone (Rose et al. 2012).

Refusing the division of labour, and of the world, into two camps—the 'ecological/natural dimensions' and the 'human dimensions'—work in these fields insists on the cultivation of new modes of working across these divides. This will often require humanities scholars—who are definitively no longer 'humanists'—to gain proficiency in ways of knowing beyond their disciplinary training (including those of the natural sciences), while also collaborating on finding ways to engage and include other pieces of knowledge and expertise that they cannot personally acquire (whether, for example, for reasons of practicality or cultural prohibitions). Furthermore, it insists that the framing of 'human dimensions' is itself deeply unhelpful. Firstly, this is because humans are tangled up in 'natural' systems in such complex ways that any effort to understand them, let alone manage them, discretely is bound to cause at least as much harm as good. Secondly, because there has never been a default, generalisable 'human'. Human beings and human communities are implicated in and impacted by 'environmental issues' in a diverse array of different ways. When we focus on 'the human', this diversity often becomes homogenised or glossed over in ways that further entrench inequalities. As a result of these dynamics, it does not seem unreasonable to insist that a key part of our current period of nested eco-social crises is precisely this tendency to divide the world and our problems into their 'human' and 'natural' dimensions.

In contrast to such a division, the approach to conservation behaviour outlined in this article is multidisciplinary, working across diverse modes of knowing. More specifically, it is situated at the intersection between two important emerging subfields of research in the environmental humanities that have been at the core of my own research for the past decade. The first of these fields is multispecies studies, which draws in particular on ethnographic research to explore people's entanglements within a more-than-human world, emphasising the ways in which the lives and possibilities of diverse beings are co-shaped, and paying particular attention to questions of ethics and responsibility (Kirksey and Helmreich 2010; Locke and Münster 2015; van Dooren et al. 2016). The second key field is philosophical ethology. Work in this area has explored the philosophical and historical underpinnings of the ways in which scientists (and to a lesser extent farmers, animal trainers, and other interested peoples) construct understandings of animal experience and behaviour, drawing on sources that range from continental philosophy to work in cognitive biology and neurobiology. Research in this field is generally grounded in close engagements with the scientific literature and/or ethnographic research with scientists themselves (Buchanan et al. 2014; Lestel et al. 2006; Despret 2016).[1]

In applying such an approach to the field of conservation behaviour, we might begin with the scientists and conservationists who are generally, but not always, the ones initiating these projects. How are these people grappling with, and developing frameworks for, the application of behavioural approaches to conservation? Through this practical focus, how are scientists learning about how diverse animals make sense of and navigate their worlds? In exploring these scientific knowledge-making practices in the laboratory, the field, and elsewhere, we might conduct what Vinciane Despret has called an 'ethology of the ethologists' (Despret 2021). Importantly, while much of this scientific work is framed in terms of a focus on animal 'behaviour', the writings of Despret and others allow us to explicitly challenge approaches that reduce 'animal life to behaviours' (Lestel et al. 2014, p. 127). Indeed, this is a challenge that is also frequently happening *within* the natural sciences today. While there are certainly long histories and entrenched practices of behaviourism in many parts of the academy, there are also a range of other approaches

that are actively exploring the rich and diverse cognitive, emotional, and social lives of animals.[2] In place of mere behaviour, this philosophical and scientific work helps us to appreciate the broader *worlds of meaning* that nonhuman animals craft, interpret, and live and act within (which, depending on the animals in question, may or may not include particular forms of sentience, intentionality, and subjectivity).

In attending to animal life in this way, we can explore the active role that the animals caught up in these conservation processes play through their particular modes of perceiving, learning, and adapting. For example, in the development of the above-mentioned conditioned taste aversion to cane toads, what differences exist between how yellow-spotted monitor lizards and blue-tongued lizards learn about the dangers of toads? In this case, it seems that one fascinating difference is that while the latter lizard can learn this lesson through exposure to a nauseating sausage made from cane toad meat, the former lizard requires an encounter with a live toad (Ward-Fear et al. 2017; Price-Rees et al. 2011). Furthermore, amongst the monitor lizards, why do some individuals learn more readily than others in certain conditions, and how are these differences mapped onto what the scientists refer to as the 'personality type' of these individuals, i.e., whether they're bolder or shier? (Ward-Fear et al. 2020). These are complex spaces of (only ever partially) shared intelligibility in which scientists are deploying practices ranging from imagination and intuition to lab and field experimentation to better understand how animals make sense of their worlds. Importantly, these efforts are highly consequential ones, with possible outcomes that include everything from death by poisoning, predation, and starvation, to the survival of individuals and their species.

Importantly, as these conservation efforts travel out into the wider world, a number of other human communities become caught up in them: from the people losing sheep or cattle to predators who evade a biofence, to architects working to integrate the elusive nocturnal movements of bats into a bridge design. These larger webs of relationship are a key part of the environments in which these emerging approaches are both tested and applied; processes that frequently take place simultaneously in a kind of 'wild experiment' that blurs the distinction between research and application (Lorimer and Driessen 2014). In sites around the world where conservation behaviour interventions are being deployed, a variety of humans and animals are developing new approaches to understanding one another's movements, motivations, and agendas. These are 'hybrid communities comprised of humans and animals sharing meaning, interests and affects' (Lestel et al. 2006, p. 155).

In drawing these broader contexts into the frame, an environmental humanities approach can explore the tangled stakes and possibilities that arise here. For example, in the context of a biofence to protect livestock or crops from wildlife, and so these wild animals from the reprisals of farmers, how do these diverse humans and nonhumans understand and navigate spaces of shared learning and response? What is at stake here, beyond the conservation of predators, including the lives, deaths, traumas, farming practices, and livelihoods of local people and their 'domesticated' animals?[3] How do diverse knowledges about animals come into dialogue: as when the expertise of San trackers is called upon to interpret the tracks of African wild dogs around the edges of a bio-fence (Pierre du Plessis, pers. comm.), or when Kenyan farmers, knowing that elephants avoid bees, suggest the development of 'beehive fences' to keep these large herbivores out of their crops (King 2021). Most fundamentally, how might attend to these questions *together*—the epistemic and the socio-ethical, the ethnographic and the ethological—enrich our understandings and our possibilities?

In keeping with well-established practices of scholarship in feminist science and technology studies (STS)—which have now thoroughly infused much of the environmental humanities—we might understand this research as a work of 'ethico-onto-epistem-ology' (Barad 2007, p. 185) that attends to the many consequences, the human and other-than-human lives and worlds that are brought into and out of being, as a result of particular ways of understanding, classifying, ordering, and knowing. In short, in bringing the methods and concerns of multispecies studies and philosophical ethology into dialogue around

specific conservation behaviour interventions, an environmental humanities approach might foreground the ways in which diverse humans—including biologists, farmers, city planners, and Indigenous communities—are working to understand and respond to animal behaviours to achieve conservation outcomes. At the same time, however, it would attend to how these animals are themselves engaged in processes of learning and adaptation, and are trying to make sense of and navigate changing environments and conservation approaches. In this way, it might explore the *shared*, *partially overlapping*, *worlds of perception*, *experience*, *and meaning* that are crafted and inhabited by humans and other animals; spaces in which living beings are adaptively (re)learning to relate to one another, to make sense of one another, and hopefully to survive and thrive with one another.

This is an approach that builds on the significant contributions of scholars such as Lestel, Despret, Tim Ingold (Ingold 2013), and others who have sought to explore the shared worlds of meaning of animals and humans through what Lestel and colleagues have called an 'etho-ethnological' inquiry (Lestel et al. 2006). Despite years of calls for such research, and some innovative endeavours undertaken, it remains the case that there are very few detailed empirical studies of this kind.[4] One of the key reasons for this is the broad, multidisciplinary nature of these inquiries, which require detailed knowledge of the behavioural, ecological, and conservation sciences, as well as the capacity to engage with them philosophically and historically. These knowledges must also be brought into dialogue with ethnographic methods and the capacity to navigate complex spaces of cultural difference, including competing livelihoods and understandings.

In this respect, however, it seems that a focus on the field of conservation behaviour might provide important opportunities for environmental humanities researchers. Many of the conservation behaviour interventions being developed around the world are active sites of ongoing animal behavioural research (which is very rarely the case in wildlife management contexts, and certainly not in a detailed manner). As a result, environmental humanities researchers might find fruitful opportunities to engage with behavioural scientists who are already working in the field and are required to grapple with the needs, values, and understandings of local communities. As such, environmental humanities scholars working in this space would not need to conduct their own empirical studies of animal learning and behaviour, and may well find willing scientific and community partners for dialogue and/or collaboration.

3. Areas of Productive Exchange: Redoing Conservation

The final section of this article is structured around four key analytic themes: agency, identity, ethics, and loss. As noted above, each of these themes represents a space in which dominant Western scientific and cultural understanding and practices in relation to conservation and extinction are being challenged in our current time. As is detailed further below, some of these understandings are already being questioned in a variety of ways within the conservation community, the environmental humanities, and in broader popular and policy discussions that have been prompted in large part by the immense scale of current processes of biodiversity loss. As such, these themes do not represent areas for 'rethinking' so much as active spaces of 'redoing', in which understandings and practices are already being altered in highly consequential ways. Through the development of a focus on worlds of meaning at the edge of extinction, scholarship in this area might seek to intervene in these processes, practices, and relationships in order to create new possibilities for shared life in diverse more-than-human communities.

3.1. Redoing Agency

The first of these domains is that of animal agency. At the broadest level, this is a space of inquiry concerned with how and why animals do what they do: what kinds of attributes and competencies do various animals have as actors, how can we know this in each case, and what differences do different modes of understanding animal life make for all of us? These are big, complex questions. However, they are ones in which work in the field of

conservation behaviour opens up new opportunities for engagement from the humanities, especially when this work is understood in the context of a longer history of conservation practice.

Consider, for example, a now well-known example from the 1980s in which a series of efforts were made in Israel to release Northern Bald Ibises that had been bred in captivity back into the environment. All of them failed spectacularly, with released birds reported to have become 'disorientated' and 'emaciated', with most of them subsequently dying (Bowden et al. 2007, p. 2). It would be one thing if this were an isolated incident, but the sad reality is that it is far from it. All around the world during this period, captive breeding and release programs began to emerge as a popular option to help stem the loss of endangered species (Cade 1986; Snyder et al. 1996). Initial releases of a range of species—including Whooping Cranes and California Condors, Golden Lion Tamarins, and Black-Footed Ferrets—met similar fates. In all of these cases, animals were born or hatched in captivity to be reared by humans. However, their upbringing produced individuals who did not know what to eat or where to find it; how to fit into the social structures of their species; how or where to migrate; and/or about the dangers that they ought to avoid (van Dooren 2014; Chrulew 2017b).

How are we to understand these widespread failures? How can we reconcile this sad situation with what is now known—and indeed, was known then—about animal behaviour, namely, that it is not all 'hard-wired' or 'instinctive'? Since at least the early 1950s, with Daniel Lehrman's (Lehrman 1953) important critique of Konrad Lorenz's sharp distinction between innate and acquired behaviours, the many issues associated with failing to attend to the developmental environment of animals have been widely accepted. Yet, many conservation projects—in the past, and to a lesser extent still today—rear captive animals in environments that bear little resemblance to their release sites, and as such fail to facilitate these developmental processes. In so doing, they focus on maintaining genetic diversity over behavioural competency.

It is hard to avoid the conclusion that these programs operate with an impoverished notion of animal life, one that might somewhat simplistically be characterised as 'mechanistic'. The historical roots of such an understanding have been explored extensively, including the particular forms that they have taken in Western science from the 17th century to the 20th: from clockwork animals, through psycho-hydraulic models, to contemporary forms of genetic determinism (Burkhardt 2005; Daston and Mitman 2005; Riskin 2016; Crist 1999). In varied ways, and with differing degrees of credibility, these more mechanistic frameworks have tended to view animal behaviour as primarily 'reactive'—driven by various kinds of 'push-me-pull-you' processes (Riskin 2020)—in a way that either denies or simply brackets out (ignores) any fuller sense of the diverse forms of experiential, adaptive responsiveness found among nonhuman animals.

Current efforts in conservation behaviour push against these simplistic framings. In different ways, these projects require scientists to rethink who animals are, as well as who they might become: what they might be rendered capable of in changing environments with novel possibilities for life and learning (Despret 2016). Part of what is at issue here is how different animals perceive their worlds and act in them differently on the basis of the biological and sensory capacities of their particular species (Greggor et al. 2020). However, in many cases these conservation behaviour interventions also require scientists to ask about the particularities of individual animals: how members of the same species might live and act differently, in part at least as a result of their unique experiences, life histories, and personalities (Garvey et al. 2020).

In this context, an environmental humanities engagement with the field of conservation behaviour might offer important new insights into the forms of animal agency at work in conservation efforts, past and present. How has conservation biology arrived at its particular understanding of the agential and perhaps experiential lives of animals? How and why were these elements of animal life sidelined within conservation in the first place, and how are those views being challenged today, albeit slowly and unevenly? In

taking up these questions this work might interrogate the forms of animal agency at work in conservation as scientists explore diverse sites of learning, memory, communication, and adaptation. Moving beyond scientific discourse, it would also ask how these insights are redone in the field as diverse interested members of local communities add their own understandings of who animals are and why they do what they do.

Research in this area might contribute to the significant ongoing discussions of agency in the humanities, in particular, to work in posthumanisms, animal studies, new materialisms, and STS, which focuses on the problems and promises of recognising diverse forms of agency in all manner of entities (Bennet 2010; Latour 2005; Robbins 2007; Barad 2003). What do such approaches enable us to see, and what 'thicker' forms of subjectivity do they perhaps cover (Braidotti 2013)? What might research in conservation behaviour contribute to these discussions? For example, do perception and learning *require* a conscious, experiencing, subject (many cognitive scientists think not, but humanities discussions sometimes assume so)? What other possibilities are there for imagining and communicating the *diverse* forms of agency found within the animal kingdom? More broadly, what might humanities scholarship contribute to emerging conservation practices? For example, work on subjectification helps to challenge the simple notion that a better understanding of animal cognition will somehow necessarily lead to improved care. Instead, as Matthew Chrulew has argued, it can often lead to new and more intense modes of surveillance, control, and domination (Chrulew 2017a). Indeed, we are already seeing this with emerging efforts to improve the efficiency of conservation actions by targeting particularly problematic individuals or personality types: for example, in a proposal to identify and 'cull' problematic California sea lions so they cannot spread their practice of consuming endangered salmon (Schakner et al. 2016). This situation, of course, also opens up challenging new ethical questions (discussed further below).

3.2. Redoing Identity

Within contemporary conservation there is a growing critique of notions of pristine nature and wilderness, alongside increasing calls for the development of new forms of 'conservation after nature' (Lorimer 2015) that consider, value, protect, and even actively create a variety of more 'humanized' environments through projects of restoration, rewilding, de-extinction, and more (Jørgensen 2019; Friese 2013; Lorimer and Driessen 2014). These approaches have been celebrated by some and strongly opposed by others (Miller et al. 2011; Wuerthner et al. 2014; Sullivan 2006; Collard et al. 2015; Buscher and Fletcher 2020). While there are many complex elements to this debate, one central point of contention is how to understand and articulate the goals of conservation outside of any notion of a static, pristine, nature that might be preserved or returned to. If the goal can no longer be 'human-free nature', then what kinds and degrees of human presence and intervention are acceptable?

This question takes on a particular, fascinating form in efforts to engage with animal behaviour for conservation purposes, requiring us to critically interrogate *what* it is that we are trying to conserve. Around the world, as conservationists consider and actively pursue programs aimed at deliberately altering all manner of animal behaviours—from the habitats they prefer to occupy and the foods they eat, to their migratory impulses and their tolerance for people—they open up new questions about species identity and the kinds and degrees of human intervention in animal lifeways that can, or should, be accommodated within conservation efforts (Reinert 2013). At what point is a species so transformed that it has not been 'conserved' at all (van Dooren 2016)? While in some cases these changes might be relatively short term—lasting only the lives of those individuals who were subject(ed) to the particular intervention—in other cases they have been far more enduring, as one generation of animals teaches them to the next, incorporating the new behaviour into the species' way of life (for example, through the social transmission of a new migratory route or feeding behaviour).

In this context, environmental humanities researchers might explore how notions of identity are being challenged as a result of conservation interventions into animals' behaviours. How are these possibilities articulated and navigated by conservationists? Equally as importantly, how should they be? In taking up these questions, we might contribute to broader discussions in the environmental humanities that have explored concepts of fixity and change in environmental thinking to challenge static, ahistorical understandings of how an environment should be and associated conservation goals (Alagona et al. 2012; Worster 1994; Head 2011; O'Gorman 2021). Through a focus on conservation behaviour, this research might expand this conversation into the relatively unstudied realm of species identities and animal behaviour, engaging with scholarship from a variety of disciplines that has explored the ontogenetic and evolutionary processes that produce living beings and their forms of life, including work in philosophical ethology (Chrulew 2010; Lestel 2011), anthropology (Ingold and Palsson 2013), and developmental systems theory (Oyama et al. 2001; Avital and Jablonka 2000). Of particular interest in this regard, however, is the need to develop new—dynamic and relational—notions of species identity and individual animal identity that account for the fact that both are always changing, and that support animals' efforts to do so in a world that is itself rapidly changing, but that take up the ongoing challenge of determining which kinds of changes are life-affirming, for whom, and at whose expense (van Dooren 2016).

3.3. Redoing Ethics

Projects like the 'olfactory camouflage' mentioned above contribute to a general sense in the conservation behaviour literature, or at least a hopefulness, that these interventions might produce less harm through the development of innovative non-lethal approaches to conservation and wildlife management (as well as potentially being more effective at achieving the desired goals). Far from being a space free of ethical challenges, however, a host of new questions are raised here. In this context, there is a vital role for environmental humanities research in asking how ethical considerations are being taken up, responded to, and transformed through these emerging conservation practices. What new vocabularies and approaches are required here? How are ethical considerations already animating and informing work in conservation behaviour?

When conservation efforts move from 'simply' killing problematic animals to intervening in their behaviour, the ethical terrain shifts substantially. Importantly, non-lethal approaches are not necessarily harm-free. For example, in the case of olfactory camouflage, while this approach may lead to a reduction or end to the poisoning of cats and other predators, this research required the use of dead gulls, quails, and chickens to produce the scent used to protect other birds (Norbury et al. 2021, p. 5). In more extreme contexts, conservation interventions that seek to deny animals access to prey they once consumed may also lead to hunger, starvation, and even death (van Dooren 2019, pp. 137–72). For others, new forms of captivity and exploitation will be required, including the use of a wide range of surrogate non-endangered species to test interventions in areas that range from predator avoidance to assisted migration. In short, diverse forms of dying and manufactured disposability continue and emerge anew in these practices, albeit often pushed into the background and rendered invisible.

At the same time, efforts to engage with the behavioural complexity of animals in this way render *more visible* some potential new forms of psychological and social harm (van Dooren 2019, pp. 137–72). From elephants to parrots, researchers are documenting the occurrence of psychological and social disorders as a result of animals inhabiting disturbed environments (Bradshaw et al. 2005; Langford 2017). Even snails seem to experience stress and a reduced capacity to learn as a result of changes to their social situation (Lukowiak et al. 2014). How might proposed behavioural interventions—including non-lethal ones, some of which are grounded in ongoing forms of hazing, displacement, stress, and fear—potentially give rise to these kinds of harm? In many cases, these ethical questions interface directly with issues of conservation efficacy. For example, elephants suffering from trauma have

been shown to be more likely to be involved in human/wildlife conflicts; importantly, the wellbeing of local people is also often impacted negatively by these conflicts (Jadhav and Barua 2012). Taking these considerations seriously might ultimately still lead us to conclude that behavioural interventions are preferable to more traditional lethal approaches—which, in addition to killing many animals, might also produce higher levels of trauma for those animals that survive—but these are topics that require ongoing, case-specific interrogation.

These questions are made even more complex in the context of conservation behaviour interventions that seek to alter animal behaviour at a landscape level. In these cases, it is often difficult or impossible to predict, let alone control, which animals, of which species, will be exposed to a given intervention. For example, an approach trialled in fish farms to prevent seals from eating fish through the nets has used a device that plays an unpleasant sound, described by one scientist as a seal's version of 'fingernails on a chalkboard' (Wang 2022). However, research has since shown that toothed whales were even more sensitive to this particular sound and less likely to adjust to it than the seals (Götz and Janik 2013). As a result, these whales may be more prone to abandoning the area and so more impacted upon than the target animals. These unintended impacts of conservation behaviour interventions might be thought about as a kind of 'behavioural bycatch' (van Dooren et al. 2023).

As is clear from many of these examples, the ethical questions at stake here involve human communities in a range of ways. Put simply, new ways of understanding and interacting with animals can have profound consequences for the many humans that interact and live with them. As has now been well documented, efforts to conserve 'wild nature' and biodiversity have very frequently excluded local communities from their lands or constrained their livelihoods or traditional cultural practices in unequal, and frequently unnecessary, ways (West et al. 2006). In many other cases, the conservation of threatened species has significantly curtailed the ability of local communities to harm or kill 'problematic' animals, which may threaten their lives and livelihoods in significant ways (including predation of crops, livestock, and humans), giving rise to significant instances of human/wildlife conflict (Woodroffe et al. 2005; Pooley et al. 2017). Some conservation behaviour interventions have the potential to reduce these kinds of conflicts. In fact, one of the key promises of this field is that it might open up spaces for something like the opposite of the 'fortress conservation' (Brockington 2002) approach, which seeks to strictly separate humans from nature. Instead, new kinds of *co-habitation* might be possible, perhaps enabled by aversive training approaches that use frightening or painful experiences to encourage animals not to visit areas where they come into conflict with people or not to prey on livestock (Blackwell et al. 2016; Snijders et al. 2019). Or, if not co-habitation, at least closer habitation; perhaps separated by a bee fence or a bio-fence. In many of these cases, however, local human communities will be required to bear the risks associated with the trialling and development of behavioural approaches to conservation (van Dooren et al. 2023). This situation will inevitably open up other kinds of ethical challenges for this emerging field to navigate.

Importantly, however, in many of these contexts, we will need to keep in mind who is being asked to change and who is being enabled to continue their existing modes of life. In many countries in the Global North, both biodiversity loss and human/wildlife conflict stem predominantly from human activities that might readily be conducted otherwise. In the case of human/wildlife conflict, poor urban planning and irresponsible waste disposal are key culprits. When conservation behaviour approaches are deployed in contexts like this, scientists are effectively working to modify animal behaviours because the behaviours of certain human communities and individuals are both so destructive and so resistant to change (van Dooren 2019, pp. 137–72). As such, it is important that these interventions—especially ones that impact significantly on animals—do not end up being used to simply avoid, or bypass (Wang 2019), the more difficult work of human social and economic change.

In taking up these ethical questions, environmental humanities research on conservation behaviour might contribute in a significant way to the growing bodies of literature in

animal studies, animal and environmental ethics, multispecies studies, and conservation and society. In particular, this work might begin to develop new approaches to teasing out the diverse and multifaceted forms of both wellbeing and harm that cut across animal and human lives, taking a broad range of bodily, psychological, social, cultural, and environmental forms. How might this kind of knowledge be incorporated into both ethical theorising and conservation practices? One key element of what is required here is an expanded ethical vocabulary that considers the *active* (even if always uneven) roles of humans and animals in the shaping of relationships and worlds, going beyond topics like suffering to consider 'resistance', 'power', 'diplomacy', and 'etiquette' in the co-shaping of lives that are lived at the edge of extinction (Haraway 2008; Chrulew 2011; Warkentin 2010; Palmer 2003; van Dooren 2019).

3.4. Redoing Loss

The final domain in which this research might make a significant contribution is in efforts to understand and more fully articulate the diverse forms of loss that take place in, and around, extinction. In attending to thicker and more complex forms of animal life, work in the field of conservation behaviour arguably also reframes our sense of what is lost in extinction. Alongside the loss of fleshy organisms, extinction is revealed as a loss of diverse modes of perceiving, understanding, and perhaps experiencing, in some cases including ways of mourning, caring, and relating to social partners (Crist 2013; Chrulew 2020; van Dooren 2014). As Despret has succinctly put it in her discussion of the extinction of the passenger pigeon: 'When a being is no more, the world narrows all of a sudden, and a part of reality collapses. Each time an existence disappears, it is a piece of the universe of sensations that fades away' (Despret 2017, p. 220). Of course, what is lost is not only the currently existing realities but all of the lively possibilities for what these species might have become in the fullness of evolutionary time (van Dooren 2014, pp. 21–44).

In this context, environmental humanities research in this area might explore how the practices and insights generated by attending to shared human/animal worlds of meaning could *redo our sense of what is being lost in extinction*, opening up a new and deeper appreciation of this process and its significance. While some scholars have explored the impact of species loss on human cultures, kinship systems, livelihoods, languages, and more (Sodikoff 2012; Maffi 2004), research in the proposed area has the potential to open this exploration into the broader spaces of animal meaning, experience, subjectivity, and more that are also at stake here, including in their entanglements with diverse human forms of life and meaning-making. In doing so, this work might contribute to ongoing work in 'extinction studies' (Rose et al. 2017) that is seeking to develop a fuller sense of what conservation and extinction mean, how they are experienced, and why they matter, for all of the diverse living beings, human and not, caught up in these processes. Doing so requires attending not only to loss and unravelling—'the withering of shared life' (Lestel 2013)—but also to the many new relationships and possibilities that are crafted and ushered into existence here. In short, thinking through the relationships taking form in conservation behaviour interventions provides a novel opportunity to ask: how can attending to shared worlds of meaning transform our understandings of what extinction is, why it matters, and how and why we ought to seek to prevent it? These are vital questions for this period of escalating biodiversity loss.

At the same time, however, there is an important sense in which attention to the intellectual, emotional, and social lives of animals might also lead to new calls to allow, or perhaps even encourage, some species to become extinct. This is particularly the case in relation to species for whom it seems to simply no longer be possible to provide the basis for flourishing forms of life. As the habitats of some species become fractured and unviable, as others are confined to diminished captive environments for generation after generation, at what point should we say that the price of conservation is too high? While some scholars and activists have long opposed captivity and other forms of intrusive conservation, within the conservation community discussions about when species should

be allowed to go extinct have largely been framed as questions of 'triage' informed by purely economic cost/benefit analyses, and they remain highly controversial, giving rise to ongoing accusations of 'playing god' (Wilson and Law 2016). Almost entirely absent from these discussions, however, are questions of animals' wellbeing and their capacities to lead flourishing lives. As we gain a greater appreciation of the richness of animal life—and as that understanding makes its way into the conservation community in this new and practical manner—how might this discussion be transformed? How should it be? At the same time, what are the dangers of opening up a public debate about the merits of abandoning species to extinction 'for their own good'?

4. Conclusions

As a field, conservation behaviour is very much still in formation. Most of the work happening in this area is thoroughly experimental. At the same time, however, given the rapid pace of biodiversity loss today, many of these experiments are active conservation efforts, some of them taking place at large scales. Rather than being a space in which tried and tested approaches are rolled out, even with ongoing monitoring and adaptive management, conservation behaviour interventions are often pushing at the edges of contemporary scientific understandings of animal life. This is an exciting domain, one that may potentially offer a range of valuable new approaches to conservation, as well as new challenges, questions, and risks.

In this article, I have aimed to show that this is also a space that is full of possibilities for environmental humanities scholars. On the one hand, there are possibilities associated with helping to shape an emerging field of conservation practice through a thorough engagement with the complex ethico-onto-epistemic challenges to which it is giving rise. The approach to these questions that I have outlined here moves beyond the application of pre-existing frameworks to instead draw out and respond to as broad a range of questions, challenges, and obligations as possible. This is an approach that must be grounded in a 'situated' (Haraway 1991) engagement with specific case study sites, with the particular species, local communities, and landscapes that are at stake in these interventions. In short, it is a space that refuses the allure of definitive answers that can easily be applied across diverse contexts. As the field of conservation behaviour continues to take shape, I hope that these dialogues might enrich the forms that it takes. There are at least some promising early signs that this is possible (van Dooren et al. 2023). On the other hand, I have also argued that an engagement with conservation behaviour has the potential to provide both fruitful case studies, and fascinating collaborators, that offer valuable vantage points on a range of thematic areas that are of ongoing interest to humanities scholars. I have broken these down into areas of agency, identity, ethics, and loss, but it is clear that the overlaps between these topics are considerable, and there are no doubt also other important domains worth considering.

Ultimately, this article offers more questions than answers. It aims to flesh out both an approach and a range of questions to be further explored in relation to the emerging field of conservation behaviour. In so doing, my hope is that this article might prove useful to scholars in the environmental humanities—including those drawn to the area of conservation humanities—who are interested in further exploring this particular field of conservation practice, as well as all those with a broader interest in how engaging with the conservation sciences might enrich both of our fields of enquiry while generating new possibilities for shared life in multispecies communities.

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Notes

1 As has long been explored in the field of biosemiotics (Hoffmeyer 1996; Sebeok and Umiker-Sebeok 1990), all living beings—including plants, fungi, and bacteria—are involved in their own forms of meaning-making: taking in information about the world and responding. While there is no doubt scope within to explore how the questions and approaches outlined in this article reach beyond the animal kingdom, for the sake of conceptual coherence, maintaining a manageable scope of inquiry, and connecting to existing scientific and conservation efforts, I have limited the scope of this article to a focus on animal life.

2 A few examples that I have engaged with or found inspirational for my own research include the work in comparative cognition of Nicola Clayton and colleagues (Seed et al. 2009; Emery and Clayton 2004); Thomas Bugnyar and colleagues' work on the social lives and strategies of corvids (Bugnyar 2013; Bugnyar 2011); the broad body of work of the primatologist Frans de Waal, including his popular writing (de Waal 2016); Marc Bekoff's work on animal emotions and sociality (Bekoff 2007); the work of John Marzluff, Kaeli Swift, and others on how animals make sense of and relate to the dead (Swift and Marzluff 2015) and learn about threatening people (Marzluff et al. 2010); and the work of Sarah Dalesman and Ken Lukowiak on social isolation, stress and memory in pond snails (Dalesman and Lukowiak 2012).

3 On the complex and contested space of domestication, see (Swanson et al. 2018).

4 Two standout examples from Francophone scholars, recently made available in English, are from Vinciane Despret (Despret 2021) and Baptiste Morizot (Morizot 2022). The emerging field of ethnoprimatology also represents another, relatively taxonomically specific, exception (Fuentes 2012; Parathian et al. 2018).

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Article

The Species at Risk Act (2002) and Transboundary Species Listings along the US–Canada Border

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Abstract: This paper is a collaborative interdisciplinary examination of the scientific, political, and cultural determinants of the conservation status of mammal species that occur in both Canada and the USA. We read Canada's Species at Risk Act as a document of bio-cultural nationalism circumscribed by the weak federalism and Crown–Indigenous relations of the nation's constitution. We also provide a numerical comparison of at-risk species listings either side of the US–Canada border and examples of provincial/state listings in comparison with those at a federal level. We find 17 mammal species listed as at-risk in Canada as distinct from the USA, and only 6 transboundary species that have comparable levels of protection in both countries, and we consider several explanations for this asymmetry. We evaluate the concept of 'jurisdictional rarity', in which species are endangered only because a geopolitical boundary isolates a small population. The paper begins and ends with reflections on interdisciplinary collaboration, and our findings highlight the importance of considering and explicitly acknowledging political influences on science and conservation-decision making, including in the context of at-risk-species protection.

Keywords: conservation legislation; Canada; USA; environmental humanities; jurisdictional rarity; science and technology studies

1. Introduction

Environmental scientists and humanists[1] share the desire to understand and alleviate human impacts on the environment. We differ in our methods, in the kinds of questions we tend to ask, and in the ways that knowledge is produced and validated within our disciplines. Raymond and Perkins, for example, co-authored a paper titled 'Temporal patterns of roadkill in the UK' (Raymond et al. 2021), that quantified seasonal variations in wildlife–vehicle collisions for 19 commonly-reported taxa of mammals and birds. The paper delivers useable knowledge: increased risk of wildlife mortality is seasonally linked to a given species biology, for example, increased foraging or natal dispersal. Such inference may ultimately provide anthropocentric insights to road safety with road accidents linked to drivers trying to avoid killing the animals. It argues that 'By quantifying seasonal patterns in roadkill, we highlight a significant anthropogenic impact on wild species, which is important in relation to conservation, animal welfare, and human safety.' For each taxon (e.g., gulls, hares), the annual reported roadkill are modelled across six years of data. Statistical analysis is used to test the correlation of modelled variation with seasonal variations in mean temperature and mean monthly rainfall.

Raymond et al. (2021) conforms to the 'epistemic culture' (Knorr-Cetina 1999) of wildlife ecology and its methods seek to minimize 'bias' by ensuring statistical validity. Its findings are presented in a paper with five listed co-authors, and is written in an impersonal idiom with a standardised structure (methods, data, results, discussion) and supporting

graphs. The paper is an approved (i.e. peer-reviewed, published) output of a process by which 'what counts as knowledge and technology is accomplished in designated settings through specific strategies that generate, validate, and communicate scientific accomplishments' (Knorr-Cetina and Reichmann 2015). Garrard's publications, by contrast, are almost all single-authored critical and reflective discussions of topics in ecocriticism, devoid of data and infographics but otherwise heterogenous in presentation and organisation (Garrard 2020, 2023). Their validity depends on the persuasive interpretation of statistically insignificant numbers of mainly literary texts. Pedagogical papers aside, Garrard's publications have no practical implication beyond suggesting which books a prospective reader might consider worthwhile. The present paper represents an interdisciplinary integration of these distinct epistemic cultures, drawing also on social science sources, that explains how and why transboundary mammal species are differently classified as 'endangered' within the regimes of environmental governance in the USA and Canada.

Integration, though, must proceed from an honest appraisal of the prevalent epistemic hierarchy that values quantitative knowledge above qualitative (i.e. social science), and empirical knowledge in general above the hermeneutic, or interpretive, claims of humanistic scholarship. Scientific knowledges are sought and valued across many spheres of environmental governance from pollution detection and regulation through biodiversity protection to climate change. Though scientific knowledges are more politically persuasive than humanistic ones, they are not decisive, as we have seen in the cases of climate science and wildfire ecology. Nevertheless, the contribution of environmental humanities to, in this case, wildlife conservation is far from obvious, and has to be justified.

The meaning of the term 'endangered species' seems self-evident: it is a biological type represented by so few individuals it is at risk of extinction. The globalisation of environmental NGOs, such as the WWF and Greenpeace, and the wide influence of wildlife documentaries, reinforce the idea that there *just are* endangered species, and that this is a sad fact. As Ursula Heise (2016a) points out, conservation campaigns frame dwindling numbers of, say, mountain gorillas, *Gorilla beringei beringei,* or right whales, *Eubalaena* sp., within:

> . . . a similar story template: the idea that modern society has degraded a natural world that used to be beautiful, harmonious, and self-sustaining and that might disappear completely if modern humans do not change their way of life. (p. 7)

In literary history, the 'elegy' is a genre, usually of poetry, that mourns the loss of beloved people, animals, and places. Heise therefore calls the prevalent story template of conservation 'elegiac'.

The concept of endangered species and the elegiac template are so familiar it can be difficult to see them as culturally contingent, rather than 'how things really are'. Luckily, it is the role of the environmental humanities to raise awkward questions. The accepted language of endangerment is shaped, above all, by the International Union for the Conservation of Nature's (IUCN) trademarked 'Red List of Threatened Species', which categorizes all biological species for which data exist into seven hierarchical categories from 'extinct' to 'least concern'. While the IUCN endeavours to use an objective (i.e., quantitative) methodology for its listing, Heise (2016c, p. 72) points out that 'a narrative of risk and of value attribution is hardwired into these very categories, where extinction and endangerment are defined positively, whereas species that thrive are tagged by means of negation or approximation: "near threatened" and "least concern"—as opposed to, say, labels such as "safe," "stable," or "increasing."' The elegiac template is implicit, in other words, even within the universalizing context of the IUCN database. Recognising this, the IUCN has been developing a 'Green List' since 2018 that would recognise effective conservation and recovery of Red Listed species (Hockings et al. 2019).

The globalised rhetoric of endangered species wrongly implies that both the object of concern—the species—and its objective—to relieve endangerment—are truly universal. Yet Heise's comparative analysis of biodiversity legislation from Germany, the USA, the European Union, and Bolivia shows that, while international treaties impose globalising frameworks, 'biodiversity laws . . . differ from one another in surprising ways, and they are

passed and adjusted at particular historical moments for quite divergent reasons' (Heise 2016b, p. 89). In this paper, we undertake a cultural analysis of Canada's Species at Risk Act (SARA 2002) to show how this pivotal text is shaped by two tensions: first, between federal and other jurisdictions, and second, between liberal internationalism and deference to American exceptionalism. Next, we present a comparative examination of USA/Canada transboundary mammalian species classifications that reveals how and why Canada is disproportionately engaged in conserving species that are rare on its side of the border, but globally secure.

2. Reading the Species at Risk Act

The Canadian federal government came rather late to comprehensive nationwide conservation legislation. As Heise's discussion points out, Germany's first nature protection act was passed by the National Socialist (AKA 'Nazi') government in 1935; the American Endangered Species Act (ESA) passed in December 1973; and the first of many European Union Habitats Directives was issued in 1992. The Canada Wildlife Act (CWA), passed in July 1973, provided for national wildlife areas (NWA), but otherwise mandated the federal government merely to fund research into non-domestic terrestrial animals, and to coax and coordinate other jurisdictions. Section 8 of the CWA made it possible for the federal government to protect wildlife by regulation in concert with the provinces:

> The Minister may, in cooperation with one or more provincial governments having an interest therein, take such measures as the Minister deems necessary for the protection of any species of wildlife in danger of extinction.

In 1994, the CWA was amended to apply to 'any animal, plant or other organism belonging to a species that is wild by nature . . . and to the habitat of any such animal, plant or other organism' (Donihee 2000, p. 60). Still, the federal government had to defer to the provinces.

John Donihee notes that, while the Canadian 'Constitution Act, 1867' includes no mention of terrestrial wildlife, conservation is a provincial jurisdiction by default: 'Provincial authorities over wildlife are based on ownership of Crown lands in the province . . . and on legislative authorities granted by subsections 92(5) "the management and sale of public lands belonging to the province . . .", 92(13) "property and civil rights in the province" and 92(16) "generally all matters of a merely local or private nature in a province".' (p. 4) The federal government is entitled to override provincial jurisdiction in order to fulfil international treaties it has signed, such as those concerning migratory birds, the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the 1992 United Nations Convention on Conservation of Biological Diversity (UNCCBD). Even the fulfilment of treaty obligations has, Donihee (2000) argues, required 'cooperative federalism' (p. 6) because Canada gained control of its foreign affairs in 1926. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an example of such cooperation. It was founded following a conference of federal–provincial–territorial conservation bureaucrats in 1976 to provide scientific evidence of the status of species at risk, and was later incorporated on a statutory, albeit advisory, basis into the Canadian Species at Risk Act (SARA).

Canadian 'Crown land' (i.e., public land) is divided between the federal and territorial or provincial governments; the Yukon, Northwest and Nunavut territories are almost entirely federal Crown land, whereas the federal government controls between 0.2% (Quebec) and 10.6% (Alberta) of the ten provinces' land areas (Neimanis 2011) in the form of National Parks, Indian Reserves and Canadian Forces bases. The provinces derive a great deal of their revenue from the sale of Crown land for development, and from the licensing of commercial activities, such as mining and forestry, on it. Canada contrasts in this regard with the USA, where the high proportion of federally-administered land in western states (80.1% in Nevada) is an ongoing cause of conflict (Vincent et al. 2020).

Following the 1992 Rio Summit, and Canada's ratification of the Convention on Biological Diversity, the federal Liberal government, led by Prime Minister Jean Chrétien,

introduced a series of bills designed to protect species at risk (Hoffman 2018). Bill C-65 (1996–7) was a radical legislative proposal that would have empowered COSEWIC itself to list species for protection, and authorised citizens to compel governments to protect species by bringing lawsuits. The draft bill made federal listing binding on provinces with respect to aquatic species and migratory birds (so-called 'federal species'), and a later amendment asserted Ottawa's jurisdiction over all 'transboundary' species (Illical and Harrison 2007). The bill met with 'immediate rejection by industry' (Olive 2014b, p. 4) and the provinces, and then 'died in 1997 when a federal election was called' (p. 4).

The Liberal's third attempt, Bill C-5, was passed as the 'Species At Risk Act' on 12 December 2002. Mary Illical and Kathryn Harrison's comparison of the legislative process and outcome of the ESA and the SARA explains that 'the more discretionary approach taken in the SARA flows from the fusion of legislative and executive functions in Canada's parliamentary government, in contrast to the institutionalized distrust within the American separation of powers' (Illical and Harrison 2007, p. 368). The authors' interviews with key Canadian players also reveal that the ESA 'was in fact an important source of *negative* lessons for Canadian business and, in turn, Canadian legislators, who consciously sought to avoid the economic consequences and litigiousness that flowed from the nondiscretionary approach of the US ESA' (p. 372). For example, Bill C-65's provision for 'citizen [law] suits', which was modelled on the ESA, was deleted; the SARA 2002 merely allows citizens to request investigation of potential species at risk. Although federal jurisdiction over endangered species was greatly extended in the SARA, as we shall see, the Act frames this safety net in terms that ensure it will hardly ever be used.

Heise (2016b, p. 90) argues that:

> Legal texts allow us to trace why and how . . . communities see the fate of nonhuman species as part of their own identity and history, and—given the institutional power of legal texts to shape and enforce social practices . . .—how they envision the best possible relation between humans and nonhumans now and in the future.

Reading the SARA (2002) from this perspective, we notice that the eighteen-part Preamble acknowledges a wide variety of motivations for the Act, including protection of 'natural heritage' ['le patrimoine naturel']; the 'value' that wildlife has 'in and of itself'; as well as its value to 'Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons'. Beyond their value to the nation, 'Canadian wildlife species and ecosystems are also part of the world's heritage' [patrimoine mondial]', as the Government of Canada recognizes through its ratification of the UNCCBD. The federal government is therefore 'committed to conserving biological diversity' as a nation-building project and as a token of Canada's commitment to liberal internationalism—so long, that is, as conservation measures are 'cost-effective'. The Act's advocacy of 'national standards of environmental conservation', 'national leadership' from the new Canadian Endangered Species Conservation Council (CESCC), and the 'vital' contribution of 'Canada's protected areas, especially national parks', exist in tension with the 'essential' role of the 'aboriginal peoples of Canada' and the constitutional reality that 'responsibility for the conservation of wildlife in Canada is shared among the governments of this country'. Perhaps because the SARA is so recent, relative to similar laws elsewhere, its Preamble encompasses all of the following extant rationales for conservation: intrinsic and instrumental value, individual species and 'biodiversity', national and international 'heritage', and indigenous ethics and governance.

Whilst the Preamble provides the expansive mood music, the text of the Act itself partially retreats from its implications. Section 3 is a non-derogation statement that, 'For greater certainty', aboriginal or treaty rights affirmed in section 35 of the Constitution Act, 1982, will always prevail. The 'constitutional paramountcy of aboriginal rights' (Donihee 2000, p. 59), which distinguishes Canadian from US law, is further affirmed in repeated statements throughout the text of the government's duty to consult with First Nations and Wildlife Management Boards established as part of aboriginal land claims processes.

The legal definition of a wildlife species *(espèce sauvage*) in Section 2 'Interpretation: Definitions' is capacious:

> wildlife species means a species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and
>
> (a) is native to Canada; or
>
> (b) has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.

In keeping with its reputation for welcoming migrants, Canada's SARA provides for wildlife species to 'naturalise', to use a term from immigration law, although the stipulated period is far longer than the three years humans must reside in the country as permanent residents prior to applying for citizenship. We are unaware of any naturalised species in the present SARA list, although if the European starling, *Sturnus vulgaris*, ever suffered a severe population decline, it would presumably qualify.[2]

Moreover, the definition ventures much further down the taxonomic levels of biology than the name of the Act—*species* at risk—might suggest. Calla Raymond and colleagues comment that, while COSEWIC's determination of the appropriate 'Designatable Unit' (DU) of conservation may be ecologically valid, its guidelines are 'subjective', thus 'subject to uncertainty and debate' (Raymond et al. 2018, p. 74). In a later section, we ask if the geopolitical boundary influences, in subtle ways, COSEWIC's decisions about Dus, over and above ecological considerations. Finally, we might also note that the definition excludes feral species by invoking a questionable conception of being 'wild by nature' that receives no further definition in the Act.

By contrast with the Preamble, the statutory definition of the 'Purposes' (Section 6) of the Act is restrictive:

> The purposes of this Act are to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.

Following Heise (2016a), we would say that the SARA closely follows the US Endangered Species Act (ESA) in putting conservation of individual species at its centre, rather than objectives such as biodiversity, German *Landschaft* ('landscape'), or the rights of *La Madre Tierra* ('Mother Earth'), as in Bolivia. Whereas the EU's Natura 2000 scheme aims to preserve habitats, and the species that live in them as a consequence, the ESA added protection of a listed species' 'critical habitat' as a later amendment, while the SARA included designation of critical habitat in the law from the outset as part of a 'recovery action plan' (Sec.49, 58) (Heise 2016b). However, as Andrea Olive shows in a helpful comparison of the two laws in relation to key issues, the ESA mandates the US Fish and Wildlife Service (USFWS) to designate habitat at the same time a species is listed, whereas the SARA assigns critical habitat listing to the later 'recovery strategy' phase (Olive 2014b). Moreover, the SARA's categories of endangerment and assessment methodology map onto those of the IUCN Red List, as we discuss below, whereas the ESA employs its own categories.

The perennial tension between federal and provincial jurisdictions is clearest when the Act sets out 'Measures to Protect Listed Wildlife Species'. Section 32 states that 'No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species.' However, because federal law only applies to federal species, or on federal land within provinces, Section 34 immediately withdraws the application of Section 32—unless 'the Minister is of the opinion that laws of the province do not effectively protect the species...' (Section 34.3), in which case they 'must recommend' (Section 34.3) to the Governor in Council (i.e., the Crown's representative in Canada, the Governor-General) that a protection order be issued, thereby overriding provincial jurisdiction. As if to cool the impact of this incendiary provision, Section 36 commits the government to automatic protection on federal land

of any non-SARA-listed species that a territorial or provincial minister designates. This, somewhat comical, to and fro amounts to the federal government warning the provinces that they *could* pull rank . . . but they *won't* . . . but they *might.* As a matter of fact, the SARA's power to impose an emergency order (Section 80) has been invoked twice: in 2013, to protect remnant populations of the Greater Sage-Grouse, *Centrocercus urophasianus*, in Alberta and Saskatchewan (ECCC 2013), and in 2016, to protect a subpopulation of the Western Chorus Frog, *Pseudacris triseriata* (ECCC 2016), an aquatic species. The latter is also the only example of critical habitat designation extending to private land. At the time of writing, the federal government has decided, against the advice of the Minister of Energy, Environment and Climate Change, Stephen Guilbeault, not to issue an emergency order that would overrule the provincial government and designate 120,000 hectares of additional critical habitat for the Northern Spotted Owl, *Strix occidentalis caurina*, of which just one individual survives in the wild in Canada (Cox 2023).

The provinces and territories have exercised their legislative authority in widely differing ways. A comprehensive survey of 'federal, provincial, and territorial laws' (p. 1044) pertaining to biodiversity identified no fewer than 201 pieces of legislation (Ray et al. 2021). British Columbia, for instance, has nine major statutes affecting species at risk, yet, in common with Alberta, Saskatchewan, Yukon, and Prince Edward Island, it has no standalone species-at-risk law. The list of 85 BC species protected under the province's Forest and Range Practices Act has not been updated since 2006 (Ministry of Environment 2006). Whilst Québec has enacted provincial legislation, separatist sentiment deters its governments from participating in federally coordinated initiatives such as the 1996 National Accord for the Protection of Species at Risk. Biologists had previously considered Ontario's 2007 Endangered Species Act (OESA) 'the best of its kind in Canada' (Bergman et al. 2020, p. 424) because listed species received automatic legal protection, and then the Progressive Conservative provincial government elected in 2018 'reformed' the ESA to lessen its powers. British Columbia's left-wing New Democratic Party government pledged, in 2018, to replace the province's 'inadequate patchwork of legislation' (Westwood et al. 2019, p. 138) with a single law, but the 'consultation' is still ongoing. In the meantime, the BC Wildlife Act (1982), the Land Act (1979), the BC Forest and Range Practices Act (2002), together with a 2005 federal–provincial agreement, govern conservation in the province (Cruickshank 2022). This example underscores that 'Biodiversity [in Canada] is formally protected and managed through a bewildering array of policy instruments administered by different levels . . . or scales of government' (Ray et al. 2021, p. 1045).

Having provided a textual analysis of the SARA, we now quantify the differences between its Schedule One list of at-risk mammalian dUs (i.e., species, subspecies or populations), the global IUCN Red List, and the species protected by America's ESA. This granular analysis complements the overview of Raymond et al. (2018), which scores all 729 dUs in Schedule One (as of 2017) in relation to their 'IUCN threat category' only, and Thornton et al. (2018), which quantifies 'asymmetric protection' of 'peripheral transboundary species (PTS)' in three taxa across the US–Canada and US–Mexico borders. Our study is limited to and focused on mammals (including marine) because of their high mobility, over other taxa. We acknowledge that this in itself is a form of taxonomic bias, as is often reflected in conservation or in scientific studies. Still, we consider mammals sufficiently representative because they are mobile animals that can move across the 49th parallel (marking most of the terrestrial border) with relative ease. Considering the two nations' vast size and contiguity, and the conspicuous arbitrariness of the geopolitical boundary at the 49th parallel of latitude, we might expect a great deal of overlap between the SARA, the ESA and the IUCN Red List, when, in reality, discontinuity prevails.

3. Methods

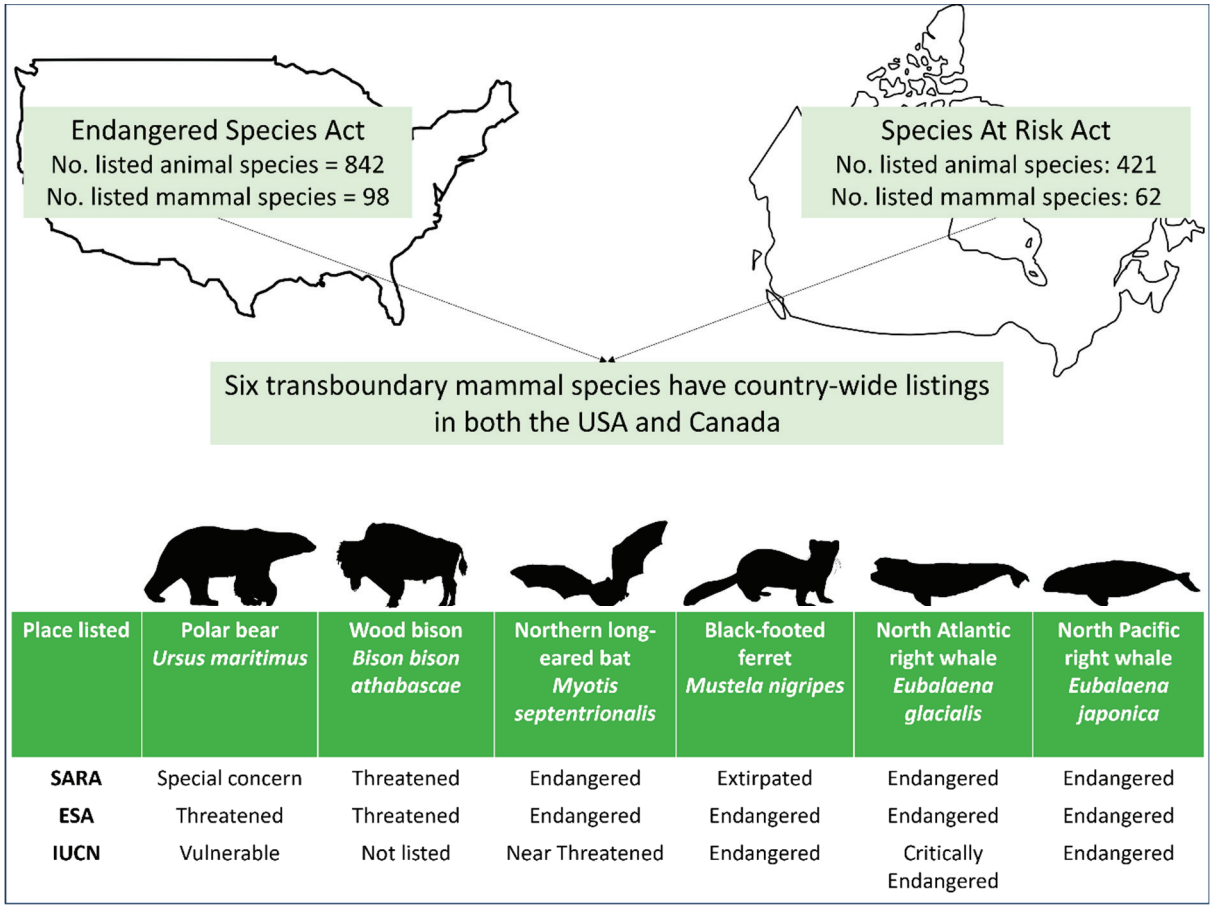
To investigate the current status of species with transboundary distributions across the US–Canada border, lists of species-at-risk were obtained from the Canadian Species At Risk Act (SARA 2002) and the USA's Endangered Species Act (USFWS 1973) and National Oceanic and Atmospheric Administration for aquatic species (NOAA 2023). Initially, a count of all listed species was obtained for comparison, and then specifically for mammal species, subspecies and populations—specific populations (designatable units (DUs) in Canada and distinct population segments (DPS) in the USA) are sometimes listed as opposed to the whole species at a country-wide level. We extracted the name and status of each mammal species or subspecies (e.g., endangered or threatened; see Supplementary Table S1 for all potential statuses) for each country. Additionally, we obtained the relevant IUCN classification for each of these species for comparison (IUCN 2023). We used NatureServe Explorer (NatureServe 2023) to check whether species and subspecies distributions were transboundary or only found on one side of the US–Canada border. We identified those species and subspecies with transboundary distributions which were either (a) listed as a species-at-risk on both sides of the border or (b) only listed on one side of the border.

The epistemic culture of biology expects statistical tests to be applied wherever possible. Thus, to test whether the USA and Canada share similar overall numbers of endangered and threatened mammal species with country-wide listings (i.e., excluding those only listed for a specific population), we used a chi-squared test for independence on the count of species in each category using R v4.3.0 (R Core Team 2022).

In addition, to provide a regional example of how federal species-at-risk listing aligns with provincial or state assessments, we extracted a count and details of the mammal species listed in the British Columbia (Canada) Red, Blue and Yellow lists (CDC 2023), and the Washington (USA) State-Listed Species (WDFW 2023). These are both provincial/state-level lists of species and subspecies at particular risk in those regions. We first compared whether the species listed at a federal level (SARA or ESA/NOAA) were also listed on a regional level, and then identified any species that are listed at a regional level but not in the SARA or ESA lists. Regional listings, we must recall, have different political significance on either side of the border. Under the ESA, the Secretary for the Interior is allowed to delegate authority to a state government, 'but only if states first demonstrate that their programs meet federal standards', whereas the SARA effectively requires the federal government to 'justify its involvement' (Illical and Harrison 2007, p. 383).

4. Results

There were 62 mammal listings in the SARA (including species, subspecies and specific populations), and 98 under the ESA (including species, subspecies and distinct population segments (DPS)). Of those mammals listed in the SARA, just over half (n = 34) were listed at a country-wide level i.e., having the same level of risk across the whole of Canada; only six of these species were also listed at a country-wide level under the ESA (Figure 1). The count of endangered and threatened species listed in each country at a country-wide level was statistically similar (χ^2 = 1.2, df = 1, p = 0.274). In addition, two species were listed at a country-wide level in Canada but only for a specific subspecies in the USA (Table 1): sea otter, *Enydra lutris* (*keyoni* and *nereis* ssp.), and mountain beaver, *Aplodontia rufa* (*nigra* ssp.). The Steller sea lion, *Eumetopias jubatus,* was listed at a species level in Canada but only for a specific population (western DPS) in the USA (Supplementary Table S2). Five species were listed at a country-wide level in the USA but only at the population level in Canada, while five species were listed at the population-level in both countries (Supplementary Table S2).



Place listed	Polar bear *Ursus maritimus*	Wood bison *Bison bison athabascae*	Northern long-eared bat *Myotis septentrionalis*	Black-footed ferret *Mustela nigripes*	North Atlantic right whale *Eubalaena glacialis*	North Pacific right whale *Eubalaena japonica*
SARA	Special concern	Threatened	Endangered	Extirpated	Endangered	Endangered
ESA	Threatened	Threatened	Endangered	Endangered	Endangered	Endangered
IUCN	Vulnerable	Not listed	Near Threatened	Endangered	Critically Endangered	Endangered

Figure 1. The number of animal and mammal species listed under the SARA (in Canada) and ESA (in the USA) are outlined, as well as the number of mammal species with both transboundary distributions and country-wide listings in Canada and the USA. Only six mammal species meet these criteria i.e., the whole species is listed across the entirety of the country, not just a specific population. Specific listings for each of these six species under the SARA and ESA are indicated, as well as their corresponding IUCN classification (if applicable).

Overall, there were 20 transboundary mammal species that were only listed in one country (17 listed under SARA, 3 under the ESA; Table 1). Additionally, five species had one or more DPS listed under the ESA where the species' range extends into Canada, but the species was not listed under SARA: Gray wolf, *Canis lupus*, Northern sea otter, *Enhydra lutris kenyoni*; Fisher, *Pekania pennanti*; Bearded seal, *Erignathus barbatus;* and Ringed seal, *Pusa hispida*. The majority (63%) of endangered species and species of special concern in Canada were not listed in the USA, and of these 53% were assessed as of least concern or not listed under the IUCN Red List (Table 1; Figure 2). There were clear disparities and misalignment in designation at every level under the SARA and ESA, with none of the designations showing complete uniformity across the border (i.e., each category branched at least once (Figure 2).

Table 1. The status of mammal species with distributions in both Canada and the USA and which are listed in at least one country (either under the SARA or ESA). Corresponding IUCN classifications are also shown at a species level. Only country-wide species or subspecies listings are included (i.e., instances where a specific localised population is listed are excluded). Listings in italics indicate where a species or subspecies is listed under both the SARA and ESA. '*' indicates where a specific, named subspecies is listed in one country rather than the species.

Species	SARA	ESA	IUCN
Pallid bat *Antrozous pallidus*	Threatened	Not listed	Least Concern
Black-tailed prairie dog *Cynomys ludovicianus*	Threatened	Not listed	Least Concern
Ord's kangaroo rat *Dipodomys ordii*	Endangered	Not listed	Least Concern
Spotted bat *Euderma maculatum*	Special Concern	Not listed	Least Concern
Wolverine *Gulo gulo*	Special Concern	Not listed	Least Concern
Sowerby's beaked whale *Mesoplodon bidens*	Special Concern	Not listed	Least Concern
Woodland vole *Microtus pinetorum*	Special Concern	Not listed	Least Concern
Haida ermine *Mustela haidarum*	Threatened	Not listed	Not listed
Little brown myotis *Myotis lucifugus*	Endangered	Not listed	Endangered
Collared pika *Ochotona collaris*	Special Concern	Not listed	Least Concern
Tri-coloured bat *Perimyotis subflavus*	Endangered	Not listed	Vulnerable
Western harvest mouse *Reithrodontomys megalotis (dychei)*	Endangered *	Not listed	Not listed
Eastern mole *Scalopus aquaticus*	Special Concern	Not listed	Least Concern
Townsend's mole *Scapanus townsendii*	Endangered	Not listed	Least Concern
Pacific water shrew *Sorex bendirii*	Endangered	Not listed	Least Concern
Grey fox *Urocyon cinereoargenteus*	Threatened	Not listed	Least Concern
Swift fox *Vulpes velox*	Threatened	Not listed	Least Concern
Canada lynx *Lynx canadensis*	Not listed	Threatened	Least Concern
Pacific marten *Martes caurina*	Not listed	Threatened	Least Concern
Sperm whale *Physeter macrocephalus*	Not listed	Endangered	Vulnerable
Mountain beaver *Aplodontia rufa (nigra)*	Special Concern	Endangered *	Least Concern
Sea otter *Enhydra lutris (kenyoni)*	Special Concern	Threatened *	Endangered
Sea otter *Enhydra lutris (nereis)*	Special Concern	Threatened *	Endangered
Polar bear *Ursus maritimus*	Special Concern	Threatened	Vulnerable
Wood bison *Bison bison athabascae*	*Threatened*	*Threatened*	*Not listed*
Northern myotis *Myotis septentrionalis*	*Endangered*	*Endangered*	*Near Threatened*
Black-footed ferret *Mustela nigripes*	*Extirpated*	*Endangered*	*Endangered*
North Atlantic right whale *Eubalaena glacialis*	*Endangered*	*Endangered*	*Critically Endangered*
North Pacific right whale *Eubalaena japonica*	*Endangered*	*Endangered*	*Endangered*

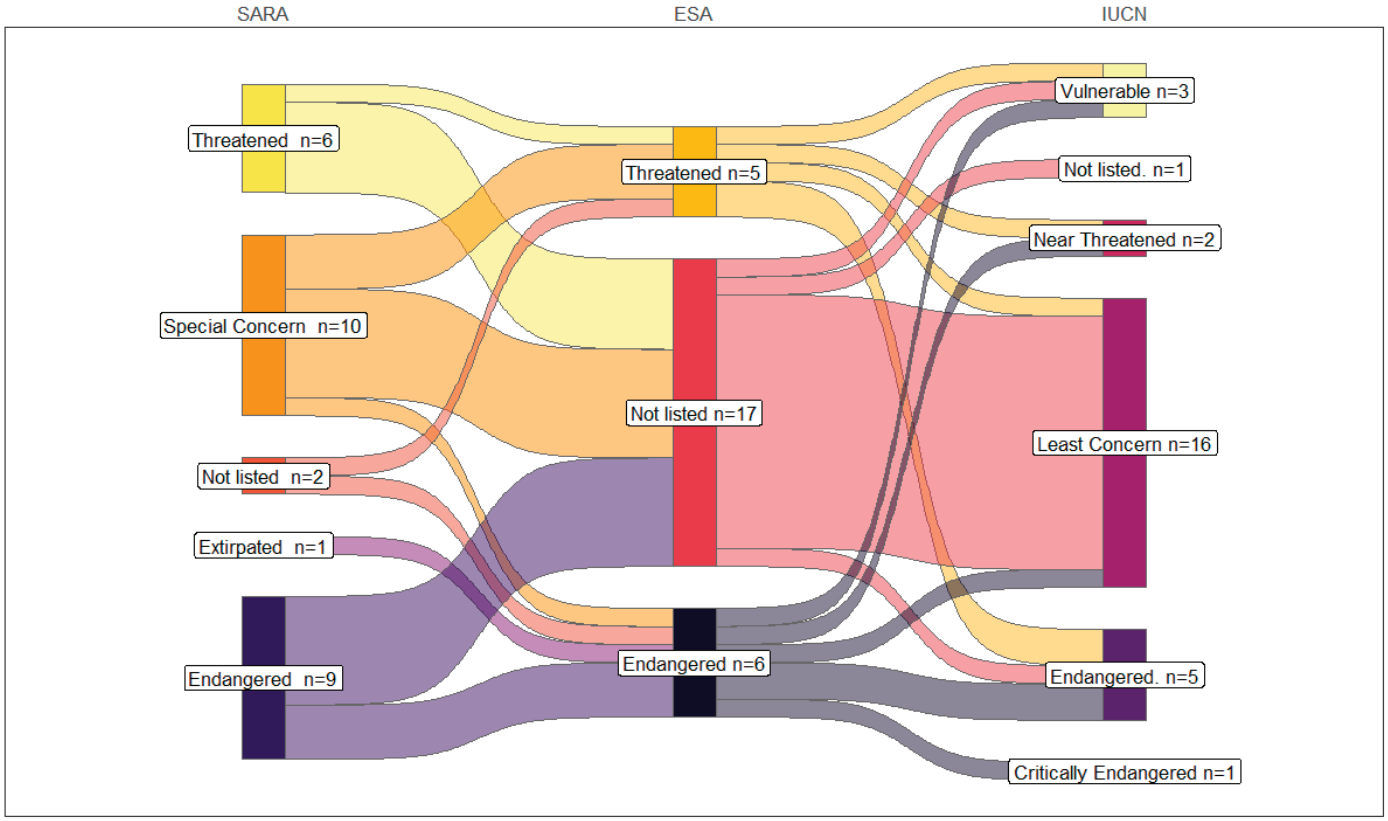


Figure 2. The relationship between the at-risk status of mammal species in Canada ('SARA'), the US ('ESA') and globally according to the IUCN. Only mammal species and subspecies which are listed as at-risk on at least one side of the US–Canada border are included, and only if they are listed at a species or subspecies level (not for a specific population or DPS). All IUCN classifications are at a species level. 'Not listed' means that the species or subspecies occurs in that country but is not considered as at-risk, or, if written above 'IUCN' on the x-axis, it means that the species does not have an IUCN classification. Colours are used to aid with interpretation and to follow connections between the different listings and levels of protection. Branching indicates discrepancies between species-at-risk classifications across the three lists: SARA, ESA and IUCN.

Provincial-Scale

Of the 34 mammal species listed country-wide in SARA, there were only 2 subspecies that were found in BC but did not have a provincial classification in BC: the Western harvest mouse, *megalotis*, of subspecies *Reithrodontomys megalotis megalotis*, and Nuttall's cottontail, *nuttallii*, of subspecies *Sylvilagus nuttalli nuttalli*. Both subspecies were listed as of special concern under the SARA but were not featured at a subspecies level on any BC species lists (Supplementary Table S3). The remaining 32 species either had BC classifications or do not currently have distributions in BC, so were not listed. Interestingly, there were also 16 mammal species, subspecies or distinct populations with designations on the BC Red List that were not listed at a country-wide scale in the SARA (Supplementary Table S3). Similarly, there were 20 mammal species or subspecies on the BC Blue List that are not listed in SARA.

The lack of alignment between provincial and federal listings in Canada is not replicated in the USA. All ESA-listed mammal species whose distributions extend into the state of Washington were also listed in the Washington State Listed Species (n = 12; Supplementary Table S4), and there were just two species and three subspecies listed in Washington that were not listed in the ESA (Supplementary Table S4); for example, the Cascade red fox, *Vulpes vulpes cascadensis*, is endangered and endemic to Washington, whilst the Western

gray squirrel, *Sciurus griseus*, is threatened in Washington but its distribution extends into other US states too.

5. Discussion

The ESA and SARA have formed the basis of wildlife conservation and protection on either side of the US–Canada border for the last 50 and 21 years, respectively. Both pieces of legislation take a species-centred approach, prioritising the listing of species vulnerable to extinction and endangerment, in order to try and reduce human impacts on these species and encourage conservation efforts to restore populations. Two previous studies of transboundary species (Raymond et al. 2018; Thornton et al. 2018) identify discontinuity of conservation status across the US–Canada border, as we do, but derive quite different conclusions from the data, as discussed below. In this study, we reveal that the vast majority (69%) of listed mammal species with transboundary distributions are only protected on one side of the border. Six species currently have listings on both sides, of which only four have equivalent statuses. We also highlight the discrepancy between federal and provincial/state-protected mammal species listings in Washington and BC, which is much greater in Canada than in the USA. All but 2 species listed in the SARA and ESA are also included in these more localised lists; however, 5 additional species or subspecies are listed locally in Washington, and 36 in BC, which are not listed federally. Here, we discuss two categories of explanation for the discrepancy: methodological and political–institutional.

5.1. Differences in Listing Methodology and Terminology

Variation amongst species listings seen in this study could be ascribed to distinctive differences in listing methodologies and terminology across country and state/provincial borders. For example, COSEWIC bases its recommendations for classification on the quantitative criteria prescribed by the IUCN Red List (IUCN 2022; SARA 2002). In addition to providing transparency and facilitating comparisons across geopolitical boundaries, adoption of the IUCN criteria reflects Canada's vocal commitment to liberal internationalism. However, there are differences: there is no equivalent to the IUCN's 'Least Concern' category, Schedule 1's 'Extirpated' extends a term from island biogeography to the level of the nation-state, and the IUCN's 'Threatened' and 'Critically Endangered' categories align most closely to 'Special Concern' and 'Endangered' in Canada (Dorey and Walker 2018; McCune et al. 2013; Turcotte et al. 2021).

In contrast, the ESA only relatively recently (in 2016) adopted a Species Status Assessment Framework (Smith et al. 2018), which prescribes a series of steps for assessing a candidate species' ecology and life history, the current condition of a species' habitat and distribution, and predictions into the future. Although the ESA's framework has a definite procedure, it does not share the same specific numeric criteria as the SARA and IUCN. Additionally, whereas Canada entrusts assessments to an independent expert body, COSEWIC, which is expected to incorporate 'aboriginal traditional knowledge' (Section 15:2, 16: 2), a comparable organisation does not exist in the US (Waples et al. 2013). Instead, the status of species is assessed by employees of the USFWS and NOAA, or, in some cases, determined by lawsuits. On a more localised scale, the BC species-at-risk list uses different criteria to SARA, adopting the NatureServe methodologies and categories instead, which may contribute to the disparity between it and SARA's Schedule 1. NatureServe, a North American non-profit, has its own 'Rank Calculator' and uses different category names to those used by the IUCN (and SARA); however, there is some overlap in its methods, with a focus on, for instance, 'area of occupancy' and 'range extent'. Indeed, NatureServe ranks are often used to inform IUCN Red List assessment in relevant regions (Master et al. 2012).

Terminological differences may also explain some of the variation in status for transboundary species between both the US and Canada and between federal and provincial or state listings. For example, the definitions of 'Endangered' and 'Threatened' differ slightly between the SARA and ESA. An endangered species under the SARA is defined as 'a

wildlife species that is facing imminent extirpation or extinction', whereas, under the ESA, an endangered species is classed as 'a species in danger of extinction throughout all or a significant portion of its range'. The use of the word 'imminent' in the SARA suggests that a species will only be classified as endangered if it is right on the brink of becoming locally or more widely extinct, rather than if it could be subject to a future, albeit real, threat. There is, however, no temporal element to the ESA definition. Similarly, specifying that 'a significant portion' of a species' entire range, within and beyond the USA, must be imperilled for species under the ESA to be classified as endangered, leads to potentially differing interpretations of what constitutes 'significant' (Waples et al. 2013). SARA's most idiosyncratic feature is its 'Special Concern' category, which identifies species considered 'sensitive to human activities or natural events' without meeting the criteria for higher classification. The ESA has no direct equivalent; its list of 'Candidate species' merely includes species awaiting assessment.

American and Canadian endangered species laws emerge out of distinct political cultures, as Illical and Harrison (2007) show, and they are implemented by institutional actors, such as the USFWS, within broader cultural contexts that strongly influence their impact. The enormous power of the US federal government to mandate conservation, buttressed by control of a vast land base, has been challenged repeatedly by the kinds of rebellion that US culture mythologises, notably the 'war in the woods' during the 1980s and 90s over the listing of the spotted owl, *Strix occidentalis caurina*, in the Pacific northwest. Canada, a settler-colonial nation founded on the basis of loyalty to the British Crown, is known for having a less confrontational political culture, and a more deferential citizenry. Whereas the 1776 Declaration of Independence cites 'Life, Liberty, and the pursuit of Happiness' as 'inalienable rights', the 1867 British North America Act, the constitution of the Dominion of Canada, empowers parliament to maintain 'peace, order, and good government'. This collaborative political culture informs both the text of the SARA, as we have seen, and the lack of controversy attending its implementation to date.

Furthermore, classificatory terminology, along with the methods that determine its application, may aim at universality, but they gain legitimacy and are operationalised in conservation thanks to what Sheila Jasanoff (2005) calls 'civic epistemologies', which she defines as follows:

> the institutionalized practices by which members of a given society test and deploy knowledge claims used as a basis for making collective choices. Just as any culture has established folkways that give meaning to its social interactions, so I suggest that modern technoscientific cultures have developed tacit knowledge-ways through which they assess the rationality and robustness of claims that seek to order their lives; demonstrations or arguments that fail to meet these tests may be dismissed as illegitimate or irrational. (p. 255)

We are not in a position, here, to undertake a full comparative analysis of conservation science and law in terms of the following six dimensions listed by Jasanoff (2005): (1) the dominant participatory styles of public knowledge-making, (2) the methods of ensuring accountability, (3) the practices of public demonstration, (4) the preferred registers of objectivity, (5) the accepted bases of expertise, and (6) the visibility of expert bodies.

It is arguable, though, that the over-powered sanctions built into the ESA, and the fierce resistance encountered on occasion by its enforcer, the USFWS, has engendered a relatively conservative approach to species listings. They have certainly spawned a wealth of creative ways, including habitat conservation plans, safe harbour agreements and candidate conservation agreements, to avoid punishing American landowners (Olive 2014b). If the USFWS declines to act, as in the case of the spotted owl, American environmental organisations may take it to court to hash out competing knowledge claims. This transparent, pluralistic, adversarial style of knowledge production contrasts with Canada's consensus-seeking approach, which values expert rationality (including aboriginal knowledge, at least in principle) and negotiations behind closed doors. While some Canadian scientists argue that effective conservation requires more technocratic, coercive

legislation (Westwood et al. 2019), it is possible that BC and COSEWIC scientists list far more species than their colleagues down south precisely *because* their determinations make less difference. Moreover, as we note above, determinations of designatable units (DUs), including distinctions between genotypes, are not wholly objective. In the absence of motivations not to define DUs that lie within the scientists' geopolitical sphere of influence, it seems plausible that unconscious national or provincial bias influences their decisions.

In a 2004 paper, the forest scientist Fred Bunnell argued that the NatureServe methodology then used to develop the BC Red and Blue lists had a bias towards listing 'peripheral species', i.e., those existing at the edge of their range (Bunnell et al. 2004). He noted the 'plethora of peripherals' (p. 4) in the provincial lists, which he attributed to the following two factors: the mountainous topography of the province, which 'encourages small extensions of species that are more abundant elsewhere' (Bunnell et al. 2004), and 'unacknowledged correlates among features producing the rankings'. As he observed, 'Local rarity, low viability, erratic trend, small population size, and small ranges are natural characteristics of peripheral populations', which may be misidentified as endangered. The NatureServe methodology was revised in 2012 to minimize this bias (Master et al. 2012)—and yet the preponderance of peripheral species remains, as we have shown.

Bunnell also criticized the conservation of peripheral species in the following, pungent, terms:

Efforts to conserve species that are locally rare but globally common often simply ignore the ecologically marginal nature of habitat and population. They engage in a fight with nature. As well as being wasteful, this fight confronts common sense. Consider the fact that, had the United States prevailed in the "fifty-four forty or fight" (54°40′) argument of 1846, Sage Thrashers (*Oreoscoptes montanus* Townsend) and White-headed Woodpeckers (*Picoides albolarvatus* Cassin) would not be "critically imperiled" in British Columbia, but Pacific Tree Frogs (*Pseudacris regilla* Baird and Girard) and Brewer's Blackbirds (*Euphagm cyanocephalus* Wagler) would be. That change of status would have occurred with no change in abundance or distribution of the species.

Bunnell later coined the term 'jurisdictional rarity' (p. 79) to describe peripheral populations marooned on the wrong side of a geopolitical border, but abundant elsewhere (Bunnell et al. 2009). Whilst the 2009 Conservation Framework he developed for the BC government includes, as Goal 3, the maintenance of 'the full diversity of native species and ecosystems', it is put in the balance with the province's responsibility to protect globally endangered and endemic species (Goal 1) and practice preventive conservation (Goal 2). Bunnell is clear that Goal 1 implies greater 'stewardship responsibility' than Goal 3.

5.2. Cross-Border Conservation and Jurisdictional Rarity

Biologists argue that differences in conservation legislation and species' listings between countries, particularly those that exist on the same land mass without physical borders, act as a hindrance to species protection and conservation goals (Dallimer and Strange 2015; Titley et al. 2021). Species may face persecution on one side of a political border, but not the other, potentially coming into danger if they have shifting or migratory distributions. This is particularly relevant in light of future uncertainties regarding the climate crisis and predicted changes in species distributions as a result of warming temperatures. Species are expected to shift poleward as a result of increasing global temperatures (Chen et al. 2011), potentially resulting in the crossing of international borders, and the establishment of populations in previously unoccupied areas. As a result, the issue of transboundary conservation only becomes more complex, and differences in legislation could have an impact on whether a species is able to successfully establish in new environments (Pecl et al. 2017; Rüter et al. 2014; Thornton et al. 2018).

Such flagship cross-border efforts as the Y2Y Yellowstone to Yukon Conservation Initiative (https://y2y.net/; accessed on 15 December 2023) show that collaboration is possible, albeit hampered by the cultural, legal and political discontinuities discussed above. More typical, perhaps, is the radio silence that Andrea Olive (2014c) found between,

in this case, USFWS officials in Ohio and their counterparts in Ontario, both of whom were trying to save the Lake Erie water snake (*Nerodia sipedon insularum*). The American population of the water snake was listed under the ESA in 2003, regulations (including on private property) were introduced, recovery goals were set and met—largely because an invasive fish provided a new food source for the snake—and the snake was delisted in 2011. On the Canadian side, COSEWIC listed the snake in 2006, and assembled a federal recovery team, but 'no recovery or action plan was ever created' (Olive 2014c, p. 49). Whilst the Ontario Ministry of Natural Resources (OMNR) also listed the snake under the OESA, imposing restrictions on dock building and the use of pesticides on the Pelee Islands in Lake Erie, it also failed to publish a recovery plan. COSEWIC eventually delisted the water snake in 2015. During her 2007 fieldwork, Olive found her American respondents were familiar with state and federal conservation officials, whereas the Canadians had seldom seen an OMNR officer. Both sides, though, said they had seen lots of water snakes, which drastically affected their sense of the legitimacy of conservation. Amazingly, there had been 'virtually no communication' about the snake, even though the islands were just five miles apart. In addition to the limited capacity of Canadian authorities to undertake assessments, Olive wonders if the snake continued to be listed in Canada because of the geopolitical boundary: 'It is as though the border creates endangered species by limiting the species' habitat' (Olive 2014a, pp. 3–24).

Two recent studies of peripheral species underscore both the lack of transboundary coordination and biologists' conflicting assessments of jurisdictional rarity (Raymond et al. 2018; Thornton et al. 2018). Reviewing 729 dUs (species, subspecies and populations) in SARA's Schedule 1, Calla Raymond and colleagues cross-referenced those with Action Plans—a proxy for conservation priority—with the IUCN Red List and ESA. They find that 'subspecies units and peripheral populations of globally secure species are being given high priority, while endemic and globally endangered species are neglected' (p. 77). The red mulberry, *Morus rubra*, for instance, is common throughout the USA, yet is listed as endangered in both Schedule 1 of the SARA and the OESA because it survives in fragments of forest in southern Ontario. While the authors acknowledge that there may be compelling reasons to conserve peripheral populations in some instances, they conclude that scarce conservation resources in Canada—starkly illustrated in the case of the water snake above—mandate that 'the full, endemic threatened species for which a jurisdiction bears the sole responsibility must be the highest priority, and that globally threatened species should also be given high priority' (Raymond et al. 2018, p. 78).

Daniel Thornton and colleagues use a different methodology to compare the federal legal conservation status of peripheral transboundary mammals, birds and herpetofauna (PTS) in Canada, Mexico and the USA (Thornton et al. 2018). They, too, find 'asymmetric protection' where 'Peripheral range segments were protected at a higher rate than core range segments as a percentage of the total number of PTS (22% vs. 2% for US–CA . . .)' (p. 4). However, their conclusion is quite different. They note approvingly that the listing bias for Canadian PTS might protect species as they migrate northward in response to climate change. They also observe that Mexico is more likely to list PTS, despite its southern location, and furthermore that climatically induced migration is not a criterion for listing in Canada. Thornton et al. (2018) take for granted the 'high conservation importance' (p. 2) of peripheral populations, ignoring both the natural constraints highlighted by Bunnell and the problem of jurisdictional rarity.

6. Conclusions

We have seen that, while the SARA conveys expansive motivations for conservation, in practice it adopts a species-centred approach modelled on the ESA. At the same time, the Canadian constitution, political culture, and paucity of resources relative to the nation's enormous land mass render the legislation relatively ineffective in its direct application. The apparent scale of the problem is exacerbated by the marked tendency for COSEWIC and its provincial equivalents to list peripheral species that are, in many cases, globally

secure. Ecosystems such as the Okanagan shrub steppe and the Carolinian forest, which happen to lie within Canada's borders, are typically identified as 'biodiversity hotspots' where conservation is considered a priority rather than, as Bunnell might have it, 'a fight with nature' (Bunnell et al. 2004). Oddly, while Canadian scholars seem repeatedly to rediscover jurisdictional rarity—neither Thornton et al. (2018) nor Raymond et al. (2018) cite any of Bunnell's publications—others ignore it entirely. For example, one of the changes made to the OESA by the Progressive Conservatives in 2019 was a requirement for the Committee on the Status of Species at Risk in Ontario (COSSARO) to consider the risk to a species 'across its entire geographic range, rather than focusing on its status within Ontario' (Bergman et al. 2020). Jordanna Bergman and colleagues criticise the change, citing their Carleton University colleagues Calla Raymond et al. and observing that extirpation of a peripheral population 'may... lead to the loss of unique traits that are potentially important for range expansion and adaptation to future conditions' (p. 425). However, they do not mention that 'peripheral populations can also be subject to gene swamping from core populations' (Bunnell et al. 2004; Raymond et al. 2018, p. 75), and they leave out the source article's critique of jurisdictional rarity. They therefore push for COSSARO to go back to classifying species 'based solely on their status in Ontario, as was formerly done'. Likewise, Alana Westwood and colleagues' proposal for a BC Species at Risk Protection Act (BCSARPA) recommends the automatic listing of provincially at-risk species, and automatic protection on Crown lands (i.e., 94% of the province), including 'B.C.-specific assessment' for 'designatable units or sub-populations in B.C. that are more at risk than their federal status indicates (e.g., red-listed species that are endangered in B.C. but only listed as of special concern in Canada)' (Westwood et al. 2019). In other words, they advocate an even more parochial system of listing and protection than presently exists. We agree with Thornton et al. about the desirability of improved cross-border collaboration, though we would observe that better alignment might come from the demotion or delisting of Canadian species, a possibility that they do not consider.

It is understandable that biologists might wish to circumvent politics by reserving for themselves the power to list endangered species and regulate activities that could harm them. Such technocratic proposals, though, fail to consider the crucial role of legitimacy in successful conservation. Olive points out that coercive 'command-and-control' approaches to conservation are not only impossible to enforce, but liable to create perverse incentives for landowners to shoot, shovel, and shut-up before authorities can step in. On the other hand, her research finds strong support for conservation across a wide range of constituencies in the USA and Canada so long as authorities adhere to 'procedural justice' in their listing and regulatory decisions (Olive 2014c). If Canadian or provincial authorities fail to address jurisdictional rarity—which might include explaining why Canadian populations of globally secure species should be protected—they risk provoking a legitimacy crisis. We recommend, therefore, that COSEWIC and its provincial equivalents incorporate jurisdictional rarity in their conservation categories according to agreed criteria, e.g., an endangered Canadian population that makes up <10% of the species' total range would be designated 'Endangered in Canada', and so on.

7. Reflections

This cross-disciplinary collaboration has enabled innovation in both results and presentation. Expert quantitative examination of mammals' conservation status in three databases confirmed the findings of previous studies (e.g., Raymond et al. (2018); Thornton et al. (2018)) that species listings do not align across the US/Canada border. Infographic presentation and tabulation has then made these findings immediately accessible (Table 1, Figure 2). Humanities methods are most conspicuous in the close reading of the SARA 2002, and its broad contextualisation within Canadian political and constitutional history, but they have also informed the treatment of scientific research itself. Just as biologists automatically include both the common and Linnaean name of a species in their text, social and natural scientists almost always cite sources as authorities, using parenthetical lists

of publications in order to support a claim within their own argument. Literary scholars, by contrast, consider all texts, including scholarly ones, as open to interpretation, hence requiring quotations as evidence for discussion. To a literature scholar, in other words, an article is more than its abstract. Our analysis is also informed by science and technology studies, a grouping of humanities and social science disciplines that treats science as a social practice shaped by—though not reducible to—its contexts, primarily geopolitical in this instance. STS scholarship suggests that humanists are often called upon to translate between, and attempt to integrate, the humanities with the natural and social sciences, as here.

In the natural sciences, bias is seen as something we aim to avoid or, ideally, to eradicate, by employing standardised methods in experimental design or by applying statistical methods post-hoc that account for or reduce bias. Consciousness of bias, and the methods that flow from it, allows scientists to make robust inferences from a given experimental design. Our analysis proposes a shift in thinking about bias. We have confirmed and extended Heise's insight that every jurisdiction embeds its distinctive cultural interests into its conservation laws, thereby imparting a positive 'bias' to scientific research and policy implementation within its ambit. Hence, whilst scientists undertake studies in good faith to answer particular questions in conservation, they may be unaware of structuring biases that skew or delimit their research *ab initio*. Humanities scholars, for their part, must be prepared to offer evidence that remains intelligible and compelling outside their own discipline, and to make actionable recommendations rather than taking refuge in mere critique. In this article, we show that bias-limiting methods can be productively combined with contextual reasoning and evidence, or, to put it another way, that 'political' considerations can enhance science, not just detract from it.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/h13010038/s1, Table S1: Definitions and sources; Table S2: Population-level listings; Table S3: Canadian federal vs. provincial listings; Table S4: American federal vs state listings. Department of Fish and Wildlife (2023), ECCC (2014), Harper et al. (1994), IUCN (2012), Office of Protected Resources (2023), USFWS (2017) are cited in Supplementary Materials.

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Conflicts of Interest: The authors have no conflicts of interest to declare.

Notes

1 In this paper we use this term as shorthand for 'humanities scholar'.

2 COSEWIC's definition of a 'native wildlife species' is more restrictive than the Act that the Committee implements: 'A wildlife species that occurs in Canada naturally, or that has expanded its range into Canada without human intervention from a region where it naturally occurred, has produced viable subpopulations, and has persisted in Canada for at least 50 years.' So starlings need not apply.

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humanities

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Article

Entangled Plumwoods: Stewardship as Grassroots Conservation Humanities

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Abstract: Hundreds of thousands of hectares of bushland and accompanying biodiversity were lost over a few short weeks during the Black Summer fires of 2019–2020 along the east coast of Australia. On the night of 19 December 2019, fire swept up the escarpment from the coast, slowed down with the thick understory of temperate rainforest and burnt through the lower dry sclerophyll forest on Plumwood Mountain. The aftermath of the bare, burnt landscape meant a significant change in the structure and diversity of vegetation, while the consequences of the fire also brought about fundamental changes to Plumwood as a conservation and heritage organisation. Plumwood Mountain as a place, the individual plumwood tree as an agentive being, Val Plumwood as a person and Plumwood as an organisation are all an entangled form of natureculture and indicative of a practice-based conservation humanities approach. Conservation as part of the environmental humanities can offer an alternative to mainstream models of conservation with the potential to instigate active participation on the ground, engaging in a different form of stewardship.

Keywords: Plumwood; fire; regeneration; natureculture; conservation humanities; entanglements; minimum interference; cultural burning

1. Introduction

Plumwood Mountain is a unique place in New South Wales, situated on a coastal escarpment with a canopy of different species of eucalypts, a forest grove containing rare Plumwood trees (*Eucryphia moorei*) amidst abundant tree ferns (*Antarctica dicksonia*) with threatened marsupials, such as a refuge population of greater gliders (*Petauroides* sp.) nesting within old canopy trees. A distinctive hexagonal stone cottage and garden is situated in the dense forest, home for over three decades to environmental philosopher Val Plumwood. She would sit and write, surrounded by the sounds of the forest, actively living her theory of breaking down dichotomies, striving instead for an entanglement between mind and body, nature and culture, theory and practice, rather than a hyper-separation between the two (Plumwood 2002).

The conservation humanities can be a means of not only theoretical and conceptual critique, but as I will illustrate below, has the potential to instigate active participation in conservation on the ground, as a means of caring for the land and as a form of environmental education. Engagement with heritage is important too, in terms of protecting indivisible cultural and natural inheritance with accompanying knowledge practices. Plumwood as an organisation includes a committee, largely made up of like-minded people working with the environment, conservation, humanities and the arts in relation to Plumwood Mountain as a place. Rather than a scientific-oriented species-specific approach to conservation, our perspective is based on environmental philosophy, while actively engaging in a different kind of ethics focusing on the care and nurturing of a more-than-human community. My intention is to use Plumwood as an exemplar for a practice-based conservation humanities approach with an emphasis on the importance of stewardship, instead of a dominating, capitalist perspective of ownership and control of distinct parcels of land. The aim is to

re-orient peoples' thinking in the recognition that we are all part of an interconnected ecosystem, while finding different ways to negotiate living with other species through a deep connection to place.

The following is a subjective narrative based on my experience participating and observing as a founding member of Plumwood Inc. Others involved with Plumwood would no doubt convey events differently based on their own subjective experiences. I have been an active member of the Plumwood executive for many years, including president of the organisation from 2019 to 2021, which has been separate from my usual anthropological research engaging with multispecies, visual and sensory ethnography in the Khangai of Mongolia and Arnhem Land in Australia. Here I describe the different entangled forms of Plumwood: Plumwood Mountain as a place, the plumwood tree as an agentive being entangled with a specific kind of tree fern, Val Plumwood as a person and Plumwood Inc. as a conservation and heritage organisation. Throughout this article, I refer to Val Plumwood as "Val" to avoid confusion between the other forms of Plumwood (Figure 1).

Figure 1. Val Plumwood next to a plumwood tree, entangled with a healthy tree fern, in the Plumwood Gully, 2 December 2004. Photo: Judith Adjani, digital copy passed on to the author.

2. A "Cool" or "Hot" Burn?

In late December 2019, I had been repeatedly checking Digital Earth Australia (DEA) and the Rural Fire Service's "Fires Near Me" application, as for the past few weeks, fires had burnt through Tallaganda, Budawang and Monga National Parks, devouring any bushland that surrounded the historic township of Braidwood where I live (an hour's drive from the Australian capital of Canberra). Orange dots were gradually filling in any area on the DEA map that had not yet burnt, as if filling in gaps on a jigsaw puzzle. Plumwood Mountain was one of the few areas of bushland that had not yet been filled in with orange dots indicating that it was on fire (Figure 2).

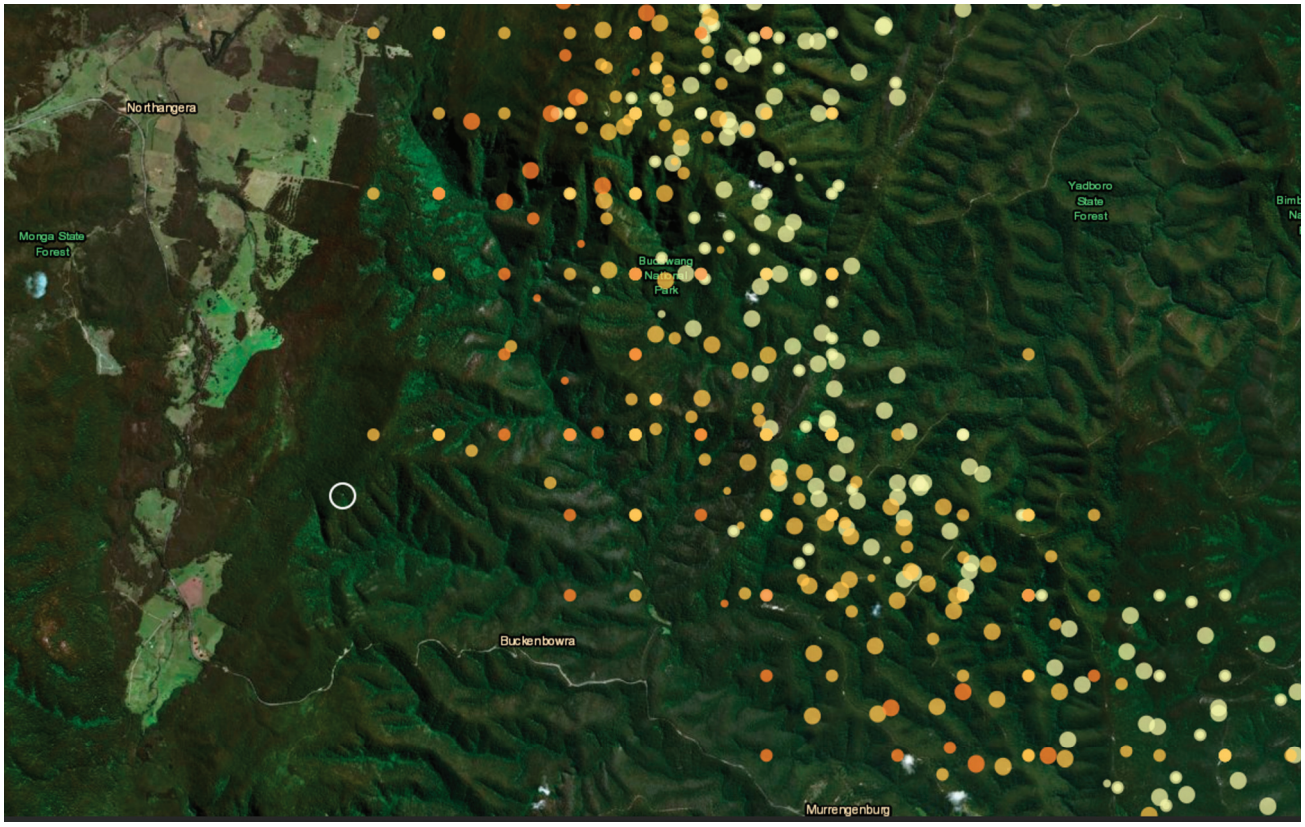

Figure 2. Screenshot from Digital Earth Australia with different coloured dots indicating the heat of the fire front (the clearing at Plumwood Mountain is indicated by a white circle added by the author), 6 December 2019.

Within email correspondence between committee members in early December, we expressed growing concerns about what may happen to Plumwood Mountain with fire approaching. I had already evacuated from my Braidwood home, after the historic township had narrowly missed burning down one evening. The town was only saved by the large number of fire trucks that arrived from surrounding areas to put out the numerous grass fires that kept sparking up from floating embers. I wrote to the committee with deep concern for the fate of Plumwood Mountain:

> *Plumwood is in very real danger within the next few days, until there's some rain. From the DEA map it looks like there are some spot fires, separate from the main fire front, very close to the Plumwood clearing. It's hard to tell how accurate these 'hot spots' are, but it doesn't look good. RFS [Royal Fire Service] have been notified that no one is currently up at Plumwood and they have the coordinates for the house and clearing . . . The road is closed down the Clyde, as the RFS are back-burning, presumably to stop the fire from crossing over the Kings Highway.*
>
> Email correspondence with the Plumwood committee, 6 December 2019.

The Black Range bushfire to the west and the Currowan bushfire to the east kept growing by the hectare over a period of seven weeks from late November 2019 until mid-January 2020, resulting in significant devastation to properties in the region.[1] The wind had been blowing like a hot furnace, fuelling a fire that had been left to increase in size within the Currowan State Forest for weeks to become a behemoth mega-fire, consuming more than a hundred thousand hectares.[2]

By the evening of 19 December 2019, National Parks staff conveyed via text that the fire was on the escarpment, only 500 m from the stone cottage up at Plumwood Mountain. We knew from our flurry of emails that fire was inevitable at this stage and all we could hope for was a "cool" rather than "hot" burn. I worried that the Gondwanan-era Plumwood Grove may have been decimated, even more so than the potential loss of the house and gardens in the clearing, as the ancient forest could never be replaced.

The fire built up momentum as it ripped up the steep 1000-m escarpment from the South Coast, splitting in three to be renamed the Clyde Mountain fire.[3] During the night, fire swept through much of the thick understory of temperate rainforest and through dry sclerophyll forest in lower areas. The burnt landscape I encountered afterwards was a dramatic change to the senses, in comparison to the dense and tangled forest I had encountered previously. The fire also brought about fundamental changes to the Plumwood committee that I had already been a part of for seven years prior to the fire. The catastrophic effects of climate change had been felt keenly along the east coast of Australia that summer, both bodily and psychologically, as hundreds of high-intensity fires burnt out of control, covering 24.3 million hectares.

3. The Plumwood Driveway: Between Hope and Despair

After the fires had abated, a local friend, who had been on the Plumwood committee previously, had been setting up feed and watering stations in Monga National Park. Once it seemed safe to head up the Plumwood driveway, he filled up a water tank on a trailer, and we added food for wildlife donated by the local supermarket, including sweet potatoes, corn, carrots, and fruit, as well as hay and birdseed. The local community had rallied together, and many in the Braidwood and even Canberra region coordinated together through word of mouth and social media to head out regularly to burnt locations to supply wildlife with food and water.

Even the gate posts were partially burnt as we entered the bush, which now consisted of a barren understory, transformed to a smooth, grey-brown crust of ash. We established feed stations with blue paddling pools to provide some water along the rough 2.4-km dirt track that leads from the gate on the main highway, through Budawang National Park, to Plumwood Mountain. I was relieved to see that the canopy of the trees on either side of the driveway was largely still alive. Precarious-looking burnt branches protruded out onto the road though, while whole burnt trees looked ready to topple in the next wind. After treading across the ash-covered surface, mindful to occasionally look up to avoid any potential falling limbs, I could see that all was not lost. When I dug not far beneath the crusty upper layer, the soil beneath contained matted roots. Even the occasional ant could be seen moving about, foraging. I was hopeful witnessing these few signs of life. In contrast, when I had gone to assist with the feeding of wildlife in Tallaganda State Forest, it had felt like another planet with no signs of life immediately above or below the surface, apart from one lone wallaby that was camping out at a food station with nothing else left to feed on. The eucalypts had begun to push out lime-coloured epicormic shoots through blackened bark. Those that later formed leaves on these shoots displayed beautiful hues of green, crimson, and blue (Figure 3). The eucalypts themselves were not happy though, as epicormic growth from the trunk is a sign of stress.

Figure 3. Eucalypts with epicormic shoots on the trunks, 14 February 2020. Photo: Natasha Fijn.

The part of the driveway which consists of dry sclerophyll forest on the lower, southern section was logged in the past, including evidence of old mine shafts, resulting in few large canopy trees. Val described such places that were used as extractive resources for logging, mining, hunting, or as general dumping grounds by humans as "shadow places", both metaphorically and literally the southern, darker side of slopes in comparison to more valued lighter, northern slopes (Plumwood 2008a). This southern part of the forest on either side of the driveway is now legally protected as a continuation of Budawang National Park, through earlier work as a committee through negotiations with the Roads and Maritime Service.[4] The higher and wetter temperate rainforest within the Plumwood Mountain section happened to escape being logged due to the steep escarpment and gullies, which means that the forest on the property remains more intact having retained large canopy trees, such as the dominant tall brown barrel (*Eucalyptus fastigata*).

I was shocked when we reached what we refer to as the "water meadow", a part of the driveway that requires driving across a water crossing. Even during the previous couple of years of drought with the water no longer flowing as a stream, thick grasses grew on the edges, but they had become charred stumps. Upon returning a couple of months later, I was amazed to find murnong (or yam daisy, *Microseris* spp.), triggered to sprout after the fire and now thriving without the competition of the larger native grasses. I enquired about the growth of the murnong with a Walbunja elder, as yams were an important staple food source for Aboriginal communities. He agreed that the location of the water meadow would be ideal for the cultivation of yams, sheltered by surrounding embankments and situated near the escarpment.[5] I could envisage Aboriginal families walking along the ridge of the escarpment with a view down to the South Coast, pausing to till, plant and harvest the murnong at the sheltered water meadow (before the land was demarcated by surveyors into separate private lots).

There is a point in the driveway that begins to markedly gain in elevation, where the soil lies on basalt rather than granite rock and the overlying vegetation changes to lush temperate rainforest. In the past, it was at this point that the track was often crowded in by protruding tree ferns. Evolutionarily, tree ferns are much older than flowering plants, such as eucalypts, as they date back to the Carboniferous era (300–360 million years ago) (Blair et al. 2017). Individual tree ferns may be older than the towering eucalypts above them, given that they too can live for more than 500 years. Previously I had misread tree ferns as fragile plants, relying on the moist temperate rainforest slopes through precipitation from the coast, yet they had survived and were responding vigorously after the fire. Vivid green shoots were unfurling from their amputated stumps (Figure 4).

Figure 4. Fern unfurling from a burnt-out stump, 5 February 2020. Photo: Natasha Fijn.

In the midst of tall canopy trees, the driveway crosses a small gully, which becomes a flowing stream only in heavy rain, and with this dampness allows for a scattering of plumwood trees and tree ferns. The uniqueness of the plumwood trees is why the place is named Plumwood Mountain and why Val changed her surname to Plumwood. Val derived her philosophy from a place-based perspective that was intrinsically connected with Plumwood Mountain and the more-than-human beings she lived amongst, including individual plumwood trees.

Plumwoods can reproduce through seedlings, as well as in vegetative form. Seedlings may just sprout up from the ground but often germinate upon landing on the matted central area of a soft tree fern (*Dicksonia antarctica*) and then send a root down to the ground. With the plumwood's roots exposed, entwined around the trunk of a tree fern, each grows to support the other. One plumwood may produce many trunks living on even after the initial mother tree has rotted back into the soil, allowing the genes of the same tree to keep growing for thousands of years. Val would take visitors to sit beneath one specific plumwood tree that she estimated had lived for over 3000 years.[6] She identified with different individual plumwood trees and particular tree ferns, as they grow with distinctive forms and shapes, "quite different even from trees in close proximity which face similar life conditions. This one twines curvaceous, animal-like limbs around a tree fern, while its neighbour has a wrinkled, knobbly animal face like a possum" (Plumwood 2005a, p. 68) (Figure 5).

Figure 5. Two individual tree ferns lying side by side, looking like a pair of pants. Even though the ferns had fallen over in the past, the leafy fronds are still growing, 29 July 2012. Photo: Natasha Fijn.

The fire had hungrily shot up the flammable bark of the large brown barrels, but it was a relief to see that the flames had only rarely reached the top of the canopy. Due to the smooth, mottled bark of the scattered plumwood trees, the fire had skipped over them, rather than lingering and devouring the trees. The lower tree ferns did not fare as well here, however, with one left as charred remains drooping over the still-living branch of a plumwood.

Charismatic superb lyrebirds (*Menura novaehollandiae*) live in this part of the forest. Plumwood Inc. has a small red four-wheel drive for carting tools and equipment up and down the driveway (removed from the property just before the fire swept through). As the vehicle would slowly bump along, a male lyrebird would often run across in front of the vehicle at a specific point in the driveway. I was looking out for him as we passed that point, but this time there was no familiar whistle or mimicking call produced by him.[7] All was silent.

Once we reached the last section of the driveway, where the land only a few metres beyond drops precipitously down the escarpment towards the New South Wales coast, sentinel trees were standing as a mass of dead wood. In the two months of serious drought before the Black Summer fire season, the trees on the escarpment had already been struggling for water and would have easily caught alight with little moisture remaining in their limbs. The tree ferns had looked under stress from the drought too. Their usual glossy, bright green fronds had curled up and turned a russet brown—it must have been like a tinderbox waiting to happen before the fire swept through.

As we arrived at the clearing, I looked for what should have been the corrugated iron roof of the shed, but instead of the usual structure, there was now a tangle of warped metal. We walked around to investigate what had burnt and what was left. A 3500-L plastic water tank had burst from the heat of the fire on the eastern side, morphing into a mess of melted plastic with more emerging from the ground here and there like tangled spaghetti, what were once water pipes leading to the hexagonal stone cottage. Even the hard ironbark timber beneath the roof was still remarkably intact. We later surmised that the burst water tank may have saved the wooden surrounds of the house from catching alight. I felt exhausted from the rollercoaster of emotions, fluctuating constantly between hope and then despair.

4. Val's Fire-Resistant Garden

In 1974, Val and her husband Richard Routley (who changed his surname to Sylvan, meaning "of the forest") began to dwell in a simple shed and philosophise together in a clearing in the Australian bush. Australian author Jackie French became firm friends with Val when she moved into the district around the same time as a young adult. Jackie helped Val and Richard build a hexagonal cottage out of stone. Both Val and Jackie were part of the "back to the land" movement of the early 1970s; as feminists, they wanted to engage with their physical bodies and minds.[8] Jackie described how Val would labour up the steep escarpment with stones in a backpack, while the practical artisanship of the stonemasonry for the walls was combined with lively discussion, written up by lamplight and sent off to form scholarly philosophical works (also see Mathews 2008, p. 318). In a short bio, Val described the topics of her writing as being about "animals, predation, gardens, ecology, forests and food 'from the inside', as a member of the food chain in a rich rainforest community of plants and animals near Braidwood" (Plumwood 2005a, p. 64) on Plumwood Mountain.

Val planted many different species of the native waratah (*Telopea* spp.) in her bush garden, a genus that produces huge flowers of brilliant red, yellow and white, including local Monga and Braidwood varieties (Figure 6). She tried to avoid invasive plants that would propagate in the surrounding bush and chose species that would be unpalatable to voracious wallabies, such as daffodils, while also selecting evergreen bushes that could act as a buffer against fire.

Figure 6. Example of one of the huge waratah flowers that were a feature of the garden in the clearing. Image taken during a working bee two months before the fire, 11 October 2019. Photo: Natasha Fijn.

Val wrote of her "de-colonised interspecies garden" (Plumwood 2005b, p. 8):

> *I have a mixed garden of local, native and exotic plants that mediate the space around my dwelling, a stone house I built myself from local stone with fire survival in mind. Gardens provide much more than appearance, visual beauty, vegetables and flowers. Appropriate deciduous trees mediate climate—providing summer shade, winter sun, and above all, in this context, some fire protection for the house. . . My objectives are to live in a mutually beneficial relationship with my surroundings, a mixed human-nonhuman community, an interspecies project.*

5. The Plumwood Committee

The conservation of Plumwood Mountain as a place stemmed from an active group of environmental and ecological humanities scholars. Between 2004 and 2008, as a PhD student at the Australian National University, I was part of an Ecological Humanities Group coordinated by Deborah Bird Rose and Libby Robin. A mentor for us all and an integral participant within the group was Val Plumwood, who unexpectedly passed away in February 2008.

By 2011, I had been missing the collegiality of the former ecological humanities group. George Main and I decided to organise an Ecological Humanities Gathering up at Plumwood Mountain. Anne Edwards had been informally mentored in environmental

philosophy by Val. She began to live up at Plumwood Mountain after Val's death, as Val indicated a wish for her to do so if anything happened to her. Anne, George and I subsequently became founding members of Plumwood, formed as an association in 2012 in order for a committee to function as stewards for the land on Plumwood Mountain (Figure 7). All initial members of the committee were engaged with the environmental (or ecological) humanities and Val's philosophical writing, but also felt a connection with Val as a person. [9]

Figure 7. One of the early working bees held during winter up at Plumwood Mountain, 29 July 2012. Photo: Natasha Fijn.

What appealed to me about becoming involved with the Plumwood committee from the outset was that there would be no one individual "owner" of the land and efforts would be towards saving an ecosystem, where combined naturecultures could be nurtured. As a committee, we were all participating as stewards for Plumwood Mountain and the continuation of Val's philosophical legacy (see, for example, Plumwood 1993, 2002, 2008a, 2008b, 2009).[10] What is different about an approach towards conservation from a humanities-based perspective is that the focus is not only on a single species, or at a population level, but can be about the recognition of the agency of individual beings, whether a single impressive, ancient plumwood tree; an individual skink responding to a human playing music; or an individual human that has a deep connection with place, such as Val.

We knew of another property in nearby forested Mongarlowe, where Australian poet Judith Wright (a friend of Val's) had set up cabins for visitors to write in a peaceful setting. She had gifted the bush property to a university in her will, but the university did not

want the responsibility of managing it, so the property was sold off. We were concerned about the possibility of Plumwood Mountain being sold off privately too when it had been Val's expressed wish to eventually turn the house and gardens into an educational space. Through the work of the committee, Plumwood Inc. took up the land title of the property in March 2014.

In 1996, Val was one of the first members of the public to sign a Voluntary Conservation Agreement (VCA) in New South Wales (the agreement for Plumwood Mountain was revised in 2002).[11] As Val stated soon after she had formed the VCA (Prest 1997, p. 17),

> *I think the liberal Lockean concept of private property is pretty iniquitous—it always struck me when I came here—that the kind of power I was given over the place was inexcusable. I could raze the whole thing. But you can't pick up an inch of soil here without it being occupied. You can see things squirming and jumping everywhere. The whole place is just packed and crammed with living things, and an incredible history of the earth. To think that I had the power to destroy it remains deeply shocking to me.*

As Val emphasised during her lifetime, we need to recognise that we are part of an ecology and that we are not omniscient; the land is not just a resource for human habitation and consumption. The "reasons" for wanting to conserve the property, and the key aspects Val intended to abide by, were outlined in an appendix to a Plan of Management within the VCA:

1. *In recognition of the Earth as a self-healing organism and with the intention to facilitate this healing process in as non-interventionist way as possible.*
2. *In recognition that the native non-human life of the land has as much claim to it as the human "owners".*
3. *In accordance with the principle that in our role as stewards of this land, it is imperative that we respect the significance it holds for Aboriginal people.*
4. *To provide an example to encourage other private landholders in conservation initiatives on a wider scale.*
5. *To support biodiversity and to acknowledge that people are dependent on and cannot survive without healthy ecosystems.*

These statements would have been forward-thinking environmentally for the time, particularly in Australian terms. Most VCAs are drawn up as legal documents with the accompanying government-oriented jargon that such agreements ordinarily contain. As a committee, we decided to establish Val's "reasons" and "purposes" as underpinning tenets for what we were trying to achieve as stewards for Plumwood Mountain.

As Val's intention was for Plumwood Mountain to work as an educational space, that became our intention too. Members of the committee had attended philosophy events that Val had organised, which included engaging outside with an open fire, singing and playing musical instruments. An important aspect of these gatherings for Val was that there was no division between theory and practice—environmental philosophy is to ideally be discussed outside, as a being in the world. With similar intentions, we coordinated a series of Plumwood Gatherings, where we featured speakers, such as John Blay (2015) and Dominic Hyde (2014).[12]

As a committee, we initiated an open access humanities journal, *Plumwood Mountain: an Australian and international journal of ecopoetry and ecopoetics*.[13] Committee member Anne Elvey was Executive Editor of the journal and a driving force for the first few years. Each of us similarly brought our own engagement with the place, depending on our interests; mine was documentation through video or photographs (Fijn 2014, 2016), while George Main's was the collection of material objects that belonged to Val as part of the development of a permanent environmental history exhibit at the National Museum of Australia.[14] We wanted scholars to be able to spend time writing on topics relating to the environment up at Plumwood Mountain, so we set up a network of places where writers could stay, known as the Bush Retreats for Environmental Writers (BREW) Network.[15] Just as Val had written some of her work at a forest desk with an impressive outlook through trees and down to

the coast, humanities-based environmental writers could spend time engaging with both body and mind away from the pressures of an urban existence.

We wanted to work on restoring Aboriginal connections with Plumwood Mountain. One of the key locations for plumwoods in the region is high up on the eastern side of Mount Gulaga (Mount Dromedary) on the South Coast, a sacred mountain for the Yuin Nation. Through the separate stands of plumwood trees at these two locations, I could see the potential to establish a cultural link between the two places. Aboriginal communities are known to connect with individual trees through a structured totemic kinship relationship in connection with clan land (Merlan 1982).[16] I invited an elder from the South Coast to come up to Plumwood Mountain, as she and her sister had coordinated workshops in the Braidwood area and had been teaching Dhurga language at the local primary school. This initial visit was fruitful, as she found evidence of stone tools from her knowledge of cultural heritage, indicating that her ancestors may have travelled along the top of the escarpment, perhaps using the clearing as a lookout point, using smoke to signal to family on the coast. The building of connections with Aboriginal community is a gradual process, however, as elders are often highly sought after for their cultural knowledge and community engagement.

There was a need for a separate space for writing residents, or for the caretaker to live in, that was separate from the communal space of the stone cottage. We spent a few weekends in 2019 holding working bees to renovate the dilapidated timber slab hut that Val and friends had originally built to house visitors. We spent many hours mixing a specific recipe of hemp with sand and lime and then hand-rendering the slurry onto the inside walls of the hut. The intention was that the insulating hemp render would make the hut warmer, but also allow writing residents to work in peace without encroaching native rats, venomous funnel-web spiders or snakes entering in the night. We just needed to put the finishing touches to the paint on the ceiling of the hut before the Black Summer fire season commenced.

I had also been in the process of setting up a separate multimedia residency in collaboration with PhotoAccess, a media arts organisation with a focus on photography, based in Canberra. As an extension of this initiative, I was about to run the first PhotoAccess "Forest Stories" course, including a field day up at Plumwood Mountain. I was driving back to my home in Braidwood from the ANU in Canberra toward the end of November 2019 when I could see that the Black Range was on fire (Greenwood 2019). A helicopter landed right near my car on the main highway, noisily scooping up water from a dam to drop on the fire front. I regretfully rang up PhotoAccess to cancel the field trip, as it would have been unsafe to have a group of enthusiastic photographers wandering around the Plumwood bush during high fire-risk conditions.

6. Renewal

I returned to Plumwood Mountain a couple of weeks after my first post-fire visit (Section 3) with a local ecologist who worked for the Biodiversity Conservation Trust (BCT), an organisation that supports conservation on properties, advising landholders regarding Voluntary Conservation Agreements. She came up with me to see how BCT could potentially support our recovery after the fires. I was also anxious to see how the Plumwood Gully had fared, as I had run out of time to explore the gully on the first visit.

Introduced plants that Val had intentionally planted had done their job in protecting the house and had initially survived, but without rain, they had curled up their leaves and were dying from stress. The garden looked bare without the usual moss and lichen, which had previously even covered the wooden seating in the usually moist-laden rainforest habitat. I was pleased to find some evidence of lyrebirds scratching in the garden and the tell-tale targeted digging of the little claws of long-nosed bandicoots (*Perimeles nasuta*) in search of highly venomous funnel-web spiders (*Hadronyche* spp.) that lived in trapdoors to one side of the slab hut.

Even though the fire had licked at the wooden posts of the newly renovated slab hut and had burnt down large tree ferns that were standing immediately adjacent to the hut, remarkably, the timber building that we had been working so hard on renovating was still standing. The fire had skipped around it, possibly because we had recently dug around the perimeter to provide airflow, and this could have acted as a narrow firebreak (Figure 8). Val's planting of fire-resistant vegetation, including rhododendrons, camellias, and hydrangeas, in combination with a pool and moist concrete bowl filled with rushes that was once a pond, must have had a positive effect, as the vegetation in the clearing was still faring better than the surrounding forest. Val is buried near the stone cottage with her epitaph clearly inscribed in sandstone stating, "Having never been one for timidity". I saw that a large skink that lived in the mound of stones forming the grave had survived. Leaves on the branches of waratahs that surrounded the grave had died, yet some hardy individuals had begun to sprout soft new shoots from their woody bases.

Figure 8. The newly renovated timber slab hut and green garden beyond with all surrounding forest burnt, 26 January 2020. Photo: Natasha Fijn.

Val would often walk along the escarpment and sit at a lookout to take in the view down to the South Coast. The view down to the South Coast was no longer obscured by dense vegetation, but the scene was devastating, with hectares upon hectares of burnt-out forest as far as the eye could see. It was hard to contemplate such vast stretches of dead forest with all the accompanying insect, reptile, bird and marsupial lives that had been lost. While looking out over the escarpment amidst the burnt trees, it was eerily quiet with no sounds of birds or insects. Even the usual different species of leeches seeking out any exposed skin between socks and pants were strangely absent.

Once the fire had hungrily leapt up the steep slopes of the escarpment and burnt all the trees at the top, it was evident that the fire had begun to slow down and lose impetus as it proceeded down gentler terrain. The landscape looked so different without the dense vegetation. We donned government-issued hard hats to protect against falling limbs from

above and periodically plotted where we were via Global Positioning System (GPS). When we reached the steep incline of the "fern tree disco", where tree ferns look as if they are dancing at different angles, the fire must have skipped over the gully and moved on to the drier sclerophyll forest on the other side. I could see why Yolngu up in Arnhem Land perceive fire as animate and living, as it moves at different speeds of its own volition, with great power, eating up vegetation as it goes or even just feeding on the air as the fire grows in scale (also see Celermajer 2021).

The hidden gem that we were primarily focused on conserving, the Plumwood Gully, consists of sculptural trees formed from plumwoods entwined with tree ferns of all different shapes and forms that were miraculously still standing, just as they had done so for perhaps thousands of years. The Gondwanan haven had remained safe from the ravages of fire within the damp, steep gully, even though it had been so dry that the stream was no longer flowing, with only stagnant pools of water remaining (Figure 9).

Figure 9. The intact Plumwood Gully that escaped the fire, 14 June 2020. Photo: Natasha Fijn.

Val (Plumwood 2009, p. 21) had been very aware of the danger of fire and wrote of her relief when moisture and rain finally came after a period of drought:

> *The southern change really is Cool. Water trickles steadily into my rain tanks as cool moist cloud sweeps in from the ocean through the forest. I dig out a sweater; lyrebirds are singing again; grasses greening. All the fires around me now seem to be out. The dripping forest feels good now, but I know it's not over yet until we get a lot more rain. It can all change back in a week or two of heat and drying winds into a fire powder keg. You have to be able to look at the bush you love and also imagine it as a smoking, blackened ruin, and somehow come to terms with that vision.*

Although she did experience having to fight spot fires that occurred near the gate to the driveway, thankfully Val never had to live through the sight of her beloved forest as a blackened ruin. She had the foresight, however, to know that one day it would inevitably come.

7. From Fires to Flooding

Fire meant that there were big changes to the structure and composition of the forest up at Plumwood Mountain, but the event also resulted in fundamental cultural changes to the way Plumwood worked as a committee and as an organisation. We necessarily had to shift our mindset in relation to what we were trying to achieve. Our focus became less on keeping the place just as Val had lived her life up there and more on considering how Plumwood Mountain could be nurtured and sustained in the long term in the context of increasingly frequent extreme weather events.

By 2020, climate change was wreaking havoc. We had hardly recovered from the impact of the Black Summer fire when there were further extreme weather events, including hail and flooding in early 2020 (Lyons 2020). It felt apocalyptic. Amidst a transition to a La Niña weather system, which brought a release from the drought and fires, the weather transitioned to constant rain and flooding along the east coast of Australia. Thankfully, no one was residing in the stone cottage at the time fire swept through, but we now lacked amenities. I would mountain bike or walk up the driveway to check on the place. All the rain had rendered the driveway almost impassable to four-wheel-drive vehicles (Figure 10).

Figure 10. Hiking in with Amanda Stuart, another committee member, to check on the stone cottage during heavy rains in the region. The driveway turned into a stream or a muddy quagmire in places, 21 March 2021. Photo: Natasha Fijn.

Due to the surrounding understory being burnt with no remaining humus layer on the forest floor, the heavy rains formed temporary streams that ran down the escarpment, resulting in water spreading across the slate floor of the stone cottage, wetting the furniture and any books that were close to floor level. I dug an emergency ditch in the rain to re-direct water from flowing through the front door. With all the moisture in the air, the house was damp and became covered in a layer of mildew and spores.

The New South Wales government was assisting properties in recovery after the fire by bringing in contractors to clean up burnt debris. A truck with workers came up the driveway to remove the contents of the burnt-out shed, but the team became stuck in the mud and churned deep gouges into the fragile surface of the already eroded driveway. Although the unprecedented rain was difficult in relation to maintaining human infrastructure, it was a blessing for the regeneration of the forest after the fire. Watering stations for the animals were no longer necessary. Wallabies and wombats could find fresh new picks. Every time I proceeded up the eroded track, I would feel heartened by the remarkable recovery of the understory and how quickly the scorched forest floor became covered in green shoots.[17]

The devastating fire and flooding became compounded by the growing impact of the coronavirus pandemic, a product of what Val termed a "crisis of reason" in our relationship with "nature" (Plumwood 2002), in the form of industrialised agriculture, the trading of wildlife across international borders and human travel around the globe, with the complex anthropogenic impact being virulent new strains of viruses. Through our environmental humanities grapevine, Ruby Kammoora and Clancy Walker heard that we were seeking an individual or couple to live as caretakers up at Plumwood Mountain. They had been living in Melbourne in lockdown at the time, but in a reprieve of cases, they were visiting family in the area and came to have a look at the place. Despite the blackened stands of trees and a lack of running water due to the fire, the couple were keen to switch focus from larger-scale environmental projects to working with a grassroots organisation.

Before we could have caretakers living up at Plumwood Mountain, however, we needed to re-install a long-drop toilet, four water tanks and plumbing; replace the guttering on the roof to prevent water from entering the stone cottage; and install a larger solar unit on the roof, all of which was facilitated by the organisation of small working bees. After Ruby and Clancy took up the role as caretakers in mid-2020, they set to work re-establishing parts of the burnt-out garden, building a tool shed and a glasshouse that could also function as a bathroom. As we were concerned about the state of the books and materials in the cottage due to the moist air, members of the committee salvaged and documented Val's extensive library of books on environmental philosophy, feminism, natural history and sustainable ways of living.

Plumwood Mountain, along with five other properties in the local area that are also under VCAs, obtained funding through the Biodiversity Conservation Trust to bring in ecological consultants to survey for the presence of keystone species, such as forest owls and greater gliders. We could then gain some baseline data regarding how these species had fared after the fire. The ecology team conducted night surveys and found that the five bush properties were providing important habitat for forest owls and gliders, despite the impacts of fire. Plumwood Mountain had retained some medium- to large-sized canopy trees, providing important habitat for a population of greater gliders (*Petauroides volans*) and the Southern boobook owl (*Ninox boobook*).[18]

As a committee, we wanted to promote new and original research across the humanities and sciences, so welcomed postgraduate students to conduct research up at Plumwood Mountain. Ecology honours and doctoral students that were part of Team Quoll from the University of Wollongong came up to Plumwood Mountain to stay in the renovated slab hut, while conducting night surveys on the property and within Monga National Park. One of the postgraduate students communicated to the committee that he had spotted 40 greater gliders along the driveway in one night, which was the highest abundance across any of the burnt areas he had surveyed (May-Stubbles 2021). He indicated that the unburnt

Plumwood Gully may have been functioning as an important refuge for greater gliders that had migrated from more severely burnt areas (May-Stubbles pers. comm.).

It was heartening to discover through this ecological surveying that although the understory of the forest had largely been burnt, the bush was providing habitat for threatened species of marsupials. An article came out just after the catastrophic bushfire season (McGregor et al. 2020). Through genetic analysis, the authors found that the greater glider species in Australia consist of three separate species, rather than one species with different colour morphs. This means that greater gliders are under greater threat than previously thought, with an estimated 80% loss of the overall population after much of their habitat burnt down within a few short weeks (Knipler et al. 2023). Previously, my focus had been on the plumwoods and accompanying tree ferns as an important example of a remnant Gondwanan age population existing in New South Wales, but through the ecological surveys after the fire and the new science regarding the genetics differentiating species, it was evident that Plumwood Mountain is also an important habitat for endangered greater gliders.

After a lot of time and energy put in by members of the committee, Plumwood Mountain was listed on the State Heritage Register (New South Wales Department of Planning and Environment 2023), in recognition of its unique natural and cultural heritage. With the property legally demarcated as a Wilderness Area as part of the Voluntary Conservation Agreement established by Val, this additional layer of protection for the house and gardens as part of a heritage register legally ensures that humans cannot exploit Plumwood Mountain for its resources or for monetary gain in the future, requiring notoriously disruptive humans to tread lightly upon the land. Protection of place through legal forms of non-interference is an effective conservation humanities approach through an ethic of custodianship and stewardship.

8. Country and Cultural Burning

Mega-fires, such as the Currowan fire, are so powerful that they form their own weather system. In January 2020, I could see an ominous-looking cumulonimbus, an anvil-shaped smoke cloud, from 40 km away. The cloud formation meant that the northern side of Monga National Park was being destroyed by a "hot burn" and there were no human resources available to save it. In contrast, Aboriginal communities have been managing fire on the continent of Australia for thousands of years (Gammage 2012). Through long-held cultural knowledge, individuals with a connection to Country in the Northern Territory light fires to decrease the build-up of fuel on the ground. Unlike "hot burns", these "cool burns" allow for the regeneration of the forest. If performed seasonally, cool burns also help to avoid huge fires that become intensely hot and out of control (Gammage and Pascoe 2021).

Walbunja are a self-identified Aboriginal clan that are part of the larger Yuin Nation on the South Coast of New South Wales. Walbunja lands are concentrated around the Batemans Bay Area, including the escarpment that extends up to Plumwood Mountain. The local RFS and individual "mozzies", equipped with a tank of water and a hose on a ute, spent weeks putting out spot fires at Mongarlowe near Braidwood. The Mongarlowe community wanted to try different techniques to mitigate against further devastating fires that they had experienced during the Black Summer fire season. With Upper Shoalhaven Landcare, they invited Walbunja elders and rangers to demonstrate cultural burning practices on the land (New South Wales Department of Planning and Environment 2022).

By 2022, Affrica Taylor had taken up the role as president of Plumwood Inc., after my stint as president managing one extreme climatic event after another. Affrica, having worked with Indigenous communities on the ground and in academia for over thirty years, wanted to promote further Indigenous engagement.[19] Affrica invited the Walbunja rangers to connect with Plumwood Mountain. The lead Walbunja ranger identified significant cultural aspects, such as medicinal and edible plants up on Plumwood Mountain. The ranger team subsequently came up to Plumwood Mountain for conservation purposes, installing remote sensing cameras to monitor for the presence of different species, including

feral animals, while training young rangers as part of a tertiary qualification. In terms of surveying wildlife, Walbunja took a minimum intervention approach, in keeping with the committee's ethics towards the surveying of species on the property. Over a series of meetings, committee members discussed the ways we could engage further with Walbunja and how we could redress some of the harm done by previous generations of settler Australians in the denial of land rights to First Australians. Walbunja elders were subsequently invited up to Plumwood Mountain. From the outset, it was clear that there was strong potential for collaboration and that we were on the same page in terms of stewardship and conservation of the land.

9. Conclusions

Thousands of hectares of bushland and all the accompanying unique biodiversity were lost over only a few short weeks during the Black Summer fires of 2019–2020. The Australian public became viscerally aware of the impact and scale of a changing climate and its potential to wreak havoc. There is, however, a lack of monetary input by the Australian government into the conservation of biodiversity on government land, with very few rangers employed on the ground in national parks. This lack of funding became particularly evident during the catastrophic bushfires and the aftermath of the devastation for wildlife communities. Emergency feeding and watering of wildlife occurred only due to the on-the-ground efforts of dedicated volunteers. The government has outsourced the conservation of land, relying on organisations to apply for specific grants and funding. There is, therefore, a need for grassroots community groups, or landholders, to put time and energy into conserving tracts of land and to ensure that there is protection through legal frameworks. On an individual level, a person can come to know a place well and can work toward nurturing species as part of a whole ecosystem, as Aboriginal custodians have done over many generations on clan lands (Altman and Kerins 2012).

As Deborah Bird Rose wrote (Rose 2013, pp. 95–96), regarding Val's philosophical form of animism that she was advocating toward the end of her life,

> *Val understood that Aboriginal Australians always live within a world that is buzzing with multitudes of sentient beings, only a very few of whom are human. She thought that a good way to start up a major cultural rethink would be to talk with people who are now living within the kinds of understandings we are seeking.*
>
> *Working in a mode of inclusion, she explored the significance of Indigenous knowledge today and the kinds of adaptations we would all need to make to engage ethically with contemporary globalised earth systems, including climate change, mitigation and exchange.*

We are initiating a "cultural rethink" through the Plumwood committee's collaboration with Walbunja rangers. When I described Val's philosophy towards Plumwood Mountain with Walbunja elders, of her ideas regarding the need to break down the divisions of nature and culture and the importance of not only theoretical but practical forms of learning, individual elders responded immediately to this non-dualistic philosophy, in keeping with their own cultural underpinnings and connection to Country.

Since Val's death, the role of the stewardship of Plumwood Mountain as a place has not been held by just one person, or "owner", but by a dedicated group of people, largely humanities-oriented, with similar environmental ethics. Conservation humanities as part of a broader environmental humanities can offer an alternative to mainstream models of conservation, engaging in a different form of stewardship that does not involve anthropocentric forms of private land ownership, or a dichotomy between reserves set aside for "nature", quite separate from humans immersed in "culture" (Figure 11).

Figure 11. Regenerating ferns up at Plumwood Mountain less than a year after the fire, demonstrating the resilience and adaptiveness of the Australian bush, 15 November 2020. Photo: Natasha Fijn.

As a committee, Plumwood will continue to care for and manage the buildings within the clearing, including the heritage-listed stone cottage and regenerating garden, with Val Plumwood's philosophical legacy in mind. Walbunja rangers intend to employ Indigenous land practices on the land, as a means of managing invasive species and conserving biodiversity, including cultural burning of the re-emerging sclerophyll understory through cool burns. The Plumwood committee intends to continue residencies, workshops and working bees. In the future, this will involve ongoing collaboration with Walbunja, enabling the use of established infrastructure as an education hub in the promotion of conservation, Indigenous knowledge practices and in caring for Country.

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Conflicts of Interest: The author declares no conflicts of interest.

Notes

1 For a podcast recording of a six-part radio documentary, *The Heart of the Storm*, focusing on the effects of the bushfires in the Braidwood area, see (Young and Ricketson 2023).

2 For footage of the out-of-control mega-fire storm from the Currowan fire, see (Fire and Rescue NSW 2020).

3 The fire that engulfed Plumwood Mountain caused havoc for residents and summer holidaymakers along the South Coast of New South Wales; see https://www.canberratimes.com.au/story/6575661/the-currowan-fire-a-monster-on-the-loose/, uploaded 11 January 2020 (accessed on 2 November 2023).

4 See my photo essay in *Landscape* journal, which draws on Val's concept of a "shadow place" (Fijn 2016).

5 I also asked naturalist John Blay about the sprouting of the murnong, as he has written of locating murnong cultivation sites along the old Aboriginal trail, The Bundian Way, which starts from the South Coast and goes all the way to the snowy mountain ranges (Blay 2015). There is also an ancient trail near Plumwood Mountain, known today as The Corn Trail, an old Yuin route up the escarpment. Before the Kings Highway was built, it was used by early settlers to transport goods from the gold mining town of Braidwood onto ships at Nerriga, a river port near the coast (see Coombe 2020).

6 Val wrote that botanists have estimated that plumwoods can live for 3000–5000 years (Plumwood 2005a, p. 66).

7 Eleven lyrebirds were seen gathering around a dam to escape an impending fire during the devastating Black Summer, posted January 30. Available online: https://www.abc.net.au/news/2020-01-30/lyrebirds-band-together-to-avoid-approaching-bushfire/11910666 (accessed on 3 November 2023). Lyrebirds must have a good mental map of their surrounding habitat, an adaptive strategy to avoid fires by seeking out water.

8 See a filmed conversation between Jackie French, George Main and me (behind the camera), recorded as material for the Val Plumwood Collection at the National Museum of Australia: "Jackie French, on Philosopher Val Plumwood" https://vimeo.com/manage/videos/182186312, uploaded 9 September 2016 (accessed on 3 November 2023).

9 The Plumwood committee initially comprised Anne Edwards, Deborah Bird Rose, Freya Mathews, Kate Rigby, Anne Elvey, George Main and me. Lara Stevens (currently a member of the committee) and colleagues edited a book, "Feminist Ecologies: changing environments in the Anthropocene", which included influential Australian eco-feminist scholars as contributors, many of whom also made up the initial Plumwood Inc. committee, including Freya Mathews, Kate Rigby, Deborah Bird Rose and Anne Elvey, and a posthumous chapter on ecological denial written by Val (Stevens et al. 2017).

10 As an undergraduate in an ecology course, I went on a field trip to Hinewai Reserve on Banks Peninsula in New Zealand. I was inspired by Hugh Wilson's explanation of his "minimum interference" approach to conservation, implemented through the establishment of a Trust (see Wilson 1994). There is a film about Hugh Wilson and his dedication to Hinewai Reserve (Osmond and Wilson 2019). I was inspired by Val's writing on the avoidance of human exceptionalism, including her article "being prey" (Plumwood 1995), where she describes what went through her head while being attacked by a crocodile. Her work informed my multispecies research on Yolngu connections with significant totemic beings, particularly kinship with the saltwater crocodile in Arnhem Land, the Northern Territory (Fijn 2013).

11 "Land subject to variation of a Voluntary Conservation Agreement between the Minister for the Environment for the State of New South Wales and Valerie Plumwood for Plumwood Mountain", dated 2002.

12 Dominic Hyde wrote a book on the philosophical lives of Richard Routley and Val after their deaths (Hyde 2014).

13 See https://plumwoodmountain.com/ for ongoing ecopoetry contributions (accessed on 3 November 2023). I contributed a photo essay in an early volume of the journal (Fijn 2014).

14 One of the significant pieces that was added to the collection at the National Museum of Australia was the canoe that Val had been paddling when she was attacked by a crocodile and survived in 1986; see https://www.nma.gov.au/explore/collection/highlights/val-plumwood-canoe (accessed on 3 November 2023). George Main collaborated with artist Vic McEwan, drawing on the concept of shadow places, exhibited at the Powerhouse Museum in 2016; see https://www.cadfactory.com.au/shadow-places-sydney (accessed on 3 November 2023).

15 See https://thebrewnetwork.org/properties/ (accessed on 3 November 2023).

16 Danielle Celermajer (2021) writes of how she named an ancient individual tree on her rainforest property after her grandfather, as both his memory and the tree remind her that it is important to consider future generations and how they will survive on the land.

17 I documented the regeneration of the forest after the fire, juxtaposing black-and-white images with my grandfather's photographs from 75 years earlier. He documented recovery after the destruction of Maastricht at the end of World War II. See a digital record of the exhibition at https://www.gallery.photoaccess.org.au/between-hope-and-despair (accessed on 3 November 2023).

18 Umwelt Environmental and Social Consultants. Report, 2020. "Post-fire ecological survey: Plumwood, Monga NSW", a survey funded by Biodiversity Conservation Trust, NSW.

19 Affrica Taylor and Leslie Instone (who was also a friend of Val's) describe how they negotiated living with a multispecies community in this era of the Anthropocene on a different conservation reserve in the highlands of New South Wales (Instone and Taylor 2015).

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Conserving Africa's Eden? Green Colonialism, Neoliberal Capitalism, and Sustainable Development in Congo Basin Literature

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Abstract: Starting with European colonization, African natural resources in particular and nature in general have been coveted and exploited mainly in the interest of Euro-American industrialized countries, with China as a recent major player from Asia. Interestingly, the incessant quest by some Western NGOs, institutions, and governments to protect and conserve African nature not only are inspired by ecological and climatic concerns but also often tend to propagate a false image of Africa as the last Eden of the earth in order to control Africa's resources. Using literary texts, this article argues that some Euro-American transnational NGOs and some of their governments sometimes conspire with some African governments to spread global capitalism and green colonialism under the pretext of oxymoronic sustainable development as they attempt to conserve a mythical African Eden. Utilizing three novels and one play from the Congo Basin, namely In Koli Jean Bofane's *Congo Inc.: Le Testament de Bismarck* (2014), Assitou Ndinga's *Les Marchands du développement durable* (2006), Étienne Goyémidé's *Le Silence de la forêt* ([1984] 2015), and Ekpe Inyang's *The Last Hope* (2011), I contend that such Euro-American environmental NGOs and their governments sometimes impose and sustain fortress conservation (creation of protected areas) in the Congo Basin as a hidden means of coopting Africa's nature and Africans into neoliberal capitalism. For the most part, instead of protecting the Congo Basin, green colonialists and developmentalists sell sustainable development, undermine alternative ways of achieving human happiness, and perpetuate epistemicide, thus leading to poverty and generating resentment among local and indigenous populations. As these literary texts suggest, nature conservation and sustainable development in the Congo Basin should not be imposed upon from the outside; they should emanate from Africans, tapping into local expertise, and indigenous and other knowledge systems.

Keywords: conservation humanities; green imperialism; neoliberal capitalism; sustainable development; Congo Basin; postcolonial ecocriticism

1. Introduction[1]

Running across six countries in central Africa, the Congo Basin contains the second largest tropical rainforest in the world (after the Amazon Basin) and is fondly referred to as the second lung of the Earth. Due to its unique biodiversity, its huge capacity for carbon sequestration, and its enormous natural resources (e.g., timber, oil, gold, coltan, uranium, etc.), the Congo Basin, like much of Africa, has remained a crucial site for the paradoxical scramble for both natural resources and nature/environmental conservation since the European colonization of Africa and more so in the twenty-first century in which anthropogenic climate change is threatening the Earth. As French environmental historian Guillaume Blanc demonstrates in *L'Invention du colonialisme vert* (2020), European colonialists, inspired by the creation of national parks in the United States and Canada—notably the establishment of the US Yellowstone National Park in 1872—invented the myth of an African Eden to be conserved, that is, protected against irrational and destructive Africans. Accordingly, Belgian colonialists created the Virunga National Park in the then

Belgian Congo (today DRC or Congo-Kinshasa) in 1925 as the first national park in Africa (Andersen 2018). Relatedly, Frits Andersen (2018) convincingly traces the origins of fortress conservation in the Congo to the colonial-racist myth, popularized by Conrad, which considered the area as "the heart of darkness" (pp. 1–3). Andersen further highlights, arguably so, the role played by the celebrated and controversial colonial primatologist and conservationist Dian Fossey in launching violent, fortress conservation in the Congo and beyond (pp. 7–11). With the political independence of many African countries in the 1960s, that myth of an African Eden was sustained by colonialists-turned-experts to the point of being appropriated by post-independence African governments. And that situation has almost not changed to this day. For instance, on #AfricaDay 2021 (25 May), the African Union shared on its social media handles what it called "some interesting facts from our 55 Member States", including a celebratory message on fortress conservation in Congo-Brazzaville with explicit reference to the Edenic idea: "The Nouabalé-Ndoki National Park in the Republic of the Congo is a protected area also referred to as *the Last Eden on Earth*" (emphasis added).[2] Similarly, in 2020, Forbes Africa celebrated Gabon, with its 87% forest coverage and initiatives to diversify its economy—including the sustainable management of forest resources, as "the emerging Eden of Africa", an idea with colonial origins and largely perpetuated by Western media such as *National Geographic*.[3] Furthermore, the ongoing double ecological and climate crisis has added more momentum to the quest by some western transnational NGOs, cooperation institutions, and governments to save a mythical Edenic nature in Africa void of any African human presence. This situation is explored in many disciplines, including literature.

In this article, I argue that literary texts can help to expose how some Euro-American transnational NGOs, financial institutions, and governments collude with some African governments to spread global capitalism and green colonialism under the pretext of oxymoronic sustainable development as they attempt to conserve a mythical African Eden. I am neither suggesting that nature protection and sustainable development are unnecessary nor demonizing all foreign environmental and developmental NGOs and institutions working in Africa and the Congo Basin. Instead, I intend to point out how literary texts, placed within the conservation and environmental humanities, can unveil wrong and harmful practices perpetuated by some of these NGOs and institutions in hopes of triggering the reformulation of their goals and strategies in order to balance the needs of nature conservation and social development in the Congo Basin and beyond. In this regard, I examine three novels and one play from the Congo Basin, namely In Koli Jean Bofane's *Congo Inc.: Le Testament de Bismarck* (2014), Assitou Ndinga's *Les Marchands du développement durable* (2006), Étienne Goyémidé's *Le Silence de la forêt* (1984), and Ekpe Inyang's *The Last Hope* (2011). While all four texts arguably constitute realist eco-literature, *Congo Inc*. and *Les Marchand* are considered, in part, as African climate fiction (cli-fi) and *The Last Hope* is eco-theatre inscribed within the tradition of theatre for development in Africa. The latter three texts were written in the twenty-first century and explicitly engage with current climate change and ecological breakdown which characterize the Anthropocene. Furthermore, Inyang and Ndinga are background-informed literary activists, that is, people with educational and professional backgrounds in conservation-/ecology-related fields who use literature to advance ecological causes (Nsah 2022). Written in the twentieth century, *Le Silence* is not directly concerned with the current climate and environmental crises, but Goyémidé's fascinating depiction of the indigenous Pygmies as they live sustainably in their ancestral forests (no romanticization intended) lends it to ecocritical readings.

Taking the four realist eco-texts together, I contend that some western environmental NGOs, in collaboration with some western financial and political institutions, sometimes impose and sustain fortress conservation (creation of protected areas) in the Congo Basin and Africa as a covert means of coopting Africa's nature and Africans into neoliberal capitalism as notably illustrated by Inyang's play and Ndinga's novel.[4] For the most part, in lieu of actually protecting nature in the Congo Basin, green colonialists and developmentalists sell sustainable development, undermine alternative ways of inhabiting the

Earth and achieving human happiness, and perpetuate epistemicide, thereby leading to poverty and generating resentment among local and indigenous populations. Accordingly, inspired by the literary texts under study, I suggest that nature conservation and sustainable development in the Congo Basin (Africa) should not be imposed from outside; they should emanate from Africans, drawing on local expertise, and indigenous and other knowledge systems.

This article is mainly anchored in the concepts of green imperialism/colonialism and postcolonial ecocriticism and placed within the broader context of the environmental and conservation humanities. Holmes et al. (2022) "consider conservation humanities to be an emergent subsection of environmental humanities that focuses on biodiversity loss and efforts to address it and studies these efforts through humanistic ideas and methods" (pp. 1–2). Meanwhile, green colonialism explains how European imperialism invented the myth of an African Eden to be protected against Africans as part of efforts deployed to control and exploit African biodiversity and natural resources (Blanc 2020; Murphy 2009; Grove [1994] 1996). Despite some evolution in their strategies and methodologies over time, most western industrialized nations (including China), partly in collaboration with some African governments, continue to pursue the same goals as when environmentalism was first created in Africa: control and exploit African nature. Unsurprisingly, therefore, Blanc affirms: "Les scientifiques et les administrateurs coloniaux voulaient des parcs pour protéger une Afrique édénique contre des Africains destructeurs, et depuis soixante ans, les experts internationaux poursuivent leur travail" (Scientists and colonial administrators wanted parks to protect an Edenic Africa from destructive Africans, and for sixty years international experts have continued their work [Note that all translations are mine.]) (Blanc 2020, p. 294). As we face the current ecological and climate crisis, the literary texts under study simultaneously portray and interrogate this stark situation, thereby suggesting that environmental conservation should be thoroughly rethought in Africa (Congo Basin) in order to serve the needs of nature and Africans. Accordingly, Joseph Murphy contends: "Perhaps contemporary environmental problems are an opportunity for the world to confront imperialism again but this time with a more sophisticated understanding of freedom and what it takes to achieve it" (Murphy 2009, p. 25).

Meanwhile, with the notable exception of Marie Chantale Mofin Noussi (2012), most literary scholars have approached the three novels under study from theoretical perspectives other than ecocriticism (Ndi 2020; Yoon 2020; Oben n.d.). I depart significantly from these scholars by placing these texts within the conservation and environmental humanities and reading the texts through a postcolonial ecocritical lens, including what Roos and Hunt (2010), following Graham Huggan and Helen Tiffin, call "green postcolonialism", which foregrounds environmental justice discourse (2010, p. 3). Specifically, postcolonial ecocriticism makes it possible to identify contractions, paradoxes, complexities, and hidden agendas within nature conservation initiatives in the Congo Basin and Africa from the colonial era to the current period of alarming ecological breakdown and climate change while paying attention to cases of injustice to both nature and humans (Holmes et al. 2022; Okuyade 2016; Noussi 2012; Roos and Hunt 2010). Taken together, green colonialism and postcolonial ecocriticism have the potential to unlock the contradictions, and intentional and unintentional consequences of foreign intervention to save Africa's mythic Eden while also underscoring alternative ways of carrying out nature conservation in Africa (Congo Basin), as suggested by the texts under study.

2. Colonial Origins of Conservation and Green Imperialism

Green imperialism stems from the myth of an African Eden to be protected against Africans, which was invented by colonialists and has remained, to this day, a means for some western transnational NGOs, and political and financial institutions to take hold of African (including Congo Basin) natural resources while mostly employing western "experts". Apart from environmental history and other sources, some African literary texts also uncover, either deliberately or accidentally, the (racial) colonial origins of fortress

conservation in Africa. A case in point is Inyang's three-act play called *The Last Hope* (2011), which accidently exposes the colonial introduction of fortress conservation in Cameroon and well beyond. As Inyang explains, *The Last Hope* was "written as part of a three-month consultancy offered by for GTZ [German Technical Cooperation, now GIZ] in 2003 for the evaluation of the Korup Project with the aim of highlighting and sharing some lessons learnt from the creation of the Korup National Park" (2011, p. iii). The play is set in and around the Korup National Park, located in the Anglophone Southwest Region, and in Yaoundé, Cameroon's political capital. It covers a period of seventeen years, from 1986 to 2003, thus following a linear plot occasionally infused with elements of flashback. The play dramatizes many issues, including displacements of locals due to the park, partial resistance to the displacements and park prohibitions, and various situations of conflict (e.g., locals vs. other locals over the sharing of resettlement funds, some locals vs. park guards over access to resources such as bushmeat in the park, the Cameroonian government vs. western conservation donors such as GTZ Donor and EU Donor over the financial responsibility of running the park, and local demonstrators vs. a logging company licensed by the Cameroonian government to operate near the park). Other issues highlighted include the irony of a lawmaker who legislates conservation but accepts gifts of bushmeat, incentives/rewards for accepting the park versus punishment for resisting it, etc. The play partly fits into the category of theatre for development, not in the sense of equipping dominated common people with a critical consciousness but in the sense of a propaganda tool for environmental projects (Nogueira 2002, pp. 104–5).

In Act 1 Scene 2 of the play, Conservator and Education Officer, two government-delegated conservationists, visit Chief Kitok's palace around 1988 to inform him and his people that the Korup Reserve has been upgraded into the Korup National Park where the people are forbidden from carrying out any activity (hunting, farming, fishing, or harvesting). As Era (Secretary General of Korup Development Association) and Koko press on for concrete answers about how they would survive without harvesting food from the forest, Conservator prefers to remind them that the national park was created from a forest reserve, thus indirectly stating that it does not deprive them of their forests. At this juncture, Chief Kitok, in some sort of a theatrical flashback, weighs in to support Conservator and consequently confirms that the reserve was created in the days of British colonization in the then British Southern Cameroons (1916–1961): "…You might still see a sign board with the inscription of Korup Forest Reserve. The reserve was created in the days of D.O Edgerton. In 1937 or thereabouts. When none of you here present was born" (Inyang 2011, p. 17). Chief Kitok's revelation incidentally evokes the colonial origins of fortress conservation and some current green imperialist projects in the Congo Basin, and Africa by extension. What Chief Kitok does not say, however, is that the creation of the Korup Reserve, now Korup National Park, was part of a colonial enterprise across the African continent inspired by the myth of an African pristine and virgin Eden that needs to be protected against Africans while providing European colonialists then and some western neocolonialists now unfettered access to control and exploit African natural resources. Besides the Korup National Park, *The Last Hope* also evokes the Waza National Park in the Far North Region of Francophone Cameroon as an example of successful fortress conservation. Indeed, Kondo and Reka had been sent by the Korup Project to witness the Waza success story (2011, pp. 18–19). However, this evocation interestingly testifies to the proliferation of national parks in Cameroon, and elsewhere in the Congo Basin and Africa—Origo ([2007] 2014) mentions that Gabon has thirteen national parks while Congo-Kinshasa is noted for parks such as Virunga (the oldest in Africa) and Salonga (the largest in Africa). Such parks are often created with financial and other forms of support from western NGOs and governments such as WWF, which initially sponsored the Korup Project, and other initial sponsors such as WCI (Wildlife Conservation International); ODA (Overseas Development Agency) (Inyang 2011, p. 18); and GTZ Donor and EU Donor, whose threats to withdraw funding nearly terminates the Korup Project at the end of the play.

Aside from the crucial need for preserving biodiversity nowadays, the play reiterates the unjust conservation policy of prioritizing nature alone instead of considering the wellbeing of both humans and nature. In this regard, Education Officer, in Act 1 Scene 1, reminds the local people in Chief Kitok's palace that the Korup forest has many species of animals and plants partly because it is "more than sixty million years old" (2011, p. 15). Education Officer adds, "And you can see that it is the last hope for many endangered and endemic species", before concluding: "[*In an elevated tone.*] On this note, I call on you all to join the Korup Project and the Government of Cameroon to protect the Korup National Park" (ibid.). Unintentionally, Inyang's support for fortress conservation in the play exposes the paradox of this conservation model and begs questions. How can people who have been cohabiting with animal and plant species for ages suddenly become a threat to the latter if there is no hidden capitalist agenda for conservation? In other words, keeping aside hunting for commercial and trophy purposes in line with the imported capitalist economy, how can people who have cohabited with a forest for over sixty million years suddenly be prohibited from entering it in order to hunt, fish, or farm? If they were so destructive to the forest/nature, why has the forest survived their destruction for over sixty million years? Similar questions could be asked with regard to the fictive Donadieu, the Swiss conservationist–developmentalist, who unsuccessfully attempts to force indigenous Pygmy people out of their forests to embrace "sustainable development" and to enable nature conservation in Ndinga's novel *Les Marchands du développement durable* (2006). Indeed, as I contend, it is paradoxical for a Swiss "expert" to attempt to expel Pygmies out of forests where they have lived for millennia in the name of preserving those forests and their biodiversity. In this regard, Blanc notes: "La figure du paysan 'africain' et 'destructeur' est une invention occidentale, et celle-ci est à l'origine de la violence, indéniablement" (The figure of the 'African' and 'destructive' peasant is a Western invention, and this is undeniably the source of violence) (2020, p. 160). This arguably points to the colonial birth of the myth of an African Eden to be protected from barbaric and destructive Africans, that is, the birth of green imperialism in Africa and the Congo Basin.

As Ndinga's *Les Marchands* reveals, the presence of Donadieu and his accompanying European colleagues in the forests of Cotovillage in the Republic of Coto has more to do with using the myth of an African Eden to secure employment for some unemployed westerners in Africa than actually conserving nature and implementing sustainable development. *Les Marchands* is an ecological novel written by Congolese biologist, conservationist, essayist, and novelist Assitou Ndinga and is narrated from a third-person omniscient point of view. It tells the story of Donadieu, a Swiss conservationist–developmentalist, on a "green mission" to implement a "sustainable development" project in Cotovillage in the heart of the Congo Basin where indigenous Pygmies and local Bantus cohabit, more or less, in harmony with their environment (Noussi 2012, pp. 146–47). Donadieu's project is financially and morally backed by fictive western conservation NGOs such as the World Organization for Forests (Organisation mondiale pour les forêts—OMF) and the World Programme for Development (Programme mondial pour le développement), as well as the government of the Republic of Coto—an imaginary country which plausibly alludes to both Ndinga's native Congo-Brazzaville (Republic of Congo), with a government which is quite committed to protecting its forests (Nguesso 2009, pp. 191–211), and Congo-Kinshasa (Democratic Republic of Congo, DRC), which possesses the highest proportion of the Congo Basin forests (Noussi 2012, pp. 152–53). Donadieu's project and mission consist of "educating" the populations of Cotovillage on sustainable development with the intension of preserving their forest and its biodiversity. Ironically, Donadieu is unable to define sustainable development, thus demonstrating the futility of his mission in Cotovillage (Ndinga 2006, pp. 20, 36; Noussi 2012, p. 150). Donadieu has an insatiable appetite for feeding Africa's exoticism to western channels such as the Internet, *National Geographic*, and the *Washington Post* (Ndinga 2006, p. 12). Meanwhile, Donadieu is fiercely opposed by most Cotovillage people, notably Lenga, a young Cotolese (Cotois), who is fighting for the real development of his area and whose ideas clash with Donadieu's.

In the novel, there is the presence of resourceful indigenous Pygmy and local Bantu characters such as Matatu, the taciturn, cunning and talented Pygmy (p. 60), Lenga and his mother Mabouéré, two intelligent and critical Bantus (pp. 30, 59), and other project employees such as Marguerite Ngala, the coordinator of alternatives to bushmeat who graduated from the Institute for Rural Development in Cotoville, and Sylvestre Makaya (p. 52). Nevertheless, the sustainable development project is designed abroad and top-managed by western "experts", notably Donadieu Luigi, the principal technical adviser for the Switzerland-headquartered World Organization for Forests (p. 21), and Rav, the coordinator of the aspect of integrating Pygmies into the market economy (p. 53). While Donadieu uses the project to access and assess animal species in the Congo Basin (p. 53), Rav takes advantage of it to satisfy his opportunism and fascination for the indigenous Pygmies (Ndinga 2006, pp. 67–68). Interestingly, both of them have been employed as western "experts" to save the Congo Basin Eden through the implementation of sustainable development, which none of them really understands. Unable to define and implement their project in Cotovillage, as the narrator's ironic tone suggests, both Donadieu and Rav use the technique of camouflage to achieve their secret intentions, thus hiding behind "le manteau vert de la durabilité pour assujettir l'environnement cotois et les Cotois eux-mêmes" (the green mantle of sustainability to subjugate the Cotois environment and the Cotois themselves) (Noussi 2012, p. 151). In this way, Donadieu and Rav become what James Brown calls "self-proclaimed experts" of sustainable development (2015, p. 1027) who pass for conservationist–developmental godsends in Cotovillage as implied by Donadieu's name, which seems to be an adulterated form of Dieudonné—godsent. Indeed, Donadieu's name sarcastically suggests that he is sent by God to sustainably develop the people of Cotovillage and save their Edenic forests, thus tackling an ecological burden in Africa. Relatedly, Blanc affirms: "Après les théories racistes qui légitimaient le fardeau civilisationnel de l'homme blanc, *l'heure est au colonialisme vert*, *né des théories déclinistes qui légitiment le fardeau écologique de l'expert occidental, dans toute l'Afrique*" (After the racist theories that legitimised the civilisational burden of the white man, *the time has come for green colonialism, born of declinist theories that legitimise the ecological burden of the Western expert, throughout Africa*) (2020, p. 112, my emphasis). In reality, however, both Donadieu and Rav incarnate the NGOization of conservation in Africa (Choudry and Kapoor 2013) and also corroborate the fact that most conservation initiatives in Africa were launched to provide jobs for unemployed colonial "experts" rendered jobless by the political independence of many African countries in the early 1960s and that, since then, conservation has continued to serve as a means for some western NGOs and governments to provide offshore employment to their citizens in Africa (Blanc 2020). Meanwhile, the deployment of many western environmental "experts" in Africa sometimes goes beyond the urge to save Africa's mythic Eden to include the domination and exploitation of African natural resources as well as the spreading of neoliberal capitalism and western cultural values.

3. Coopting Africans and Africa into Global Capitalism

The literary texts under study, I argue, reflect and criticize green imperialism for its tendency to coopt Africa and its nature into the neoliberal capitalist economy while also spreading and imposing western consumerist cultural values on Africans. According to Robert Fletcher et al. (2014), "Neoliberalism defined more strictly is commonly identified with the widespread trend toward increasing relaxation of state oversight over political-economic affairs and reliance on the 'invisible hand' of the market to efficiently allocate resources across the social landscape" (p. 6). Meanwhile, many scholars and journalists rightly identify neoliberalism as the fundamental root cause of many of today's global problems, particularly the current climate and ecological crisis (Randall 2018; Elliot 2016; Monbiot 2016; Verhaeghe 2014; Fletcher et al. 2014; Parr 2013). Neoliberal capitalism has led to the commodification, privatization, and hyper-consumption of much of nature, consequently causing both environmental and climate breakdown across the globe.

The situation is not different in Africa and in the Congo Basin, in particular where the scramble by some western NGOs, financial institutions, and governments to conserve Africa's mythic Eden serves as a pretext for the exportation of "neoliberal conservation" (Fletcher et al. 2014) and western ideals. Following Fletcher, Dressler, and Büscher, I contend that conservation in Africa seems to be more about "selling [African] nature to save it" or "commodification through conservation" (2014, pp. 9, 12) than actually saving it for posterity and the basic needs of its closest human population. Consequently, it is unsurprising that Inyang's *The Last Hope* (2011) is replete with neoliberal terminologies and jargons mostly utilized by the two Cameroonian conservationists in the play. In their attempt to convince resistant residents to accept fortress conservation in Korup, Education Officer and Conservator deploy a neoliberal economic metaphorical language. In Act 1 Scene 2, Education Officer describes the park as a bank:

> EDUCATION OFFICER: Whether you believe it or not, the National Park is your bank. And everybody has a free account in that bank. It is a natural bank. You don't need to be told that Nature provides for every one of us. Free-of-charge. I must advise you very sincerely to join the project in protecting your God-given bank. If you allow thieves break into it, well, you know what you will have been losing. Use the interest as it grows but maintain and protect the capital. (Inyang 2011, p. 26)

At this point, Era sarcastically remarks: "This man is beginning to talk like an economist. [*Laughing*.]. . . " (ibid.). Ignorantly, Chief Kitok rebukes Era for interrupting the conservationists' lesson, and obtains some silence, before Conservator proceeds to reinforce his colleague's neoliberal language:

> . . . If you allow the animals and other resources to multiply, you will benefit in the future. Your children and your children's children, too, will benefit. Either hunting some of the animals and harvesting other resources [*Emphatically.*], in accordance with the law, or by benefiting through research and tourism. (Inyang 2011, pp. 26–27)

Of course, Conservator and Educational Officer's discourse comes off as the language of future-looking conservationists. In other words, they stand for the preservation and meticulous use of natural resources with both present and future generations in mind, which is the ideal type of conservation that western institutions such as GTZ (which hired Inyang to write the play) and WWF (where Inyang has been working for many years) promote in Africa and the Congo Basin. However, a deeper assessment of their neoliberal language, as Era sarcastically notes, gestures in the direction of the neoliberal model of fortress conservation, which underpins the Korup Project and similar conservation projects in Africa and the Congo Basin. Perhaps, these Cameroonian conservationists are not aware that the western conservationist ideology underlying their project has the ulterior motive of commodifying Africa's Eden for capitalist profits, including the promotion of ecotourism in Korup (Inyang 2011, pp. 27, 89), which is synonymous with what Nigerian postcolonial ecocritic Ogaga Okuyade (2016) describes as "modern capitalist [eco]tourism which is detrimental to the health of the environment" (Okuyade 2016, p. 469; also see Blanc 2020, pp. 287–88).

If the Cameroonian conservationists in Inyang's *The Last Hope* are seemingly unaware of the invisible neoliberal forces driving fortress conservation in Africa, the western conservation–development "experts" in Ndinga's *Les Marchands* (2006) are straightforward in their mission to assimilate indigenous Pygmies (and local Bantus) into the neoliberal market economy while pretending to save the Congo Basin's mythic Eden. As part of Donadieu's sustainable development project in Cotovillage, Rav is very overtly entrusted with the responsibility of coopting indigenous Pygmies into the market economy while at the same time educating them to dislike bushmeat, a task which the narrator satirically describes as "*fantastiquement* difficile" (fantastically difficult) (2006, p. 61, original emphasis). Using Matatu, the sarcastic Pygmy, as interpreter, Rav would explain to the Pygmies

(expelled from the forests to live with the Bantus) that they will soon be prohibited from hunting, gathering, and fishing in their millennial forests—fortress conservation is *en vogue*. As the narrator tells us, a few days later, Rav struggles to "créer une génération de Pygmées ausssi bien mangeuse et productrice de viande be bœuf que des capitalistes" (create a generation of Pygmies who are as good at eating and producing beef as capitalists) (Ndinga 2006, p. 62). Rav proceeds to lecture the Pygmies that beef is eaten in developed societies and that it is the healthiest meat, without any risk of Ebola or AIDS (and COVID-19, I add). Explaining to them that beef is used to make the best hamburgers and *Big Mag*, Rav removes images of western cuisine excerpted from the best western gastronomic magazines from his bag, displays them on the ground, and continues to lecture them on their recipes and cooking modalities, with a special focus on *Big Mag*, which he tells them is obligatorily accompanied by *Coca occidental* (Western Coca) (Ndinga 2006, pp. 62–63). *Big Mag* and *Coca occidental* symbolize western transnational capitalist companies such as McDonald's and Coca Cola, which are very destructive to the environment, thereby serving as metaphors for the global spread of western capitalist hyper-consumerist lifestyles. Oswaldo de Rivero (2010), for instance, asserts that "Present-day economic globalization is promoting a primary type of capitalism, more interested in selling pop music, Coca-Cola or McDonald's…" (p. 97). Paradoxically, the western conservationists–developmentalists Donadieu and Rav want to impose these on indigenous Pygmies whose immemorial lifestyles are more protective of the environment, as illustrated by Ndinga's *Les Marchands* and Étienne Goyémidé's *Le Silence de la forêt*. Following T. V. Reed, Okuyade (2016) explains:

> Western colonialism remains a scheme or agenda which privileges dominant cultures above colonised ones, which in turn creates the rationale for the colonial attempt to civilise indigenous societies because the lands of the indigenous people are assumed—from Eurocentric arrogance—to be underdeveloped and empty. (p. 469)

From this perspective, Rav's ulterior motives of "civilizing" or forcefully assimilating the "primitive" Pygmies, such as Africans who from colonial times are in need of western civilization, then become uncontestably established. One would normally expect such practices by Rav and Donadieu to be punished since, due to pressure from human-rights NGOs, emergent legislation in some Congo Basin countries prohibits the forceful assimilation or integration of indigenous people.[5] Coincidentally, for example, five years after the publication of Ndinga's *Les Marchands* (2006), the government of his native Congo-Brazzaville adopted Law N^{o} 5—2011 of 25 February 2011 on the protection of the rights of indigenous populations, which, among other stipulations, prohibits the forceful assimilation or integration of indigenous peoples. One could speculate that, in one way or the other, Ndinga's novel remotely served as one of the pressure factors that led to the enactment of this law. Despite the westerners' wrong assumptions about the Pygmies' and Bantus' primitivity and lack of knowledge in *Les Marchands*, the people have their own civilizations and are quite knowledgeable, not only about what they need as development, as Lenga and his mother suggest, but also about the contradictions and lies of neoliberalism. In a heated argument between Rav and Matatu, his Pygmy interpreter, the latter defeats the former by proving to him that neoliberal markets are not free from government intervention as he claims (Ndinga 2006, pp. 63–64). Matatu's intelligence notwithstanding, he and his fellow Pygmies (especially the young ones) and Bantus such as Sylvestre initially learn the fundamental principle of capitalism and its development, as well as the politics of salaries and prices, the creation of capital, and techniques of negotiating in the market. Matatu and Sylvestre for that matter even renounce the eating of bushmeat, something considered as a great achievement for the project, although this capitalist conversion does not last for long. While Cotovillage residents interminably await the other project cows, the Pygmies finish all the fowls and eggs owned by the Bantus. The Bantus accuse the Pygmies of being thieves, thereby pushing the latter to return to the forest (Ndinga 2006, pp. 64–69). Unlike the partly capitalism-indoctrinated Bantus, in the Pygmy worldview and lifestyle, there is no private ownership of property or food—everything is either owned communally

or meant to be shared. Following the near-war situation between Bantus and Pygmies over the eaten fowls and eggs, Donadieu and Rav decide to "restructure" the sustainable development project with the aim of scrapping the aspect of integrating Pygmies into the market economy, thus barring them from the project (p. 69). Sixteen days after suspending Pygmies from the project, all the Pygmies nocturnally escape back into the forest, taking along Maguy, the lone project cow. All attempts by Rav, Donadieu, Toto, and Lenga to trace the Pygmies in the forest are futile (pp. 71–72). At this juncture, one would expect the western "experts" to discontinue the project, but that does not happen. Even when some Bantus, such as Mabouéré and other women who concert with Lenga on developmental needs of their community, display skepticism and opposition to his rather underdevelopment project (Ndinga 2006, pp. 31, 71; Noussi 2012), Donadieu persists with it since their employment depends on it and they need it to achieve other green capitalist-imperialist goals such as spreading capitalism and western values.

While Euro-American culinary practices and neoliberal capitalism are openly and unacceptably imposed on Africans by western "experts" and their sponsors in Ndinga's *Les Marchands*, it is covert instruments of capitalist globalization such as television (TV) and the Internet which imperceptibly assimilate Isookanga the young Pygmy in Bofane's novel. Written by Bofane who hails from Congo-Kinshasa, *Congo Inc.: Le Testament de Bismarck* (2014) deploys the omnipresent third-person point of view to narrate the complexities of the endless wars over natural resources in the Democratic Republic of the Congo (DRC) in a story whose setting spans the DRC, the USA, and China.[6] It is, to borrow from Andersen (2018) and Nixon (2011), a fascinating narrative of the Congo as a resource-cursed country. It should be recalled that Congo-Kinshasa (DRC) is blessed with "vast deposits of diamonds, gold, uranium and, particularly, coltan: a mineral that is used for making mobile phones, and which the volcanos of the mountain ridge have spewed out for aeons and today has become a curse on the area" (Andersen 2018, p. 2). Part climate fiction (cli-fi) and part resource-war fiction or what Ndi (2020) calls "the coltan novel", *Congo Inc*. is set against the backdrop of a looming climate and ecological catastrophe well known to the third-person narrator and characters such as Isookanga and his uncle Lomama. For instance, the novel opens with a restless Isookanga who cannot catch sufficient caterpillars in the forest for Lomama in a situation which the narrator implicitly blames on "climate change" in the second sentence of the novel (Bofane 2014, p. 11). Isookanga, the protagonist of the novel, is fascinatingly obsessed with capitalist globalization and capitalism, as exemplified by his endless computer game called *Raging Trade* (whereas Congo Bolo confronts western companies such as American Diggers, Skulls and Bones, Uranium et Société, Goldberg & Gils Atomic Project, China Networks, and Hiroshima-Naga over the control of natural resources in the DRC fictionally called Gondavanaland) to the extent of self-proclaiming himself as a "*mondialiste*" (globalist) with the ambition to become a "*mondialisateur*" (globalizer) (Bofane 2014, p. 26). With a laptop stolen from a young Belgian social anthropologist with whom he later has a sexual relationship considered as revenge colonization, Isookanga quits his native village around the Salonga National Park to go to Kinshasa in search of globalization. There, Isookanga enters into a business partnership with an abandoned Chinese young man called Zhang Xia to sell "Eau Pire Suisse" (Swiss Pure Water), before eventually returning back to the village with a CD-ROM containing a Chinese map of Congolese natural resources after Zhang's extradition to China to face corruption charges. Accordingly, Gilbert Shang Ndi describes Isookanga as "an archetypal figure of commercial pragmatism that characterizes Congo's economic war history" (2020, p. 63).

Congo Inc. does not only expose the Euro-American capitalists who fan wars in the Congo Basin, especially in the eastern DRC, in order to access natural resources such as gold, coltan, uranium, etc. Through the translation of all chapter titles into Chinese, China Networks; the CD-ROM; the presence of countless Chinese (and Middle Eastern) business products in Kinshasa shops; and the presence of Chinese capitalists such as Mr. Liu Kai, who abandons Zhang in Kinshasa (Bofane 2014, pp. 47–48, 63–67), the novel also symbolically

foregrounds China's conspicuous entry into the capitalist race in Africa. However, Bofane apparently suggests that, despite obvious shortcomings, Congolese and Africans should look more in China's direction for win–win deals such as Isookanga-Zhang's, especially now that western countries are increasingly refusing visas from Africans (Bofane 2014, p. 238; also see Yoon 2020, p. 337).[7] In this complex network of capitalism in the Congo, as Duncan M. Yoon (2020) argues, Bofane "complicates the reductive representation of the PRC as an economic actor and the DRC as a passive recipient by innovating temporality" (2020, p. 317). Aside this complication of the China-Congo dynamics, *Congo Inc.* chronicles the imperceptible ways in which capitalist globalization, not only western conservation–development "experts", coopts Africans into western and other foreign cultural values. In addition to his obsession for the video game *Raging Trade* and integrating the global capitalist economy, Isookanga no longer dresses like a Pygmy. He has a particular fondness for dressing like Euro-American pop cultural stars. Through a flashback, we learn from uncle Lomama that 25-year-old Isookanga finished high school, came home with headsets one day, and became stubborn, eventually obtaining a tee-shirt bearing the effigy of Snoop Dogg, an American pop music star described by Lomama as a marijuana smoker (Bofane 2014, p. 15). In the village, Isookanga usually dresses in a Superdy JPN jean and a Snoop Dog tee-shirt with a necklace bearing the letters NY when playing his video game (Bofane 2014, p. 13). While in the city (Kinshasa), Isookanga is invited by Aude Martin to accompany her to a bar one evening shortly before her departure for Belgium. Through vivid descriptions, we realize that, for this occasion, Isookanga wears his Superdy JPN jean and a Jimmy Choo tee-shirt bearing the English inscription "*This is not a Jimmy Choo & it's not available by H&M*" (Bofane 2014, p. 189, English and italics in the original). With his NY chain shining on his chest, he also wears his Dolce & Gabbana sunglasses. And they go to a bar where music by Wenge Musica and Werrason, the King of the Forest, is played (p. 189). Therefore, *Congo Inc.* suggests that neoliberal capitalism, green imperialism, and western imperialism sometimes move together in Africa and their ultimate objective is to control and exploit the abundant natural resources in the mythic African Eden while also assimilating Africans into foreign cultures for capitalist and other gains. In other words, capitalist industrialized countries in the North need African natural resources for their endless industrialization and economic growth and as markets for their goods. Consequently, they scramble for Africa's nature and resources, deploying varied methods such as warfare (symbolized by Isookanga's videogame *Raging Trade* and the endless wars in eastern DRC where Bizimungu was a warlord), neo-imperial conservation, and luring Africans into foreign cultural and economic lifestyles in order to ensure markets for foreign products in the name of development.

4. (Sustainable) Development and Alternative Ways of Being

Sustainable Development, as advertised or practiced in Africa, largely camouflages the double aim of saving the Eden of Africa while simultaneously making capitalist profits. First popularized through *Our Common Future: Report of the World Commission on Environment and Development* (the *Brundtland Report*) published in 1987, the concept of sustainable development advocates the pursuit of development in ways that meets the needs of present generations without depriving future generations of meeting theirs. Nonetheless, many scholars (e.g., Noussi 2012; Garard 2007) acknowledge the complexity and difficulty of defining this concept, including its increasingly official substitute: sustainability. The shift towards sustainability is mainly explained by the fact that sustainable development has come under heavy criticism as an oxymoron trapped in the dilemma of sustaining either nature or development, but both sustainability and sustainable development are criticized for their collusion with neoliberal capitalism to commodify and commercialize finite nature (Blanc 2020; Spaiser et al. 2017; Brown 2015; Noussi 2012; Garard 2007; Bonnevault 2004).

Accordingly, Ndinga's *Les Marchands du développement durable* (2006) satirically characterizes sustainable development as a prefabricated western commodity to be sold to Africans, especially in the Congo Basin. As the novel's title explicitly indicates, Donadieu

and Rav, and all the western stakeholders in their project in Cotovillage are merchants (sellers) of a sustainable development agenda, which Donadieu cannot even define appropriately (Ndinga 2006, pp. 20, 36; Noussi 2012, p. 150). Nonetheless, the real goals of these merchants of sustainable development consist of "saving" the Congo Basin's Eden and incorporating its people into neoliberal capitalism and western imperialistic globalization. Consequently, even nature seems to suspect or oppose Donadieu's project in Cotovillage: the novel opens with dog-mouthed monkeys escaping, observing, and seemingly mocking (by chuckling) Donadieu as he walks through the Congo Basin forests (Ndinga 2006, p. 11). Moreover, at the end of the novel (Chapter 20), Lenga meets three fairy-like female figures in the forest discussing the fate of Coto (pp. 148–52). Unfortunately for Donadieu, Rav, and their western sponsors, their ill-conceived, foreign-designed project and masked attentions are quickly understood and variously challenged by many critical minds in Cotovillage, notably Matatu the Pygmy spokesperson, Lenga, his mother Mabouéré, and many other women. As an enlightened Bantu woman, Mabouéré verbally confronts Donadieu immediately after he explains that he has come to implement sustainable development in Cotovillage:

> . . . Nous sommes développés, nous mangeons déjà à notre suffisance, maintenant vous voulez que notre développement soit durable, que nous pensions à la prospérité. [. . .] Pourquoi voulez-vous que nous élevions des animaux sauvages, pourquoi voulez-vous que nous mangions de la viande fade, que nous labourions nos terres comme vous, que nous semions nos graines comme vous? (*Puis, à voix basse, monologuant, elle ajoute: Ehe, likabo na ye oyo eza na tin ate*!) [. . .] Voulez-vous que nous soyons tous des Suisses? [. . .] Vous ne voulez pas que nous soyons tous des Suisses, mais vous nous demandez de faire tout comme vous. Alors, je ne comprends rien à votre presence ici. . . (. . . We are developed, we already eat to our satisfaction, now you want our development to be sustainable, you want us to think about prosperity. [. . .] Why do you want us to raise wild animals, why do you want us to eat bland meat, why do you want us to plough our land like you, to sow our seeds like you? (*Then, in a low voice, monologuing, she adds: Ehe, likabo na ye oyo eza na tin ate*!) [. . .] Do you want us all to be Swiss? [. . .] You don't want us all to be Swiss, but you ask us to do everything like you. So I don't understand anything about your presence here . . .) (Ndinga 2006, p. 31)

As this quote shows, in their mother tongue and in a lower voice, Mabouéré derisively remarks that Donadieu's mission makes no sense. Mabouéré and other Cotovillage locals have a point in rejecting this (un)sustainable development which is conceived abroad and based on the wrong assumption that their Eden needs to be protected against them. Deep in his thoughts, Lenga wonders why they would be forced into a project which purports to address forest exploitation, since Donadieu claims that farming and hunting are threatening their forests. As Lenga recalls, forests are mostly destroyed for road construction and commercial timber exploitation, but nobody in Cotovillage and its environs has the ambition or the means to exploit wood for commercial reasons (Ndinga 2006, pp. 35–36). Thus, there must be concealed intentions in Donadieu's project.

Nevertheless, Mabouéré's rejection of Donadieu's project does not correspond to what Axelle Kabou (1991) described about three decades ago as Africa's refusal of technological development. Instead, Mabouéré and her fellow women stand for a different kind of development which reposes on solidarity among the downtrodden, especially women, a sense of community, and respect for and harmony with nature—a model which is quite similar to that advocated by Francophone Cameroonian novelist Angèle Kingué in *Venus du Khalakanti* (Kingué 2005, p. 163). As Oswaldo de Rivero (2010) convincingly argued after Kabou, the much-flaunted "development" programmes designed for countries in the global South have almost all failed because such a Californian style of development (heavily dependent on industrialization, hyper consumerism, incessant urbanization, and enormous energy consumption) is both a myth and dangerous for the health of the Earth. De Rivero rightly asserts: "If industrialized societies' consumption patterns are globalized, the earth's

biosphere will be unable to sustain them" (2010, p. 62). Yet, this is exactly what Donadieu and Rav have come to do in Cotovillage—globalize western consumption patterns in the name of sustainable development. Interestingly, despite initial acceptance of this model by some characters, Mabouéré tells Donadieu that the people of Cotovillage already eat to their satisfaction, thus suggesting that they have no need for these new consumption patterns imposed on them. As Cameroonian literary scholar François Guiyoba (2011) advises: "…l'humanité gagnerait à favoriser le développement raisonné de l'Afrique et non à faire semblant de l'aider à se développer pour mieux l'exploiter, ou à l'engager sur des voies de développement-leurre qui ne tiennent pas compte de ses traditions" (…humanity would benefit from fostering the reasoned development of Africa and not pretending to help it develop in order to better exploit it, or to set it on development paths that do not take into account its traditions) (p. 528). Relatedly, Ndinga's novel not only rejects such forms of green capitalist-imperialist domination of Africans but also highlights alternatives to what de Rivero (2010, p. 71) describes as "Darwinist" or endlessly progressive development as conceived in the global North. As Ndinga suggests, the people of Cotovillage do not need (un)sustainable development because they care more about their wellbeing and happiness than any development skewed to the whims and caprices of the misleading Gross Domestic Product (GDP), an economic metric which is substantially criticized for encouraging infinite capitalist growth on a planet with finite resources and failing to measure human wellbeing and immaterial needs (Jackson 2017; Sarr 2016; D'Alisa et al. 2015; de Rivero 2010). Accordingly, Tim Jackson (2017) proposes prosperity without growth; Kallis (2019) promotes the idea of an economy of limits, flourishing, and care; and Giacomo D'Alisa et al. (2015) advocate degrowth as replacements for endless capitalist growth premised on GDP which destroys nature.

As alternatives to GDP-driven development and oxymoronic sustainable development, which are wrongly designed abroad and imposed on Africans in the name of saving their Eden, I argue that Ndinga proposes development which hinges upon inclusive participation of men and women, with emphasis on the crucial role of women in formulating and implementing developmental projects (e.g., the consultations between Lenga and women such as Mémona and Rita, pp. 121–29), local consumption patterns and the people's overall satisfaction and happiness. The narrator reminds us through Lenga's thoughts: "À Cotovillage, la vie est rythmée entre la femme, les enfants, le champ, la chasse, la pêche, l'alcool, le rire et la danse" (In Cotovillage, life is punctuated between the wife, children, the farm, hunting, fishing, drinking, laughing and dancing) (p. 36). The residents of Cotovillage including the forest Pygmies cherish their lifestyles and have not invited anyone to come and (un)sustainably develop them.

Similarly, in *Le Silence de la forêt* (1984), a novel by Central African Republic author Étienne Goyémidé (1942–1997), when Gonaba, a Bantu Inspector of Primary Schools trained in France, decides to abandon his job and go and learn from Babinga Pygmies in the forest, he discovers that the Pygmies lead complex, dynamic, satisfying, and happy lives. Through a series of events, interspersed with flashbacks, foreshadowing, contrast, dreams, dialogues, etc., the first-person narrator Gonaba exposes a people in a self-sufficient community where laughter is ubiquitous and contagious. And Gonaba cannot help but marry Kaliwossé, a young Pygmy woman, as one of many strategies to integrate into the society. Whether it is Manga the Pygmy on his way to study the Bantu society (pp. 26, 28–29), Toukamignan and Kpoulougnan—Gonaba's brothers-in-law—or old women (pp. 106, 128, 130), bursting into laughter is the leitmotif of the Pygmy society. In fact, laugh ("*rire*") features about thirty times and (was) laughing ("*riant/riait*") about six times in *Le Silence de la forêt*, reminding us that the forest is not actually a place of desolation and silence (despite Kaliwossé's tragic death after bearing two children with Gonaba). Laughter and dance in both novels are of particular relevance nowadays not only because neoliberal capitalism in industrialized countries of the North has proven that it cannot procure happiness for those who accumulate unnecessary wealth (Mortensen 2020; Jackson 2017; D'Alisa et al. 2015; de Rivero 2010). Laughter is also important here because of growing interest in the Bhutanese

concept of Gross National Happiness (despite the debates surrounding it) as one of the alternative instruments for measuring human wellbeing and fulfillment (Mortensen 2020, pp. 8–9). In both novels, life is framed more or less in terms of happiness and wellbeing, which roughly corresponds to how life is perceived and experienced in much of Africa. Senegalese scholar Felwine Sarr observes: "La vie ne se mesure pas à l'échelle, elle est une expérience et non une performance" (Life is not measured on a scale, it is an experience, not a performance) (Sarr 2016, p. 19). Moreover, Sarr reminds us that economic life in precolonial Africa was not organized in order to be measured by metrics such as the GDP, which emerged between the seventeenth and eighteenth centuries in Europe. Instead, precolonial African economies were cyclical in nature and focused on guaranteeing the subsistence of all (Sarr 2016, p. 79).

In view of what precedes, I argue that both Ndinga and Goyémidé use their novels to project alternative cultural lifestyles and forms of "development" for Africa. In the context of the current climate and ecological crisis, I suggest that Africa does not need what I call "aspirational development", that is, development which is not locally inspired but instead aimed at catching up with the global North. This is no longer the time to conceive development in the Congo Basin or Africa in the form of the "lateness" that Kabou once evoked (1991, p. 44). Contrarily, as Sarr observes, Africa has nobody to catch up with in terms of development:

> L'Afrique n'a personne à rattraper. Elle ne doit plus courir sur les sentiers qu'on lui indique, mais marcher prestement sur le chemin qu'elle se sera choisi. Son statut de fille aînée de l'humanité requiert d'elle de s'extraire de la concurrence, de la compétition, de cet âge infantile où les nations se toisent pour savoir qui a le plus accumulé de richesse, de gadgets technologiques, de sensations fortes, de capacité de jouissance des biens et plaisirs de ce monde, et peu importe si cette course effrénée et irresponsable met en danger les conditions sociales et naturelles de la vie humaine. (Africa has no one to catch up with. It must no longer run along the paths indicated to it, but walk swiftly along the path it has chosen for itself. Its status as the eldest daughter of humanity requires it to extricate itself from competition, from that infantile age when nations pounce on each other to see who has accumulated the most wealth, technological gadgets, thrills, and the capacity to enjoy the goods and pleasures of this world, no matter if this unbridled and irresponsible race endangers the social and natural conditions of human life.) (Sarr 2016, p. 152)

As "the eldest daughter of humanity", Africa needs to draw lessons from her past and cultural realities, as well as borrow what is beneficial from elsewhere and proceed to formulate the kind of "development" model that best fits her without harming nature, especially in a post-COVID-19 world. This is exactly what Ndinga suggests in his novel, notably through the failure of Donadieu's project and the vision which Lenga obtains after his sojourn with the three fairy-like female figures in the forest. Before his sojourn in the forest, Lenga forcefully symbolizes the present-day Africa, which lacks a sense of direction, as he tells the fairy-figures: "Je vais partout et nulle part" (I am going everywhere and nowhere) (Ndinga 2006, p. 151). Invited to stay with them, Lenga stays there for 17 years, 7 months, and 7 days, eating wild yams, dried crayfish, leaves, and nuts; studying and defining the properties of things; calling them by their names; not listening to any fake words; and not embracing any comedy from the "developmentalists" of Africa or that of politicians (Ndinga 2006, p. 151). When written together, 17 years, 7 months, and 7 days becomes 1777, and this figure is quite suggestive. The year 1777 falls within the precolonial phase of African history and could suggest the need to partly tap into the African past, local and indigenous knowledge systems, and foreign inspiration in formulating a new economic model for Africa. As Ndinga's narrator tells us about Lenga in the end,

> Loin du diktat des intellectuels du monde dominant, de leur arrogance et de l'hégémonie de leur culture, il découvre et prend conscience du passé de Coto, conçoit des réponses à ses questions existentielles, réponses qu'il ne veut imposer

> à personne en même temps qu'il tolère la pluralité des façons de vivre. (Far from the diktat of the intellectuals of the dominant world, their arrogance and the hegemony of their culture, he discovers and becomes aware of Coto's past, conceives answers to his existential questions, answers which he does not want to impose on anyone at the same time as he tolerates the plurality of ways of living.) (Ndinga 2006, pp. 151–52)

Certainly, Lenga expects people from other cultures to reciprocate this approach of tolerating different ways of inhabiting the Earth. In other words, western developmentalists–conservationists such as Donadieu and Rav should stop using the pretext of conserving a mythic African Eden to impose their economic and social models on Africans and inhabitants of the Congo Basin. Such a green imperialist approach to conservation and sustainable development comes with many consequences, including cultural and spatial dislocation and the production of poverty.

5. Producing Poverty to Preserve Africa's Eden

Nature conservation and sustainable development, both inspired by the masked agenda of preserving the Edenic Congo Basin (Africa), often produce opposite outcomes, especially in terms of ruining people's lives instead of ameliorating them. This should not, however, come as a surprise given that both nature conservation and sustainable development initiatives in Africa, to a larger extent, serve as covert channels for green imperialism or what Rob Nixon calls "resource imperialism". In Nixon's words, "[the] environmentalism of the poor is frequently catalyzed by resource imperialism inflicted on the global South to maintain the unsustainable consumer appetites of rich-country citizens and, increasingly, of the urban middle classes in the global South itself" (Nixon 2011, p. 22). Relatedly, Caminero-Santangelo and Myers (2011) acknowledge that many Africans are adversely affected by global environmental problems, including resource exploitation and consequent poverty, although most Africans are not the primary causes of these problems (p. 9). Similarly, and with regard to the oil-rich Niger Delta region in his native Nigeria, Sule Emmanuel Egya (2016, p. 7) contends that it is often for the interest of a few powerful individuals from the global North and global South that millions of innocent people, such as those of the Niger Delta (and the Congo Basin, I add), are made to suffer. In short, "Poverty in the South is the outcome of the exploitation of its natural and human resources at low cost by the North" (D'Alisa et al. 2015, p. 5).

Whereas the precarious and poor situation of millions of people in the Niger Delta is largely linked to oil exploitation, in the Congo Basin, millions of people are principally impoverished by efforts to conserve the basin's Edenic forests. As Richard A. Schroeder (2000) observes, "environmental policies have for decades done little to alleviate, and have at times contributed directly to the exacerbation of poverty across the continent" of Africa (p. 341). Ndinga's *Les Marchands* interestingly exemplifies this situation. In spite of Donadieu's project to purportedly implement sustainable development in Cotovillage, its inhabitants remain poor.

Without mincing words, Ndinga's narrator tellingly declares:

> De la *françafrique* aux réseaux de plus en plus denses de liens internationaux, amicaux et d'intérêts divers pour la conservation biologique à Coto, ce sont moins les triomphes des Landois, des Américains et des Cotois à sauvegarder des ressources forestières en péril que le triomphe du status quo. En d'autres termes, c'est l'asservissement de ces derniers par les deux premiers ainsi que le maintien des Africains, et des Cotois en particulier, en soutiers de l'abondance de l'Occident en ressources naturelles. Du fait des ressources financières qu'ils mettent en jeu, la Lande et les Amériques exigent que l'OMF, de même que le projet—les employés de nationalité cotoise compris—travaillent pour eux, c'est-à-dire promeuvent leurs politiques. (From *Françafrique* to the increasingly dense networks of international links, friendships and diverse interests in biological conservation in Coto, it is less the triumph of the Landese, the Americans and

> the Cotois in safeguarding endangered forest resources than the triumph of the status quo. In other words, it is the enslavement of the latter by the former two as well as the maintenance of Africans, and Cotois in particular, as pimps to the West's abundance of natural resources. Because of the financial resources they bring into play, Lande and the Americas demand that the OMF, as well as the project—including its employees of Cotois nationality—work for them, that is, promote their policies.) (Ndinga 2006, p. 94)[8]

Unsurprisingly, therefore, the project is unable to meet the people's needs for a road, a bridge, and a health center (Ndinga 2006, p. 15). Indeed, the project serves the interests of its western sponsors as the narrator reveals above. Consequently, neither the numerous western NGOs nor the foreign states which finance them, while intimidating local NGOs and the civil society (p. 119), are able to ameliorate the lives of Cotovillage residents to the standards of the capitalist economy into which they are coopted. Towards the end of the novel, particularly in Chapter 17, the omnipresent narrator sarcastically remarks: "Le village est riche en ressources naturelles mais les individus meurent chaque jour de paludisme, de sida, de luttes intestines ou de malnutrition" (The village is rich in natural resources but people are dying every day from malaria, AIDS, infighting or malnutrition) (Ndinga 2006, p. 121). Lenga's abusive and punitive dismissal from the project, partly due to unfounded sexual assault accusations from an incompetent western employee called Sophie (Ndinga 2006, pp. 99–102, 121), and the deplorable state of the former project camp and local employees/beneficiaries at the very end of the novel all symbolize the poverty created in that community in the name of conservation and sustainable development. When Lenga returns from the forest, Rita, Madeleine, Judith, and Hélène, four women who depended on the project, have consecrated their lives to raising their grandchildren due to a lack of funding for the project while the project camp is in ruins and the plane landing path is covered with Bokassa grass (*Chromolaena odoratum*) (an invasive plant as explained in a footnote) and "l'œil d'autrui ne voit plus rien. Ainsi, l'OMF donna à Cotovillage un plat à sa façon" (someone's eye sees nothing. So, the OMF served Cotovillage a dish in its own manner) (Ndinga 2006, p. 152). While the invasive Bokassa grass metaphorically represents the intruding nature of some western conservationists–developmentalists in Africa and the Congo Basin, the fact that one sees nothing beyond the ruined camp and abandoned landing track symbolizes the nothingness/emptiness of Donadieu's project, including the poverty it has created in Cotovillage.

Although Ndinga and Inyang both work within the conservation/environmental sector, the former critically and deliberately exposes how some western conservationists–developmentalists contribute to material or economic poverty in Africa (as discussed above) whereas the latter more or less takes the defense of western environmental NGOs and donors on the continent. Indeed, in *The Last Hope*, Inyang struggles to defend the thesis that locals who obediently support fortress conservation efforts in their communities and relocate to designated resettlement sites receive the rewards of development which include moving from thatched houses to modern houses roofed with zinc and furnished with luxurious chairs in the resettlement sites; becoming animal breeders (pig and poultry farmers); and obtaining collective infrastructure in the form of schools, community halls, bridges, and roads (Inyang 2011, pp. 73–77). The play establishes a dichotomy between good residents such as Kondo and Asu who have received developmental blessings from the Korup project and bad residents or activists such as Era, Koko, and Motia whose resistance to the project (e.g., some still want to hunt in the forest and refuse to relocate to the resettlement site) makes them losers. In Act 3 Scene 1, when Era and Koko visit Kondo and they start arguing about why some of them have benefited from the project while others have not, Era promises that they will wipe out everything in the forest, and Kondo (his cousin) reminds him of their last confrontational encounter with the park guards. Stage directions read: "*Era casts Kondo an angry look, and then resumes surveying the house and chairs in hidden admiration. He is apparently boiling with regretful anger*" (Inyang 2011, p. 80, original italics). That Era secretly admires Kondo's house and chairs while boiling with "regretful

anger" suggests the authorial intention to highlight Era's regrets for resisting the project. Unintentionally, however, the play demonstrates the production of poverty among many residents in the name of conserving the Korup Eden. Despite attempts to make forest management more inclusive in the play, the dissenting voices of characters such as Era and Motia should be taken seriously.

Motia concludes as follows: "Whether the project is here or not, it doesn't really make any difference to me. [*He takes a few strides away*.]" (Inyang 2011, p. 86). Despite the few successes of the Korup project flaunted in the play, the future of the project is uncertain whenever EU Donor and GTZ Donor will pull out their funding, whereas a lot of the project's promises have not been fulfilled. If ever these western funders withdraw, it is highly probable that the project will end in ruins like Donadieu's project in Cotoville. In this regard, Motia's conclusion should be read as the cry of the numerous Africans whose lives are disrupted and impoverished by conservation–development projects in the Congo Basin (and Africa), which are designed and imposed from the global North in the name of sustainable development and conserving Africa's Eden. This material poverty engendered in Africa is rightly designated as "paradoxical poverty" (Kabou 1991, p. 151) because under normal circumstances Africans should never be poor since their continent is the richest in terms of natural resources. However, as Schroeder (2000) puts it, "…contemporary natural resource management strategies premised on marketing nature as a commodity have, if anything, only exacerbated preexisting conditions of poverty in many areas" of Africa (p. 346).

In addition to producing poverty as argued above, and provoking violent physical and spiritual displacements (addressed elsewhere—Nsah 2022, pp. 202–4; also see Hill 2023; Lee 2022; Betoko and Carvalho 2020; Simlai 2015; Rainforest Foundation UK 2014), another negative consequence of green imperialism in Africa in general and the Congo Basin in particular is epistemicide, as I discuss below.

6. Local and Indigenous Knowledge and Epistemicide

Instead of considering local and indigenous people as threats to their environments and forests, conservationists–developmentalists, especially those from the global North, have a lot to learn from them in order to conserve nature. In other words, you cannot claim to preserve a mythic Eden in Africa while at the same time destroying the cultures and epistemologies which have sustained it since time immemorial. Yet, many capitalist conservationist–developmentalist projects actually perpetuate this in Africa and the Congo Basin. Instead of perpetuating such practices, there is much to learn from local and indigenous peoples. Undoubtedly, (neoliberal) capitalism is the principal cause of the climate and ecological crisis threatening the Earth today.[9] Interestingly, in *Les Marchands* and *Le Silence*, for instance, indigenous Pygmies have a collectivist economic system focused on the survival and wellbeing of all, that is, an anti-capitalist system which acknowledges their belonging to and interdependence on nature. Following Cameroonian literary scholar Oscar Labang (2015), it should be noted that, for African local and indigenous people, the forest is a resource owned communally by the community, whereby the people depend on the forest for their wellbeing and the forest partly depends on them for preservation. As Kingué's novel reminds us, we/Africans are all children of the forest (2005, p. 163). We all collectively depend on the forest/nature for food and healing. Accordingly, when accused of having stolen Bantu eggs and fowls, the Pygmies in *Les Marchands* rightly insist that they did not steal but rather ate the village eggs and fowls when they were hungry (pp. 65–66). This is because there is no private ownership of food or resources in their collective worldview or "economic" model.

In *Le Silence*, after Gonaba kidnaps his wife Kaliwossé aka Pygmalion from her parents' house to his own house, according to the Babinga marriage tradition (Goyémidé 1984, pp. 114, 120), Gonaba starts wondering what will become of the bushmeat which he and his two brothers-in-law had caught and the yams, ingredients, etc. offered by anonymous Babinga women in preparation for their marriage (Goyémidé 1984, pp. 115–19). Indeed,

Gonaba understands that he and his wife alone cannot consume all the food. As Gonaba starts making plans to smoke and preserve the extra meat and fish, unbeknown to him, the community organizes a festive ceremony to officially seal their marriage, a ceremony for which they bring more food and meat and everything is eaten to Gonaba's surprise. Prior to the ceremony, Gonaba visits the old Pygmy Kpignawoulossé (who is a seer, advisor, and healer) to seek his advice on what to do with the excess food and the old man ironically tells him: "Vous n'êtes pas obligés de tout manger. Si ça se gâte, on s'en débarrassera, la viande on en trouve toujours. Essayez de supporter encore cinq jours. Et tout finira par s'arranger" (You don't have to eat everything. If it goes bad, we'll get rid of it, there's always meat. Try to bear it for another five days. And everything will work out in the end.) (Goyémidé 1984, p. 123). Although, superficially, the old man seems to suggest that leftover meat can be thrown away, this is actually an instance of dramatic irony for two reasons: in their customs, they never waste food because it is shared to everyone in need (in fact, no one owns it individually) and they are secretly planning a ceremony in which all of that food will be consumed. Reflecting during that ceremony, Gonaba, the first-person narrator, concludes: "Je suis sans parole devant une telle marque de sympathie, d'amitié. Les Babingas ont fêté à leur manière mon mariage avec leur fille. Les Babingas sont un peuple mûr, souverain, capable à tous égards, et qui n'a de leçon à recevoir de personne" (I am speechless in front of such a mark of sympathy, of friendship. The Babingas celebrated my marriage to their daughter in their own way. The Babingas are a mature, healthy people, capable in all respects, and they have no lessons to learn from anyone.) (Goyémidé 1984, p. 126). As the novel illustrates, these mature, sovereign, dynamic, and capable people lead a lifestyle based on recognizing their place in nature; receiving their food and medicine from nature; and giving to, sharing with, and caring for, one another, including nature. And this is the basis for their wellbeing and happiness (laughter).

In *Congo Inc*., the Ekonga Pygmies, particularly uncle Lomama, display deep connections to and knowledge of nature and their forests. Lomama is one of those who want to preserve everything (Bofane 2014, p. 158). While Bizimungu is struggling to know how he can destroy the forests and extract minerals, Isookanga informs him that his uncle knows how to cure trees but not how to make them sick. As Isookanga explains, Lomama masters the forest and how to make it prosper; for instance, he can summon rain to fall where it is necessary to make vegetation grow (Bofane 2014, p. 176). In Chapter 9, the narrator follows Lomama in the forest, as the old man struggles to identify the cause of the violent death of his leopard friend Nkoi Mobali (Bofane 2014, pp. 198–206). Lomama finally concludes that Nkoi Mobali was violently assassinated by warthogs whose intrusion into the leopard's territory is blamed on climate change and the telecommunications pylon installed by China Networks, an antenna which has partly led to the disappearance of caterpillars in the area. He understands that the leopard's death symbolizes impending ecological doom if nothing is done (Bofane 2014, pp. 205–6). Yet, his visit to Kinshasa to inform Bizimungu (the detached park manager who never visits it even once) concerning government ministers and UN officials yielded no fruit since none of these people really care about the welfare of the animals and trees in Salonga except the resources they can exploit therefrom (Bofane 2014, pp. 248–52). Loma only succeeds in bringing home his nephew Isookanga who would replace him as chief among the Ekonga, but there is every reason to fear Isookanga's forthcoming reign since he returns home with a CD-ROM containing a Chinese map of Salonga natural resources (Bofane 2014, pp. 252, 256, 279).

Despite the uncertainty of Isookanga's future chieftaincy, *Congo Inc*., and the other novels under study, I argue and unequivocally advocate for the recognition and promotion of local and indigenous knowledge systems in both conservation and development matters at a time when there is a strong international indigenous rights movement and growing consensus among scientists to recognize and learn from the value of indigenous technical knowledge systems (Schroeder 2000, p. 345). Instead of humbling themselves and learning from these systems, some western conservationists–developmentalists (displaying colonial arrogance and superiority) in Africa and the Congo Basin prefer to disrespect, undermine,

trample upon, and destroy indigenous knowledges, thereby perpetuating epistemic injustice (Fricker 2007) and what de Sousa Santos (2014) calls "epistemicide" or "the murder of knowledge" (p. 92). As we see in *Les Marchands* in particular, Donadieu and Rav are bent on murdering the lifestyles and knowledge systems of the Pygmies as they want to force them into the neoliberal capitalist economy in the name of preserving their Eden.

Meanwhile, in *The Last Hope* and *Les Marchands*, conservationists–developmentalists embark on identifying or "discovering" new fauna and flora species in the Congo Basin. In his theatrical lecture to the Korup residents in *The Last Hope*, Education Officer discloses that "ninety medicinal plants have been discovered in the Korup National Park, thirty-eight of which are new to science" (p. 29) and proceeds to announce that one such plant is *Ancistrocladus korupensis*, describing it as "a vine that may provide a cure for AIDS" (p. 30). Certainly, it is beneficial to have such a plant which might potentially save humankind from AIDS and it is laudable to name it after Korup, but one must still wonder which science (epistemology) Education Officer is referring to: western science or the science of the Korup people? Furthermore, there is no guarantee that a potential AIDS cure from that plant would not be hijacked by capitalist pharmaceutical companies for the maximization of profits at the detriment of humanity, including the Korup people. In *Les Marchands*, while Donadieu relies on the assistance of local Bantus such as Lenga and Sylvestre to study, photograph, and document different species in their forests (Ndinga 2006, pp. 5–54, 67), he does not acknowledge them in his *Progress Report* (italics in original) addressed to OMF in which he declares that numerous species of plants, mammals, fish, birds, reptiles, amphibians, scorpions, myriapods, etc. have been identified in the forests and should be protected against the menacing Cotolese (pp. 72–73). Rav in *Les Marchands* and Aude Martin, the young female Belgian social anthropologist, in *Congo Inc*., in their respective parts, are representative of some scholars from the global North who sometimes pretend to work for conservation–development NGOs in order to quench their exotic thirst and curiosity for local and indigenous people without proper respect and consideration for their cultures and knowledge systems. For such foreigners who perpetuate epistemicide in Africa in the name of saving a mythic Eden, Goyémidé's protagonist Gonaba has a strong message:

> Je ne suis pas ethnologue. Je ne suis pas venu ici avec l'intention arrêtée de faire découvrir au monde civilisé «Les Vies et Mœurs des Babingas de la forêt équatoriale.» Une certaine Margaret Mead le ferait avec plus de «compétence.» Si je me trouve ici dans cette clairière, sous cette hutte faite d'écorces et bâtie des mains de Pygmées, ce n'est pas pour violer leur personnalité, ce n'est pas non plus pour piller leur patrimoine culturel, sociologique, ethnologique et autres, mais c'est simplement pour vivre avec eux, de leur vie de tous les jours, leurs joies, leurs peines, dans leur contexte naturel en les considérant comme il se doit, en peuple mûr et respectable, et non en espèce de cobayes de laboratoire. (I am not an ethnologist. I did not come here with the firm intention of introducing the civilized world to "The Lives and Habits of the Babingas of the Equatorial Forest." A certain Margaret Mead would do so with more "competence." If I am here in this clearing, under this hut made of bark and built by the hands of Pygmies, it is not to violate their personality, nor is it to plunder their cultural, sociological, ethnological and other heritage, but it is simply to live with them, their everyday life, their joys, their sorrows, in their natural context, considering them as it should be, as a mature and respectable people, and not as a species of laboratory guinea pigs.) (p. 97)

In this excerpt, the narrator's reference to famous American cultural anthropologist Margaret Mead (1901–1978) suggests Goyémidé's advocacy for the respect of indigenous people and their lifestyles and against stealing their knowledge and cultural heritage. Instead of treating them as laboratory guinea pigs, local and indigenous people should be approached as complete, sovereign, and dynamic humans with alternative cultural and knowledge systems. Unless local and indigenous people are approached the way

Goyémidé advocates, I argue that conservation and development will continue to be wrongly conceived and imposed on Africa and the Congo Basin without any tangible success in terms of mitigating climate change and preserving nature. Indeed, conservation efforts must cease to be premised on a mythic African Eden to be saved from Africans and instead recognize the unbreakable bonds between these people and the nature to which they have belonged since time immemorial. Instead of displacing them, conservationists–developmentalists should genuinely acknowledge, learn from, and work with them in a spirit of epistemic pluralism (Coliva and Pedersen 2017), following their real needs and desires, and with their explicit consent.

7. Conclusions

As I have argued in this article, the myth of an African Eden invented in the colonial era continues to permeate most development and conservation efforts in Africa, including the Congo Basin. I have suggested that some Euro-American transnational NGOs, and political and financial institutions collude with some African governments to spread global capitalism and green colonialism under the guise of oxymoronic sustainable development as they attempt to conserve a mythical African Eden. Such Euro-American environmental NGOs and other institutions impose and sustain fortress conservation in the Congo Basin as a hidden means of coopting Africa's nature and Africans into neoliberal capitalism. In fact, through fortress conservation, some western NGOs such as WWF, Wildlife Conservation Society, and Ndinga's fictional OMF; financial institutions such as the World Bank and IMF; and (inter)governmental agencies such as the EU, GTZ (GIZ), and USAID knowingly or unknowingly perpetuate green imperialism/colonialism and resource imperialism and promote neoliberal capitalism in Africa and the Congo Basin at the expense of the nature they claim to be protecting. In this regard, while Africans, including indigenous peoples, are being coopted into neoliberal capitalism which destroys nature, alternative forms of development are undermined in the name of sustainable development or sustainability and indigenous people are violently dislocated to save a non-existing Eden at the same time as their knowledge systems are either stolen or destroyed (epistemicide). In the end, most development–conservation projects only succeed in producing visible and invisible violence, as well as material and social poverty, which in turn adversely affect humans and nature instead of actually preserving nature or implementing questionable GDP-driven development.

Although Inyang, in this play and elsewhere (e.g., some of his scholarly publications), intentionally, and sometimes uncritically, defends fortress conservation, I argue that all four literary texts under study expose the various shortcomings of fortress conservation, the contradictions of sustainable development, the nefarious effects of green and resource imperialism, and the resourcefulness of alternative economic models and knowledge systems as practiced by local and indigenous peoples.[10] Fortress conservation often results in both overt and subtle forms of resistance such as those mounted by local and indigenous populations in Inyang's *The Last Hope* and Ndinga's *Les Marchands*. In both texts, attempts to perpetuate "accumulation by dispossession aimed to employ free-market policies for private appropriation of the commons" (Fletcher et al. 2014, p. 7) through fortress conservation are glaring. Meanwhile, calls for the abolition of fortress conservation in Africa are multiplying and come from many angles such as academia, civil society, and NGOs (e.g., Betoko and Carvalho 2020; Blanc 2020; Mohanty 2019; Pemunta 2018; Büscher 2015; Fletcher et al. 2014; Brockington 2002). In October 2020, for instance, Irene Wabiba Betoko and Savio Carvalho, two employees of the international environmental NGO Greenpeace, made it clear in an opinion piece that the only way to protect nature in Africa is to tear down the walls of fortress conservation.[11] Undoubtedly, protecting nature in Africa and the Congo Basin is crucial for the posterity of species and as a way of mitigating climate change, but the current approach and strategies deployed to achieve these goals must be changed if we want to achieve success. Any initiatives in these directions must be both nature- and people-centered, not imposed from the global North, fully considering the people's genuine

needs and actively involving them. Moreover, conservationists should approach nature not as a static given but as a dynamic arena of co-construction between human and nonhuman forces (Kelly et al. 2017, p. 1). Otherwise, most forest conservationists–developmentalists in Africa and the Congo Basin will meet resistance and failure and continue to ask the same rhetorical questions as Donadieu in Cotovillage:

> Pourquoi est-il venu à Cotovillage? Quel besoin? Quelle urgence? On peut admettre que le développement durable soit nécessaire. Mais Cotovillage est-il réellement demandeur du projet dont il est le Conseiller technique principal? Les procédés d'utilisation de l'énergie, d'exploitation de bois ou de transformation de la matière sont uniformes partout à travers notre planète. Mais doit-on pour autant imposer partout la même façon de manger, la même façon d'aimer, la même façon de faire l'amour, les mêmes saints, les mêmes religions? . . . Pourquoi croire que les résistances des Cotois au projet sont forcément liées à un déficit en éducation relative à l'environnement? (Why did he come to Cotovillage? What need? What urgency? One can admit that sustainable development is necessary. But is Cotovillage really interested in the project for which he is the main technical advisor? The processes of energy use, wood exploitation or material transformation are uniform everywhere on our planet. But should the same way of eating, the same way of loving, the same way of making love, the same saints, the same religions be imposed everywhere?) (Ndinga 2006, pp. 51–52)

Such questions remind me of the following story. It is reported that an international NGO (which I prefer to anonymize), without proper consultation, constructed a well (borehole) for some indigenous Baka Pygmies in their camp in the East Region of Francophone Cameroon. But the Baka people ignored the well and continued sending their children to walk for about 2–3 h to fetch water in their distant stream. When the NGO personnel eventually realized this, they conducted an inquiry which revealed that the well was a serious cultural problem for Baka couples because they share their huts with their children and only make love when they send their children faraway to fetch water from the stream. Then, the NGO built small houses with rooms for the Baka.[12] This story alongside the four texts I have examined here all point to the multiple dangers of disregarding people's cultures, value systems, lifestyles, and economic models in the name of preserving a mythic African Eden and spreading neoliberal capitalism and western cultures. In this way, I have demonstrated that conservation humanities go beyond critiquing and generating frustrations to developing new insights about conservation (see Holmes et al. 2022). Holmes et al. (2022) observe, "A conservation humanities approach can also draw attention to perspectives that have been marginalized, silenced, or neglected but have the potential to enrich conservation debates" (p. 3).

As Eveline R. de Smalen (2019) succinctly puts it, "efforts to mitigate human activity's adverse effects on the environment often meet with opposition when they ignore the cultural memories, values and imaginations of implicated communities" (p. 381). Following Bonaventure Mve-Ondo, Felwine Sarr rightly reminds us that the path taken by western reason is just one among many paths (Sarr 2016, p. 114). Similarly, Ndinga uses Lenga at the end of his novel to remind humanity that there are multiple ways of perceiving and inhabiting the world (p. 152). Literature is particularly useful within the conservation humanities given its capacity to critique, to engage with complexity, and to point to new or different possibilities and futures. Consequently, as these literary texts suggest, I submit that nature conservation and sustainable development in the Congo Basin (Africa) should not be imposed from the global North. Instead, these should emanate from Africans and tap from local expertise, cultures, indigenous, and foreign knowledge systems in order to preserve both nature and humans in a world of multiple epistemological systems and ecosystems. In this way, environmental protection and environmental justice will be pursued together.

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Notes

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2 See for instance the African Union Commission Facebook Page at <https://www.facebook.com/AfricanUnionCommission/posts/10165087226585408> accessed on 26 May 2021.

3 Forbes Africa, "Focus on Gabon: The Emerging Eden of Africa", 28 February 2020, retrieved from <https://www.forbesafrica.com/brand-voice/2020/02/28/the-emerging-eden-of-africa/> on 10 March 2020. Despite the fact that all the 13 Gabonese national parks were created by presidential decree in 2002, they all employ the fortress model of conservation with heavy repercussions for local and indigenous people, and this model has roots in the colonial mythic idea of an African Eden perpetuated by Western media such as *National Geographic* and in the French colonial creation of hunting reserves, especially the Lopé National Park (see Laurence Caramel, "Forêt d'Afrique centrale: le pacte vert de Lee White", *Le Monde*, 6 October 2021, retrieved from <https://www.lemonde.fr/afrique/article/2021/10/06/lee-white-un-britannique-au-service-de-la-foret-d-afrique-centrale_6097288_3212.html> on 8 October 2021). It should also be noted that European demand for African animal products such as ivory and the killing of African fauna as hunting trophies by white men played a key role in the decline in biodiversity in Africa in general and the Congo Basin in particular after the Berlin West African Conference. Today, Chinese and other Asian markets are largely responsible for the decimation of African fauna species such as elephants and rhinoceros.

4 Fortress conservation refers to the creation of protected areas as a method of biodiversity protection. Specifically, this model, as opposed to community-based conservation, often results in prohibiting local and indigenous people from accessing parts of the protected area on which their livelihoods and cultures formerly depended. It also involves "the full protection of certain classes of large mammals, the use of specific tools forbidden by existing forestry legislation and the ruthless behaviour of 'eco-guards'" (Pemunta 2018, p. 1035).

5 In addition to United Nations and African Union legal texts on the rights of indigenous peoples, some countries in the Congo Basin have begun adopting laws to protect and promote the rights of their indigenous populations. For instance, The Republic of Congo (Brazzaville) adopted Law Nº 5—2011 of 25 February 2011 on the Promotion and Protection of the Rights of Indigenous Populations (Official Gazette of the Republic of Congo, Nº 09-2011, 3 March 2011, pp. 315–18). In addition, following a cabinet reshuffle in Congo-Brazzaville in May 2021, the names of two government ministries were modified to embody concerns relating to the Congo Basin and its indigenous people (Pygmies). The two ministries were the Ministry of Justice, Human Rights and Promotion of Indigenous Peoples and the Ministry of Environment, Sustainable Development and the Congo Basin (<https://www.adiac-congo.com/content/executif-la-composition-du-nouveau-gouvernement-126964> accessed on 16 May 2021). Furthermore, the Central African Republic (CAR) was the first African country and the 22nd in the world to ratify WTO Convention Nº 169 on Indigenous Peoples on 30 August 2010 (United Nations, CCPR/C/CAF/3 of 26 June 2018). Meanwhile, although consultations on a possible bill to promote and protect the rights of indigenous people in the CAR were suspended in 2013 due to political instability, the preamble of the 30 March 2016 CAR Constitution reaffirms the adhesion of the CAR to all duly ratified International Conventions, especially those regarding the prohibition of all forms of discrimination against women, the protection of children's rights, and those regarding indigenous and tribal peoples (ibid.). Finally, in April 2021 the National Assembly and in June 2022 the Senate of the Democratic Republic of Congo (Congo-Kinshasa, DRC) adopted a bill on the protection and promotion of the rights of indigenous Pygmy peoples, a bill initially drafted in 2012 (Ntumba 2021; Mie 2022). In terms of pressure from human-rights and environmental NGOs, it was reported, for instance, in 2020 that the European Union would suspend funding to a WWF project to create the protected Messok Dja area in Cameroon due to pressure from the international NGO Survival International, which had documented evidence of beatings, torture, sexual abuse, wrongful arrests, and killings of the indigenous Baka Pygmies in order to establish the project ("EU suspends funding to WWF's flagship African project after persistent abuses", Survival International, 13 May 2020 <https://www.survivalinternational.org/news/12384> accessed on 15 January 2021).

6 Marjolijn de Jager's English translation of *Congo Inc.* was published by Indiana University Press in 2018, but I have chosen to read the original French text here. Accordingly, any translations here are mine.

7 In Koli Jean Bofane has equally confirmed this reading in an interview, asserting: "…La Chine est incontournable aujourd'hui en Afrique. Le titre de chacun des chapitres de *Congo Inc.* est d'ailleurs traduit en mandarin. La Chine n'est pas apparue

par hasard. À force de se voir refuser des visas partout, l'Africain a commencé à regarder la carte du monde, non plus du sud vers le nord, mais d'ouest—Brésil—vers l'est—Maghreb, Émirats, Inde, Chine. Quoi qu'on dise de ce pays et de son régime, la question essentielle est: que pourra faire le Chinois à l'Afrique que l'Américain, le Français, le Belge n'ont pas encore fait? Je voulais représenter un Chinois normal, pas un fantasme…" (…China is a major player in Africa today. The title of each chapter of *Congo Inc*. is translated into Mandarin. China did not appear by accident. By dint of being refused visas everywhere, Africans have had to look at the world map, no longer from south to north, but from west—Brazil—to east—Maghreb, the Emirates, India and China. Whatever one says about this country and its regime, the essential question is: what can the Chinese do for Africa that the Americans, the French and the Belgians have not yet done? I wanted to portray a normal Chinese, not a fantasy…) ("Jean Bofane: C'est un Pygmée qui figure la grande Afrique", *Humanité*, 24 June 2014 <https://www.humanite.fr/jean-bofane-cest-un-pygmee-qui-figure-la-grande-afrique-545006> accessed on 9 April 2021).

[8] The term *Françafrique*, coined from a combination of France and Africa and first used by pioneer Ivorian President Félix Houphouët-Boigny in 1956 to describe the strong ties between his country and France, has come to designate France's neocolonial influence over and economic exploitation of former French colonies in Africa (see McGowan 2020).

[9] Although growing populations also partly account for the current climate and ecological crises, capitalism is by far the highest cause of these crises.

[10] It should be noted that, although Inyang has published scholarly research and plays (e.g., *The Hill Barbers* 2010) on the importance of community-based natural resource management, in *The Last Hope*, he uses "theatre as an instrument for community sensitization and mobilization" to defend fortress conservation in Korup. And he has acknowledged this role of theatre in at least two scholarly publications (see Inyang 1996, 2015, 2016).

[11] See Irene Wabiba Betoko and Savio Carvalho (12 October 2020). "To protect nature, bring down the walls of fortress conservation." Aljazeera. <https://www.aljazeera.com/opinions/2020/10/12/to-protect-nature-bring-down-the-walls-of-fortress-conservation/> accessed on 20 January 2021.

[12] I owe this story to Professor Divine Che Neba at École Normale Supérieure (ENS) de Yaoundé who recounted it during my guest lecture in his class on Monday 25 February 2019. He told us the story as part of my lecture was about indigenous people and their knowledge systems in Congo Basin literature. An employee of the NGO had told him the story. Professor Neba still confirmed the story to me on phone on 12 May 2021.

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humanities

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Article

Ghosts of the Techno-Fix Ocean? A Short History of *Periphylla periphylla* in the Norwegian Fjords

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Abstract: In 1980, reports of deep-sea jellyfish blooms in Norwegian fjords led researchers to investigate the problem. The helmet jellyfish, *Periphylla periphylla*, has since migrated far north into Arctic waters. This paper examines what happened when the jellyfish blooms were noticed in 1980 from a historical and ethnographic perspective. It traces four research projects and business ideas that proposed solutions to the jellyfish problem and asks how they are representative of the ways in which humans meet the challenges of anthropogenic climate change. The paper concludes that the jellyfish problem was met with a "techno-fix" attitude that sought to "turn a problem into a resource", which eventually leads to what Julia Livingston has termed "self-devouring growth". In a final outlook, the article asks how we can engage with questions of conservation from a humanities perspective and concludes that the jellyfish story can help us to ask questions about "conservation for whom".

Keywords: jellyfish; conservation; alien species; history of marine resources; ocean history; Anthropocene ocean; *Periphylla periphylla*; jellyfish bloom

1. Introduction

The book *Arts of Living on a Damaged Planet*, an anthology of essays by scholars across the humanities and sciences, opens with the words: "The winds of the Anthropocene carry ghosts—the vestiges and signs of past ways of life still charged in the present" (Gan et al. 2017, p. 1). This article seeks to study such a "wind of change" while it blows and to explore some of the ghosts it carries with it into the future. This paper deals with the mass appearance of a so-called "invasive species" (see Russell et al. 2014), a deep-sea jellyfish (see Figure 1 below), in Norwegian waters (Tiller et al. 2015, 2017). Faced with evidence that dramatic changes were happening along its coast, how did the country react to the jellyfish, and where are they now?

In the following, I will examine the roles that the fishing industry, researchers and the government took when they noticed that something had changed in the fjord ecosystems with the arrival of *Periphylla periphylla* from 1980 to 2021.

The newly emerging paradigm of conservation humanities aims at uncovering conservation stories from a multidisciplinary environmental humanities perspective. Is the jellyfish case a conservation story? And if so, what was supposed to be "conserved" in its wake, and for whom? This article seeks to contribute to the paradigm of conservation humanities and gives an example of how to think about conservation by examining a local case of an emerging "alien species" from a contemporary history perspective. I use historical methods inspired by my journalistic investigation to examine a local Norwegian case of a jellyfish invasion and place it into a larger, international context in which addressing and dealing with "alien species" is a growing concern (see Cuthbert et al. 2021; Tricarico 2016).

One strength of the humanities is the ability to examine concepts, frameworks or solutions that are often accepted without further questions by policymakers or in the public debate at large. I am interested in the approaches taken by both scientists and policymakers in responding to react to the jellyfish migrating to the north. By viewing the jellyfish as

"ghosts" of the future ocean instead of through the lens of the alien species concept, I want to inspire new ways of thinking about human responses to anthropogenic changes in ocean environments. The jellyfish serve as a perfect example. Their appearance is unwanted from a human viewpoint, and therefore, they are treated as pests. In reality, they are primarily a symptom of ongoing changes in ocean ecosystems all around the world. They foreshadow a possible future ocean scenario in which jellyfish will thrive, and other organisms might disappear altogether. In that role, they are ghostlike forerunners of a possible future ocean that humans do not want.

Figure 1. *Periphylla periphylla* known as the helmet jellyfish. Illustration Reviel Meyer.

2. Concepts and Material

This article is inspired by a journalistic piece I wrote in 2018 about an experimental seafood firm set up at the outskirts of rural central Norway (see Meyer 2018). The firm

intended—and failed—to turn snails, sea cucumbers and eventually jellyfish into food for human consumption. It is the first case that I discuss in a later section about the various research projects that were proposed to tackle the jellyfish question. It started as a peculiar story about a businessperson's quest to process new kinds of seafood in Norway and turned into a much larger and more complex issue that reaches far beyond a single business idea gone awry. I identified an interconnection between research, industry and government that highlights a problem of global relevance, which deserves to be examined from a contemporary historical perspective. The way the jellyfish problem was dealt with confirms a problem that is symptomatic of the Anthropocene, and one that has been recognised by many other scholars who study how human activity plays out in different settings in the Anthropocene ocean (see Duarte et al. 2021; Probyn 2016). Julie Livingston writes in *Self-Devouring Growth*: "When people are thinking about a place in this world and how to improve it, immediately they/we assume that growth must be the basis of that effort" (Livingston 2019, p. 4). If growth in the Anthropocene is the imperative to "improve a situation" or fix a problem, how is growth achieved? For this, the concept of the "techno-fix" is paramount (see Johnston 2020).[1] The growth that humans often seek to achieve in order to improve a situation is facilitated by technology. The story about *Periphylla periphylla* in the Norwegian fjords neatly illustrates these mechanisms of the Anthropocene. While I was researching the jellyfish case, I met with both of these concepts: "self-devouring growth" (Livingston 2019) and the "techno-fix" (see Johnston 2020).

The source material that highlights the mass occurrence of *Periphylla periphylla* in the fjords comes mostly from regional news outlets like *NRK Trøndelag*[2], *Trønderavisa*[3] and *Adressavisen*[4], but the national newspaper *Dagbladet*[5] also picked up the story of the invading jellyfish when researchers became more vocal. As part of my work on the news article, I conducted interviews with researchers and representatives of the industry. The information gathered through these interviews inspired me to investigate this case from a historical perspective (Meyer 2018). Other important sources for insights into the discourse in the local industry and research community were niche publications like *Universitetsavisa*[6] and *Norwegian SciTech News*,[7] which publish on research from the Norwegian University of Science and Technology (NTNU) and SINTEF. I used these various news outlets to study how issues concerning the jellyfish came into the public sphere and then seeped into government reports over a period of years as the problem became more visible. I also noticed that scientific publications about *Periphylla periphylla* appeared both simultaneously with and as a consequence of the news of a new species arriving in great numbers in the fjords. For my research, those articles have had two functions: to gain an understanding of the actual ecological problem and to observe how the research community reacted to a perceived ecological threat. Additionally, I kept track of different research projects that were launched in connection with the jellyfish problem and also with related issues like the harvest of "little-utilised resources".[8] Another important source for understanding the interaction between research, industry and government included government- and industry-funded reports on the *Periphylla periphylla* problem. Finally, I studied government reports about marine resources at large in Norway from the relevant period to examine the country's national goals as a seafood nation.

3. *Periphylla periphylla* Arrives in Norway

The helmet jellyfish is a peculiar creature. It is red in colour and not as mushy and fragile as other species, like the translucent moon jellyfish. Instead, helmet jellyfish have comparably solid bell-shaped bodies and twelve stiff tentacles sticking out from under their "helmet"-like arms ready to grab their prey. Individuals have been found that were believed to have reached 30 years of age (Bazilchunk 2016). They thrive deep in the ocean and avoid direct sunlight.[9] Until recently, the species was common in waters not further north than the southern part of the North Sea.[10] In the 1980s, however, things started to change. Researchers noticed that helmet jellyfish had started to migrate to Lurefjorden, close to Bergen on the southwest coast of Norway, and began studying this phenomenon

(Mork 2017, p. 93).[11] They discovered that the species had begun to move northward. From 1980 up until today, individuals have surfaced and established solid populations in several fjords along the Norwegian coast, some as far as north as Bodø above the Arctic Circle (Mork 2017, p. 94). In recent years, sightings have been recorded as far north as the Svalbard archipelago.[12]

The arrival of the jellyfish in the inner Trondheim fjord is well documented and therefore serves as a good example of how researchers, the government and the fishing industry dealt with this event. In the 1990s, the helmet jellyfish started to appear in the nets of biologist Jarle Mork at the Biological Station in Trondheim. He had been monitoring the cod population in the inner fjord of Trondheim, called Verrabottn and Verrasundet.[13]

The jellyfish appeared as a by-catch and soon found themselves lured into a research project that was originally about the management and regulation of and genetic variation in the cod population in the innermost parts of the Trondheim fjord. Mork found that the cod population declined with the arrival of the helmet jellyfish (Mork 2017, p. 94). Although he was unable to link this decline directly to the jellyfish at the time, he and his colleagues argued, in an article titled "To Adapt or Not Adapt: Assessing the Adaptive Capacity of Artisanal Fishers in the Trondheimsfjord (Norway) to Jellyfish (*Periphylla periphylla*) Bloom and Purse Seiners", that there was a strong likelihood that the two findings were related (Tiller et al. 2015, p. 267).

Similar findings were reported by fishermen, who were asked to share their experiences with the jellyfish for a study that was conducted in 2014 (Tiller et al. 2015, p. 268). Researchers distributed a questionnaire in which they asked fishers to provide log book information about changes in their catches (see Tiller et al. 2015, p. 262). The results, combined with data from bottom trawling conducted by the researchers, suggested that the jellyfish population had been established for good in the inner fjord around 1998 or 1999 (Tiller et al. 2015, p. 267). The correlation between the increase in jellyfish and the decrease in cod could be explained by the jellyfish's ability to outcompete cod and other fish for food. In some parts of the fjord, this has led to the jellyfish becoming the top predator in the ecosystem (Tiller et al. 2014, p. 76). By 2005, the advent of *Periphylla periphylla* in Norway had come to the attention of the media (see, for example, Hustad 2007; Kjerkreit 2006; Laukøy 2007). The jellyfish were becoming a problem, and researchers and policymakers began to discuss possible solutions.

4. Jellyfish Research—Business Ideas and Research Projects Intertwine

This section is not an exhaustive list of all of the research projects in Norway that have tried to tackle the *Periphylla periphylla* problem. Rather, it follows four selected projects over a period of about 15 years (from 2005 to 2021) that I found were initially motivated by the first pilot project, which involved the seafood firm Su San Norway AS that featured in my article (Meyer 2018). I selected the three follow-up projects either because they represented a clear continuation of the work of earlier projects, or the same institutions and some of the same researchers were involved. We will see that the projects range from taking a local perspective (Su San AS, LUR and JANUS) to a broader, more international scope (GoJelly).

4.1. Su San Norway AS—An Experimental Seafood Firm (2005–2008/2010)

Several newspaper articles were published about the arrival of *Periphylla periphylla*. They give an insight into the different solutions that were pondered publicly and an overview of those that were realised over the course of a few years. One suggestion was to monetise the jellyfish and make them a food resource. An experimental seafood production plant—Su San Norway AS—was established in 2005 by a Norwegian-Korean businessman named Lee-Chul Ho (Johnsen and Kothe-Næss 2005), widely known as the "Noodle King" in Norway for his brand of instant noodles available in every supermarket in the country (Rosenlund-Hauglid and Rognstrand 2018). Su San was set up on the island of Frøya at the outskirts of the Trøndelag municipality. Although this was not publicly announced or commented on by Lee, we can assume that the location was a strategic choice. The

region is famous for its farmed Atlantic salmon and as the birthplace of one of the biggest global players in the industry, Marine Harvest, now Mowi Salmon (see Rye 2018, p. 194). In fact, the firm was established in parts of an abandoned factory building once belonging to Marine Harvest, which had moved its processing plant from Frøya to Poland in 2003 See (Frøya Næringspark 2020). Su San Norway AS, we learn from several newspaper articles, was exploring possibilities for processing unusual seafood like sea cucumbers, common whelk and potentially *Periphylla periphylla*. Perhaps because of the novelty value of such specimens for the Norwegian palate, several local newspapers published articles about those business meetings, one including an in-depth description of a jellyfish tasting (Rørvik 2007).

In the spring of 2005, businessmen from Korea were flown in by private plane to the little plant on Frøya to discuss possible common whelk exports (see Walhovd 2005). Lee Chul-Ho, the company's co-founder and front man (see Johnsen and Kothe-Næss 2005), advertised for the quality of Norwegian seafood. One article reported that "Mr. Lee does everything to promote Norway's purity in Korea. On national television, he has stated, "If you cut your finger in Korea, you buy disinfectant. In Norway, you just stick your finger in the water for two minutes".[14] The article closes with the business associates already dreaming of building a bigger runway for the island's private airstrip, in order to be able to transport the common whelk and other seafood directly to Korea, instead of having to go via road to Gardermoen, the international airport in the south of Norway (Walhovd 2005).

The articles about the experimental seafood firm, together with Jarle Mork's reports about the invading jellyfish, seemed to spark a debate that inspired further business ideas and research projects on the topic. In 2007, the secretary of the Norwegian fisheries department talked about exploring the potential of experimental seafood, asking, "How to commercialise jellyfish and sea cucumbers?" (Ulriksen 2007). A newspaper published an article about "Monster Jellyfish invading the fjord" (Eide 2006), and an ad hoc research group was set up to look into "industrializing jellyfish" (Pettersen 2007). The entire enterprise culminated in a final report from the research group in 2010 titled "Jellyfish—From problem to resource" (Jelmert et al. 2010), stating that the proliferating jellyfish could create problems for other industries like fisheries and tourism. However, it added, they also had potential market value. The report contained a preliminary market analysis for marketing jellyfish as food. Another suggestion was to extract collagen from jellyfish bells and sell it to the pharmaceutical industry. Thus, the researchers concluded, "There lies an untapped potential to achieve win-win situations" (Jelmert et al. 2010, p. 5). The report also contained a caveat: the research had solely concentrated on *Periphylla periphylla* in the Norwegian fjords and had not explored other jellyfish species. The report stated, "the knowledge about geographical distribution, occurrence, biomass and ecosystem effects of the commonly occurring species of jellyfish in Norway (the fire jellyfish Cyanea capillata, Cyanea lamarckii and the glass jellyfish Aurelia aurita) is deficient" (Jelmert et al. 2010, pp. 8–9).

As part of my research for the 2018 newspaper article, I travelled to Frøya to see the seafood plant. When I got there, I soon discovered that Su San Norway AS was a failure. The experimental seafood endeavour never took off, the plant never went fully into production, and the idea to harvest jellyfish was at best a side note (see Meyer 2018). Perhaps Su San Norway AS was a useful industry contact, mainly for the researchers looking into the industrialisation of jellyfish, since the government encourages research projects with industry partners and a flagged relevance for society.[15] The original business idea, I discovered, was to make money from common whelk exports—something another firm on the neighbouring island of Hitra, called *Hitramat*,[16] had been somewhat successful in for a couple of years. The Su San project failed, though the reasons for that are mostly guesswork, since none of those who were involved in the project wanted to discuss it. Perhaps they could not garner enough interest among local fishermen; this was also the problem Hitramat faced when getting into the common whelk business (Kvile 2017). By the time of my visit to Frøya, Lee Chul-Ho was deceased (Rosenlund-Hauglid and Rognstrand

2018). But the failed experiment that started with researchers observing the ever-increasing jellyfish population in the Norwegian fjords and continued with an exotic business idea was only the start of a series of consecutive research and industry efforts that have unfolded in response to the arrival of *Periphylla periphylla.* Those follow-up projects can tell us more about how researchers, industry and government handled the appearance of the "alien" species. What the initial jellyfish food experiment by Su San did for the jellyfish problem at large was to make the public aware of the problem and the possible solutions for getting rid of it. In the following years, new projects were established to look into the issue from different angles.

4.2. Nofima LUR (Little-Utilised Species) Report (2000–2011)

In 2011, the Norwegian Seafood Research Fund (FHF) issued an additional report from the Norwegian food research institute Nofima assessing the status of so-called LUR species (Bjørklund and Henriksen 2011), LUR standing for: "Lite utnyttet ressurser"—little-utilised resources. The authors reviewed a collection of reports and presentations about LUR from 2000 to 2011 to examine the knowledge base and early work on these potential future resources.[17] The LUR report is important in respect to the timeline of jellyfish-related projects, because it addresses the issue from the perspective of the fisheries industry. The report was meant to be a guideline for future research funding that could advance the industry. It also included a chapter about common whelk and jellyfish. The chapter on jellyfish is quite sober in comparison to the newspaper article that celebrated the idea of jellyfish as food. To some extent, Nofima's conclusion is also more cautious than the research group's report "Jellyfish—From problem to resource" (Jelmert et al. 2010) that had been published the previous year. Nofima concluded that instead of focusing on the commercialisation of jellyfish, "Greater attention should be paid to the ecological and socio-economic problems associated with jellyfish, and destructive fishing should be considered in some defined fjord areas" (Bjørklund and Henriksen 2011, p. 22). The authors nonetheless acknowledged that "this can also provide a basis for the development of commercial processes in the future" (Bjørklund and Henriksen 2011, p. 16). Instead of celebrating the jellyfish as a resource worth exploiting, the report recommends focusing on two other species: "sea urchins and flounder" (Bjørklund and Henriksen 2011, p. 3).

One consideration the authors make in the report is especially important: they state that many of the LUR species they studied could be harvested if fishers were willing to move over to those species. However, they found that fishers were less willing to do so, unless harvesting those species was to become more economically beneficial and easier to execute (see Bjørklund and Henriksen 2011, p. 3). This shows that the mere abundance of a little-utilised species is not incentive enough for fishers to begin harvesting those species, even though there might be a market for them, and even though there are companies like Su San AS who would be willing to sell the produce.

There was actually a pilot project, COJECT, that developed a prototype trawler with a shredder to collect and kill jellyfish, which would have had the potential to be used in the fjords where there were bloom problems. However, the technology was never patented, and I could not find any information on its whereabouts.[18]

4.3. JANUS Future Fisheries Scenarios (2012–2015)

The interdisciplinary project JANUS[19] was funded by the Norwegian Research Council to examine the impact of the *Periphylla periphylla* invasion on the local fisheries in the Trondheim fjord. Leigh Bailey, a professor of sociology at NTNU in Trondheim and the project leader of JANUS, spoke to *Norwegian SciTech News* in 2016 about the findings: "If you were to shift fishermen to harvesting jellyfish, then resource managers are in the uncomfortable position of having to manage and protect an invasive species. Do you really want to maintain a stock of jellyfish, which is more of a nuisance species?" (Bazilchunk 2016). However, the project found that local fishers who were interviewed about their willingness to start harvesting new species, like jellyfish, indicated that they would consider

moving over to new species.[20] The researchers found that "Overall, the fishermen did not indicate being worse off because of the income loss from cod fishing, since it had been compensated by the income from other activities like increasing opportunities for emerging species, like crab and pollack or mussel farming" (Tiller et al. 2015, p. 267). In *Norwegian SciTech News*, Jennifer Bailey concluded about the situation of the cod fisheries in Trondheim that "they didn't necessarily want to maximize their profits. What they really wanted was a reasonable lifestyle and for their profession to be able to continue" (Bazilchunk 2016).

The project contributed to understanding the challenges the industry would face in moving over to harvesting other species. Although it had a clearly local scope—the interviewees comprised a group of, respectively, four and seven small-scale fishers in the Trøndelag region that were impacted to varying degrees by the *Periphylla periphylla* invasion—it can still help explain how fishers view the move from one species to another. Although the LUR species report made some clear recommendations about new species to focus on, the report warned that a shift to other species could be challenging as long as the traditional fish stocks could still be exploited. JANUS confirmed this concern, but also showed that fishers would be willing to fish other species, as long as they could continue their work and have a stable income (Tiller et al. 2014). An interesting observation is that nowhere did the researchers mention that the fishers themselves expressed deeper concern for the ecosystem at large, despite the fact that some species seemed to be declining, which made it necessary to "fish harder" for other species. Instead, they were concerned about bigger trawlers from outside the fjord that were allowed to come into the fjord to fill their quotas.[21]

4.4. GoJelly—"A Gelatinous Solution to Plastic Pollution" (2017–2021)

From 2017 to 2021, NTNU was involved in a third project concerning jellyfish. *GoJelly* was a European Horizon 2020 research project looking to find "a gelatinous solution to plastic pollution".[22] From the project webpage, we learn that the aim was to build "microplastic filters made of jellyfish mucus"[23], which would result in "less plastic in the ocean and in turn more jobs for commercial fishers in off-seasons to harvest the jellyfish".[24] The project also mentions using the "biomass" for feed in fish farms and exploring possibilities of human consumption.[25] This project was a European collaboration where the focus shifted away from the jellyfish problem in the Norwegian fjords and expanded to other species and areas. NTNU was involved in investigating the mechanisms and prediction of jellyfish blooms.[26] The project stated in its first press release that "the life cycle of many jellyfish species is only scarcely explored. Therefore, it is almost impossible to predict when and why a large jellyfish bloom will occur" (see Press Release 1 n.d.). The Trondheim section of the project's research outcomes was mostly focused on predicting jellyfish blooms in the fjord and trawling it with the same research vessel—the Gunnerus—that had been used in the initial research at Trondheim biological station.[27] The team concluded with a long-term study where they showed that *Periphylla periphylla* had been recorded in Trondheim fjord already 100 years ago. Though they were described as invasive species in several publications, the paper raised the question of whether bloom events had actually increased, or whether they were simply more visible because of better surveillance technology (see Aberle-Malzahn et al. 2023, pp. 59–60).

The project's final conference was held in December 2021, where the main outcomes were presented. The topics of the presentations can be seen on the GoJelly website and the EU project website and include the following: *sustainable jellyfish fisheries*, *aquaculture*, *tracking blooms*, *cosmetics*, *food processing*, *jellyfish fertiliser*, *micro- and nanofilters* and *jellyfish as fishfeed*.[28]

GoJelly also launched an educational strategy game produced by the Centre for Ocean and Society in Kiel—an interdisciplinary research platform that involves societal actors in projects.[29] In the game, the player is led through a fictional coastal town with a once-booming tourism industry that is plagued by a jellyfish invasion. In the role of

the mayor, the player must make choices to address the jellyfish problem in cooperation with the town's science facility. Possible solutions include manufacturing jellyfish burgers, increasing jellyfish fishing and establishing jellyfish aquaculture on land. The beaches become pristine again, leading to an uptick in tourism, which then causes an increase in microplastics in the drinking water. This problem, in turn, is solved by a scientist inventing a filter system using jellyfish mucus. Nowhere in the game is the underlying cause of the jellyfish bloom addressed other than one section, where jellyfish fertiliser is used to decrease the flow of nutrients from agriculture to the coast, which in turn leads the scientist to come up with jellyfish aquaculture to meet the need for more fertiliser. The game illustrates the issue at hand: the focus is to make society grow and prosper with the help of ingenious scientists, who turn jellyfish from a problem into a resource.

I doubt that it was the intention of the game's designers and the scientists involved in the project to give a performance of the "techno-fix" (see Johnston 2020)—the idea that any problem can be solved with a new invention. Solutions inspired by the techno-fix attitude, however, fail to take into account that any technological solution needs to be maintained, and that new problems can arise from new technology, which then require yet another new techno-fix. Journalists Naomi Klein and Elizabeth Kolbert have both published books about recent examples of techno-fixes and the controversies surrounding them (Klein 2015; Kolbert 2021). Klein argues that climate change itself is often approached with a techno-fix attitude fuelled by our capitalist system (see Turner 2014). Kolbert presents a number of different examples in which the techno-fix approach was used to reverse environmental degradation. She mentions, for example, an Australian research project in which coral eggs and sperm of different species are mixed in the hopes of creating a sturdy coral that can withstand a more acidic ocean. In an interview, Kolbert explained that this relatively low-tech attempt is one step on the slippery slope of techno-fixes that are well intended; some may even work, but some could have harmful consequences. This concept extends to ideas such as dimming sunlight, hence the title of her book, *Under a White Sky* (see Osaka 2021). What unifies all the techno-fix approaches is that it is difficult to foresee their consequences.

Techno-fix ideas keep society in a never-ending forward-looking loop. It is an appealing approach, because the techno-fix does not require uncomfortable change; instead, we can continue to buy into the idea of never-ending growth facilitated by future technological solutions to the current environmental crisis. An alternative approach when developing the game could have been to focus on the underlying causes of the jellyfish blooms and to have the player find solutions to counteract those. A game like this would have had a less linear trajectory and would have been more layered and complicated. I want to point out that the game by itself is not representative of the overall results of the GoJelly project. Interestingly, the research outcomes listed on the project page are much less linear and techno-fix-inspired than suggested by the game or even by the project's catchy name, "a gelatinous solution to plastic pollution".[30]

4.5. Blue Economy and Seafood Ventures—The Role of the Government

In 2005, when the jellyfish first appeared as a news item, policymakers seemed enthusiastic about the prospect of a new seafood venture. The idea to harvest jellyfish and to exploit other species for the fisheries industry and other industries was welcomed. It fit into the existing narrative of Norway as a seafood nation (Nærings- og fiskeridepartmentet 2021a). The government's ocean strategy report from 2019, "Blue Opportunities" (Departementene 2019), states in the preface: "Norway is a leading ocean nation. The history of Norway is a story about the oceans" (Departementene 2019). This is the slogan with which Norway reconfirms its national identity: living with and from the sea (see Holt-Jensen 1985). The jellyfish case is only one example among many opportunistic industry ventures in the country's history that are closely connected to the ocean. In respect to resources coming from ocean-based industries, the story goes back to the start of cod fisheries exports to Europe in 1800 (see Vik-Langlie 2016), continuing with the oil industry boom in the

1970s (see Ryggvik 2015) and the establishment of the first fish farms by former fishers in the Norwegian fjords that now sell Atlantic salmon to the world (see Vik-Langlie 2016).

In the case of the Norwegian jellyfish, too, the government's push to increase exploitation of the oceans plays a role. The Norwegian fisheries department frequently publishes updates on the status of the industry and the oceans, and the enthusiasm for seafood is visible in various official speeches and reports. In 2005, the fisheries minister at the time, Svein Ludvigsen, gave a speech about the future development of the marine industry under the title "The Blue Acre" (Ludvigsen 2005). Granted, the speech was held at a meeting of the "Norwegian Fishermen's Sales Organisation for Pelagic Fish"[31], so it is perhaps not so strange that the issue was addressed with enthusiasm. But this way of addressing fisheries and the state of the Norwegian seas resounds in many of the reports that were published between 1999 and 2021. Three consecutive reports about the future of Norway's marine resources—published in 1999, 2006 and 2012—reflect the same tone in their titles: "Norway's opportunities for value creation in aquaculture" (Norges Muligheter for Verdiskaping Innen Havbruk 1999), "Utilisation of biomarine resources—global opportunities for Norwegian expertise" (Det Kongelige Norske Videnskabers Selskab and Norges Tekniske Vitenskapsakademi 2006) and "Value creation based on productive seas in 2050" (Det Kongelige Norske Videnskabers Selskab and Norges Tekniske Vitenskapsakademi 2012).

In recent years, the government has frequently published so-called ocean strategy reports: one in 2017, called "New growth, proud history" (Nærings- og fiskeridepartementet and Olje- og energiedepartementet 2017), and in 2021, "A sea of possibilities" (Nærings- og fiskeridepartmentet 2021b) and "Blue ocean, green future" (Nærings- og fiskeridepartmentet 2021a). Though the term "sustainability" has appeared in the more recent reports, the focus is on growth and prosperity. Less recognition is given to reports and articles that focus on problems connected with overfishing, and there is too little focus on marine conservation zones (see Jørgensen et al. 2021). In 2020, for example, an article by the Norwegian Institute of Marine Research (Havforskningsinstituttet) revealed that a historic grazing event induced by proliferating sea urchins along the Norwegian and Russian coast could be traced back to coastal overfishing (see Norderhaug et al. 2021). The topic of overfishing is seldom discussed in the official reports and in the public at large. There is also very little justification for why the government and industry are so interested in developing fisheries for so-called LUR (little-utilised resources) when it is obvious that the push for research in this direction signals a need to move over to new species, because traditional fish stocks are gradually declining (see Pettersen 2023). All these efforts to fish down the food chain can be seen as reactions to the already looming "aquacalypse" (Pauly 2009) in Norwegian waters and all around the world. In many government reports about the marine resources in Norwegian waters, the underlying issues are not addressed. The general message has become about feeding the world with sustainable Norwegian seafood, without ever making it explicit what exactly this shift towards "sustainability" entails. The general solution seems to be to pin all hopes on some sort of future technological progress and innovation to maintain growth, while pressuring oceanic ecosystems even more.[32]

The idea to monetise the jellyfish—to eat the problem, so to speak—involved selling the jellyfish as food to foreign "markets of interest", meaning in most cases non-Western markets. At least the ideas for collagen production and microplastic filters in the GoJelly project were focused on making the jellyfish produce useful in Norway as well.

5. Conclusions—Jellyfish as Ghosts of the Future Ocean?

All fishery scientists are familiar with the "shifting baseline syndrome" (Pauly 1995) and the decline in fish stocks globally, yet the practice that is promoted with the techno-fix approach in fishery science and policy perpetuates that effect (Pauly 2009). Exaggerated hope for future technological solutions to current environmental problems suggests that there is always a way forward, that there are no limits, and that some obscure future technology will be the remedy for the current ecological crisis. The techno-fix ideology

has propelled humans from the deep-sea floor up to the moon and back, but it would be dangerous to rely on it as a cure for overfishing and ecosystem decline.

In relation to the Norwegian jellyfish case, this raises the questions: Do we want the self-devouring techno-fix ocean that is promoted in current fishery science, policy and practice? And whom does it serve?

Following the different research projects, political reports and the public debate over time, we see a proliferation of efforts towards monetising the jellyfish in Norway from 2005 until 2021. The proposed technologies developed from simple destruction trawlers (or shredders) to delicate filter systems. Neither of these ideas has actually been realised at a large scale. The local media seemed most interested in reporting on the jellyfish as a novel foodstuff, or as an exciting new business opportunity. At the same time, Norwegian government reports were focused on exploring new fisheries and securing growth. The call for "more knowledge" about the underlying causes of jellyfish blooms, or even the ecology and biology of jellyfish, remained a constant background noise created by the scientists actually employed in the research projects. When we look at the results of these projects, especially the GoJelly project, we see that the research output is much less directed at technology and produce than the project pitch makes out. The Trondheim team in particular published on the problem of jellyfish blooms and how to forecast them, as well as questions of international governance connected to ocean resources. However, ever since the first *Periphylla periphylla* appeared in the region during the 1980s, and all throughout the various projects that were launched, none of these efforts really tackled the local problem of blooms in the Norwegian fjords. The actual jellyfish continued to migrate north.

The jellyfish-turned-into-a-resource tale is just one of many examples where a problem caused by anthropogenic climate change is approached with a techno-fix attitude that contributes to "self-devouring growth". It is self-devouring because the many proposed and tested solutions do not address a simple but forceful option: doing less. For example, strict regulations for cod fisheries to see whether the cod can compete with the *Periphylla periphylla* in areas where it is not also predated on by humans. This would have immediate and unforeseen consequence for local fisheries, the seafood industry and consumers. In the long run, the consequences are likely the same wherever *Periphylla periphylla* thrives and cod disappears. Currently, we allow fishing down the food web to utilise "little-utilised species". But where does that lead us?

Can we view the jellyfish case as anything else but an elaborate fishing down the food web situation? When techno-fix solutions are pondered for ecological problems, it creates a strong incentive to look for solutions promoting growth and prosperity. Ultimately, those are short-term solutions that fail to address the real problem. Why are we faced with all those invasive organisms or "ghosts of the future ocean"?

In the introduction to this article, I asked whether the jellyfish could be seen as ghosts carried by "the winds of the Anthropocene", quoting from *Arts of Living on a Damaged Planet*. I am not sure that the editors of that book would agree that the jellyfish are ghosts. They are not extinct creatures of the past; they represent not what is lost, but rather what is gained, because of anthropogenic climate change. I want to argue that they are ghosts in a different reading of the term. Their appearance signals a scary problem that we have called upon ourselves. They continue to migrate north, likely due to a combination of factors, including overfishing and warming temperatures. Their migration and occasional blooms are signs of a changing ocean. Wherever they appear in masses, other organisms are outcompeted and decline. *Periphylla periphylla* are one of the visible signs of a changing ocean caused by human activity. I want to propose that they are a different category of ghost of the Anthropocene: they foreshadow a possible future ocean, and in their wake is death and decline.

6. Outlook—Conservation for Whom?

Conservation humanities can contribute to uncovering the different layers in stories like this one about *Periphylla periphylla* from an interdisciplinary perspective. The strength

of humanities research is the ability ask uncomfortable questions, rather than to look for solutions. Techno-fix approaches can only be identified and remedied when we dare to ask multilayered questions that cannot be answered in a simple way. Policymakers would likely prefer the linear approach exemplified by the GoJelly game. It goes like this: We have a problem, we clearly point out what it is (there is always a single cause), we employ some brilliant scientists, they serve us the best solution, wise policymakers accept this best solution and implement it. We repeat this a few times, and that is how we solve the environmental crisis.

The reality is more muddled and complicated. Repeatedly, we see that "the best available science" is not taken into account in decision making on government levels. Who has the power to decide what the best available science is? Or the best technological solution? For whom and for what purpose? It is not the scientific community alone that holds the key to solving environmental catastrophes. Neither is it in the hands of the techno-fixers. We know that meeting the challenges of the Anthropocene is a multidisciplinary endeavour. In the course of my research on the jellyfish case, never were the jellyfish talked about in any terms other than as alien, a nuisance and a problem. I doubt the jellyfish would welcome being sucked into a shredder or farmed to produce collagen. Yet we humans live in a world in which other beings constantly suffer because of us.[33] Depending on what place those beings occupy in the hierarchy of life, they deserve no name or recognition. They either become resources or are treated as pests.

I believe that conservation humanities can contribute to conservation efforts by uncovering the multilayered, difficult questions that have no definite answer and often create more problems than solutions. Of course, no one likes to entertain them. We have to ask ourselves: what exactly are we conserving, and for whom? When the jellyfish are shredded or otherwise removed, cod thrives; when cod thrives, coastal fisheries thrive. Wherever an alleged equilibrium is disrupted in an ecosystem, "future ghosts" appear. They inform us about a possible future ocean, and our response to them will serve some species and threaten, kill or enslave others. The research interests of the emerging paradigm of the conservation humanities must be in the dark and muddy areas, with low visibility and little oxygen, where the jellyfish thrive.

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Notes

1 The techno-fix approach appears everywhere. Already in 1979, Max Oelschläger wrote about the techno-fix becoming an accepted solution to social problems (see Oelschlaeger 1979, p. 43). More recently, Sabine Höhler has discussed the concept of nature having been turned into a "technogarden", as it was proposed by former head of the Millenium Seed Bank Paul Smith (Höhler 2020, p. 707).

2 The Norwegian Governmental Broadcasting Service https://www.nrk.no/trondelag/ (accessed on 25 February 2024).

3 Trønderavisen https://www.t-a.no/ (accessed on 25 February 2024).

4 Adressavisen https://www.adressa.no/ (accessed on 25 February 2024).

5 Dagbladet https://www.dagbladet.no/ (accessed on 25 February 2024).

6 Universitetsavisa https://www.universitetsavisa.no/ (accessed on 25 February 2024).

7 Norwegian SciTech News https://norwegianscitechnews.com/ (accessed on 25 February 2024).

8 The projects were Su San Norway AS, Nofima LUR, JANUS, and GoJelly.

9 For a description of the species, see, for example, Telnes (2020). *"Helmet Jelly—PERIPHYLLA"*.

10 A long-term study of the changes in light in the Norwegian fjords suggests that the jellyfish thrive in darker environments and that the fjords where jellyfish are more abundant are darker: (Aksnes et al. 2009). A study published in 2023 stated that individual jellyfish must have been present in the Trondheim fjord for at least 100 years: (see Aberle-Malzahn et al. 2023, p. 59).

11 A few research articles were published in the 1990s and early 2000s that attempted to explain the phenomenon. See, for example, (Sornes et al. 2007; Fosså 1992). See also (Ugland et al. 2014).

12 Currently, the jellyfish have been reported in Sognefjord, Halsafjord, Lurefjord, Vefsnfjord and Trondheimsfjord and Svalbard waters (Båmstedt et al. 2020, pp. 87–88).

13 For earlier studies, see (Mork 1982). Mork published his first findings in the booklet "Verratorsken". The later outcomes culminated in following article: (Liu et al. 2018). Another publication that discusses the findings of the project is (Tiller et al. 2017).

14 Walhovd, "Fristet Av Kongsnegler. Koreanerne Vurderer å Kjøpe 1200 Tonn Kongsnegler i Året Fra Frøya".

15 See (Brandt 2014). A more detailed account of research funding in Norway from a historical perspective is (Brandt et al. 2019).

16 Hitramat is a Norwegian seafood firm: https://hitramat.no/about-hitramat/?lang=en (accessed on 25 February 2024).

17 See the full research material on page 31–35 of the Nofima report.

18 There is one presentation by Mork in which the COJECT technology is mentioned. It can be accessed through the project database: (Jelmert and Mork 2010). There is also a feasibility study in the project database: (Grønlie 2010).

19 See https://app.cristin.no/projects/show.jsf?id=442399 (accessed on 25 February 2024): "In 2012, Mork joined a coalition of biologists and social scientists from NTNU and SINTEF to work on the three-year-long JANUS project, funded by the Research Council of Norway and designed to look at options and future scenarios for the Trondheim Fjord fishing community in response to the Periphylla invasion and other changes more generally". In (Bazilchunk 2016).

20 For the local stakeholder workshop, see (Tiller et al. 2014).

21 See (Tiller et al. 2015), To Adapt or Not Adapt: Assessing the Adaptive Capacity of Artisanal Fishers in the Trondheimsfjord (Norway) to Jellyfish (*Periphylla periphylla*) Bloom and Purse Seiners. *Marine and Coastal Fisheries*, 7: 271. https://doi.org/10.1080/19425120.2015.1037873. They write: "The fishers affected by jellyfish in the Trondheimsfjord, believe they were unfairly impacted by top–down decisions allowing for rest quotas being distributed liberally to purse seiners and allowing them to enter the fjord where artisanal fisheries had their livelihoods. This allowance was voiced to be a bigger hindrance of adaptive capacity for the fishermen than the jellyfish, with expressions such as "vacuuming the fjord of fish"".

22 (Horizon 2020) See also the projects website (Woldmann et al. n.d.).

23 See the weppage of the project at https://web.archive.org/web/20230402120706/, https://gojelly.eu/about/, https://gojelly.eu/about/ (accessed on 25 February 2024).

24 See note 23 above.

25 One outcome was testing the jellyfish as fertilizers: (Reinsch and Emadodin 2020).

26 In work package two. see Cant et al. (2021). "Jellyfish risks and interactive maps and app for jellyfish bloom forecasting". Public report of GoJelly EU project. Work Package 2, Activity 4. Available online: https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5e9029da6&appId=PPGMS (accessed on 25 February 2024).

27 (Halsband et al. 2018) For the outcome for this section of the project, see (Cant et al. 2021). There was also a newspaper article about commercialising the jellyfish. See (Bazilchuk 2018).

28 All reports of the project are in the Horizon 2020 project database: GoJelly, Horizon 2020 Grant, https://doi.org/10.3030/774499.

29 The game is discussed and evaluated by researchers in one of the summary reports: (Tirre et al. 2022).

30 Several research articles had no direct link to the GoJelly produce (a mucus filter, fish feed or consumption). Instead, they covered ocean acidification, plastic and the governance of biodiversity internationally. See, for example, (Tiller et al. 2019a, 2019b; Rotter et al. 2020).

31 See https://www.sildelaget.no/en/sildelaget/about-us/who-are-we/ (accessed on 25 February 2024).

32 See (Nærings- og fiskeridepartmentet 2021a, p. 8): "Regjeringen ønsker å skape økt internasjonal forståelse for sammenhengen mellom havets økonomiske betydning og havets miljøtilstand. I 2018 tok statsminister Erna Solberg initiativ til det internasjonale Høynivåpanelet for en bærekraftig havøkonomi (hav panelet). Basert på 16 vitenskapelige delrapporter, tre spesialrapporter og en hovedrapport, la de 14 panellandene i desember 2020 frem en ambisiøs handlingsplan. Havpanelets arbeid viser at det haster med å utvikle god havforvaltning verden over for å oppnå de miljømessige, økonomiske og sosiale målene i FNs 2030-bærekraftsagenda".

33 The strength of the environmental humanities is that we can allow ourselves to explore other perspectives. Deborah Bird Rose, Thom Van Dooren and Matthew Chrulew have demonstrated some of the suffering that occurs due to human activity, despite well-intended conservation efforts: (Bird Rose et al. 2017).

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humanities

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Article

The Sounds of Silence: Perspectives on Documenting Acoustic Landscapes at the Intersection of Remoteness, Conservation and Tourism

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Abstract: The humanities are often criticised for lacking a way through from the complexity they reveal to the challenges they might hope to address. In the face of the accelerating biodiversity crisis, we present two projects that aim to respond to the limitations and lack of interdisciplinary conversations in conservation and in humanities research. At field sites in Finnish Lapland and the French Pyrenees, we document how conservation humanities research can be used to develop a more pragmatic and integrated transdisciplinary approach to conservation in remote and fragile landscapes. Firstly, we show how sound and *soundscapes* are important subjects of study in both conservation biology and the humanities. We also highlight their importance to conservation planners and policy makers seeking to preserve biodiversity and landscape characteristics, as well as our social values thereof, which, together, are critical to their survival. Secondly, we demonstrate how integrated conservation humanities methods can lead to rich local-level insights on key conservation themes that can then be scaled via existing large-scale acoustic monitoring and spatial datasets to support decision making across much larger areas. Finally, we highlight how the participatory mapping approach at the core of our integrated methodology shows potential to generate change in the real world and meet the classic operationalisation challenge that academia faces.

Keywords: conservation; soundscapes; ecoacoustics; wilderness; protected areas

1. Introduction

> "The world has problems, universities have departments". G. D. Brewer (1999, p. 328)

Although they appear to share much in common—a desire to study the relationship between humans and biodiversity, a lament for the loss of biodiversity and a search for ways to address this—there is remarkably little shared activity between conservation biology and the conservation humanities. This contradiction is even more remarkable given two other factors. Firstly, whilst the work of conservation biologists has slowed rates of biodiversity loss (Johnson et al. 2017), extinction and habitat loss continue at a rapid rate (Neugarten et al. 2024). To address this, there have been repeated calls within conservation to become more effective by integrating additional disciplines and forms of knowledge, stretching back

to the founding documents of modern conservation biology (Soulé 1985) and continuing into the dawn of the Anthropocene (Palsson et al. 2013; Bennett et al. 2017). Yet, in spite of these calls for genuine interdisciplinarity and the conclusion that 'Our belief that science alone could deliver us from the planetary quagmire is long dead' (Sörlin 2012, p. 788), recent research on human–natural systems continues to neglect the humanities (Elsawah et al. 2019). Existing integration can be limited—for example, visions of interdisciplinary research on coupled human and natural systems (see, for example, Shin et al. 2022) still have a tendency to limit their new, inclusive vision to "*just add social scientists*" when addressing complex environmental and ecological problems. Secondly, although the humanities have been integrated into the work of many prominent thinkers for some time—see, for example, Aldo Leopold's land ethic inspired by philosophy and ecology (Leopold 1949)—humanities scholars have been criticised for failing to achieve 'impact' and change the world through their work. As a broad interdisciplinary movement, the conservation humanities are well geared towards understanding the subtleties of the relationship between society and the 'dynamic milieus' that constitute our multispecies environment (Van Dooren et al. 2014). Whilst there is a stated willingness within both conservation biology and the conservation humanities to work across disciplinary boundaries and to have greater impact, as well as many shared interests, there has been a failure to do so.

This failing can be explained by a number of factors. There is a lack of humanities content in conservation degrees and training and vice-versa, which has shaped the values and worldview of graduates working in these fields (Sandbrook et al. 2019; Luque-Lora et al. 2022; Slater et al. 2024). The structure of academia, such as disciplinary journals, the norms of publication and the organisation of departments, constrains such integration. Whilst there are shared interests, objects of study and vocabulary between conservation humanities and conservation biology, there are also differences in definitions, as well as epistemologies and ontologies (Pooley 2013; Holmes et al. 2022). There is a tension between disciplines being true to themselves, able to speak to debates and developments in their own field, whilst drawing insights from other disciplines and contributing to them and changing the world. Our focus here is on the challenges of integrating the rich data from humanities scholarship with rich environmental data.

Here, we demonstrate that one way of addressing this impasse is through research projects with a shared focus and even shared datasets, as well as ongoing academic–societal partnerships. Specifically, we explore how knowledge of the socio-cultural dimensions of biodiversity can be captured and understood, then 'operationalised' alongside ecological data in the kinds of tools needed by conservation organisations working at regional and national scales, such as National Parks and landscape planners. We also make the case for the importance of sound as a socio-ecological nexus for understanding landscape and 'soundscape' as a useful concept and methodological focus for conservation research (Carruthers-Jones et al. 2019; Eldridge et al. 2020). Sound, in its variety, its presence and its absence, is a part of conservation in three important ways. Firstly, it is part of how ecosystems function, such as the role of birdsong in bird communication, and, thus, worth conserving in its own right. Secondly, measuring sound can be a proxy for measuring other aspects of biodiversity; for example, the recording of birdsong can be used to monitor bird abundance. Thirdly, sound can be part of the ways in which humans relate to and value the environment, such as appreciating the beauty of birdsong or the sense of solitude that comes from silence. It should be noted that these do not always align; for example, humans might value the calls of invasive bird species, whose presence might reflect a damaged environment. Similarly, not all humans relate to and value sounds in the same way; silence

can be both comforting and unsettling, and the call of a bird can be an important part of cultural identity to one person and a cacophony to another.

Theoretically, our approach aligns with contemporary environmental humanities perspectives that treat human cultures and ecosystems as an integrated whole. From this perspective, soundscapes are rich with meaning, a critical dimension of the '*ecosemiosphere*' that is shared by all species—and their *umwelts*—a complex cultural-ecological system within which diverse semiotic relations play out (Maran 2021). Human perceptions of soundscapes therefore have potential to provide insights into this space and be interpreted and analysed as indicators of the quality and diversity of the cultural–ecological system (Carruthers-Jones 2019). At the same time, the emerging discipline of ecoacoustics (Sueur and Farina 2015) can provide both a framework to conceptualise the diverse sounds found in the landscape and a robust, low-cost methodological toolkit to monitor them over long time frames, even in remote and logistically challenging environments (Metcalf et al. 2023). We can record environments and analyse the sounds within them using powerful computer tools to provide a relatively easy, cheap and unintrusive insight into the natural world, what is in it and how it functions, thereby offering us a proxy for ecosystem health and status (Eldridge et al. 2018). The discipline of ecoacoustics has emerged as part of broader developments in ecology facilitated by mass-produced and inexpensive instruments to take environmental measurements, as well as computing developments to automatically analyse the large amounts of data produced. Acoustic monitoring offers insights into a shared multispecies space at the interface between human beings and ecological and technological processes and allows us to measure qualitative socio-cultural and quantitative ecological data for the same space.

Grounding these theoretical frameworks in the landscape, we use a participatory mapping approach structured around the concept of the 'transect' as both a landscape element and a transdisciplinary framework through which results derived from multiple approaches can be integrated, cross-fertilized and exchanged (Carruthers-Jones et al. 2019). A path- or transect-based approach has been found to be a useful analytical method and research tool to explore contested issues in relation to urban and landscape planning (Talen 2002; Moccia and Berruti 2018). The idea of a path situated in the landscape speaks to multiple disciplinary approaches and ways of describing data or knowledge. Within environmental history, it is considered to be a way of both accessing knowledge on 'mobility heritage' and a potential mechanism for resolving conflicts arising from competing land uses in remote locations (Svensson et al. 2016). Paths are also shared, co-evolving from human and non-human use of the landscape, serving as an anthropological lens through which to research shared land use and cultural knowledge of places (Van Dooren et al. 2014). We frame the paths walked by participants in these projects as a spatial 'transect' along which different kinds of data are collected. At a minimum, this includes both objective measures of landscape attributes—via ecoacoustics—and subjective human perceptions of that landscape (via mobile ethnographic mapping methods). This allows us to vertically integrate multiple types of data collected laterally along spatial gradients and analyse them as part of the process of constructing knowledge (Ingold 2011, p. 153). Combining the conceptual framework of soundscapes and ecoacoustics with the spatial 'thread' of transect-based mobile ethnographic methods allows us to respond to calls within research on global environmental change for integrated methods that reflect the plurality of representations of landscape and the diversity of human values these represent (Castree et al. 2014).

Practically, our empirical research aims to better understand the challenges facing the conservation of sub-Arctic and high-mountain landscapes, which are increasingly threatened by the dual threats of rapid climate change and growing tourism pressures. The

fieldwork unfolds along transects that span gradients of social, cultural and ecological land use at two field sites in Finnish Lapland and in the French Pyrenees. These sites are typical of fragile remote landscapes in Europe where a growth in sustainable tourism threatens the very thing that people travel to visit and experience (Walter et al. 2024). Our work was aimed at exploring the tensions between multiple land uses, such as cultural heritage and biodiversity conservation, and between different actors in the landscapes (herders, tourists, livestock and predators). Increasingly, the conservation of intact remote landscapes is seen as critical to the future of our biosphere on both ecological and social levels (Di Marco et al. 2019). Although sound has historically been overlooked in conservation when considering the social and ecological heritage value of protected areas (O'Connor 2008), high levels of anthropogenic noise can be detrimental to a range of bird, insect and animal species (Berger-Tal et al. 2019). Equally, intact ecological landscapes with low levels of human impacts such as anthropogenic noise are now considered critical to the wellbeing they provide for humans (Milner-Gulland et al. 2014; Allan et al. 2020). The 'soundscape' found in these remote landscapes is therefore now considered a critical ecological niche for both species communication and for human wellbeing, and developing methods to advance the protection of soundscapes via methods that integrate both humanities and conservation biology is critical to the survival of these fragile landscapes (Eldridge et al. 2020).

2. Listening in—Methods, Machines and Publics

Conservation humanities spans multiple disciplinary silos and, in doing so, opens up much-needed novel pathways for '*conceptualizing*' complex conservation problems' (Holmes et al. 2022). At the intersection of several of these pathways, our field methods combine anthropology and human geography—which exist in the 'fuzzy space' between the humanities and the social sciences—and extend their disciplinary reach further via the discipline of ecoacoustics, which has emerged out of landscape ecology and biology. Beyond the use of multiple disciplinary lenses, our research questions are driven by a pragmatic and 'applied' approach (Sandbrook et al. 2013) to research on conservation to mitigate the biodiversity crisis. Via a focus on our shared experience of the soundscape, we seek to develop a more detailed and nuanced understanding of our interactions with nature. In pursuit of more constructive pathways for coexistence going forward, we use this multiplicity of methodological lenses to triangulate key dimensions of the complex dynamics driving the biodiversity crisis. Bringing the anthropological gaze to bear on these cultural landscapes within mixed-methods walking interview techniques, we then overlay machine-based listening data capturing ecological attributes of the landscape for the same locations.

We tested and developed these methods during two recent research projects, Contours and Corridor Talk. The CONTOURS: Conservation, Tourism, Remoteness (https://www.oulu.fi/en/projects/contours-conservation-tourism-remoteness, accessed on 1 January 2025) project was concerned with protected areas and explored how conservation and tourism practices and processes intersect and how they are understood, implemented and, at times, resisted. Within this wider project at field site 1 in the Kilpisjärvi area of northern Finland (see Figure 1) we used the framework of the soundscape as a conceptual and methodological pathway for linking applied studies of nature tourism and conservation practices with critical research on human–environment relations.

In parallel, the Corridor Talk: Conservation Humanities and the Future of Europe's National Parks (https://conservationhumanities.com/corridor-talk/ (accessed on 1 January 2025)) project was funded jointly by the German Research Council (DFG) and the UK's Arts and Humanities Research Council (AHRC). At multiple field sites, it explored

Europe's national parks and the unique challenge they present to conservation work: many of them are not just historically wild and contested places but also sites of more recent geopolitical disputes. Understanding the role these parks play in local perceptions of place, identity, species movements and human rights of access involves conservation as refracted through multiple languages and cultures: it requires, in short, a humanities-based, as well as a scientific–managerial approach. Within this wider project at field site 2, the concept of the soundscape and the techniques of ecoacoustics were also used in the Pyrenees mountains (see Figure 2) to explore the socio–ecological dimensions of wild landscapes, notably as a method to deepen our understanding of human values for this landscape and the challenges of co-habiting with the other species we share them with, such as the brown bear.

Figure 1. Field site 1 in the Kilpisjärvi area of northern Finland, showing a passive acoustic monitor and a group visiting the popular tourist destination of Saana fell. The passive acoustic monitors were predominantly deployed in the wooded areas, which are visible lower down on the path up to Saana Fell.

Figure 2. Field site 2 in the Pyrenees National Park area of southern France showing a passive acoustic monitor (**left**) and a group visiting the popular tourist area of Pont d'Espagne (**right**).

Together, these two field sites highlight the tensions currently being played out across Europe between growing anthropogenic pressures and accelerating ecological vulnerability. Both of these remote landscapes incorporate strict nature protection areas—designated for their ecological importance—that are subject to complex anthropogenic impacts via nature-based and leisure tourism, a trend that has only grown post COVID-19. At both these field sites, we used participatory mobile methods to understand how people experience sound and relate to their soundscape (see the location map in Figure 3 below).

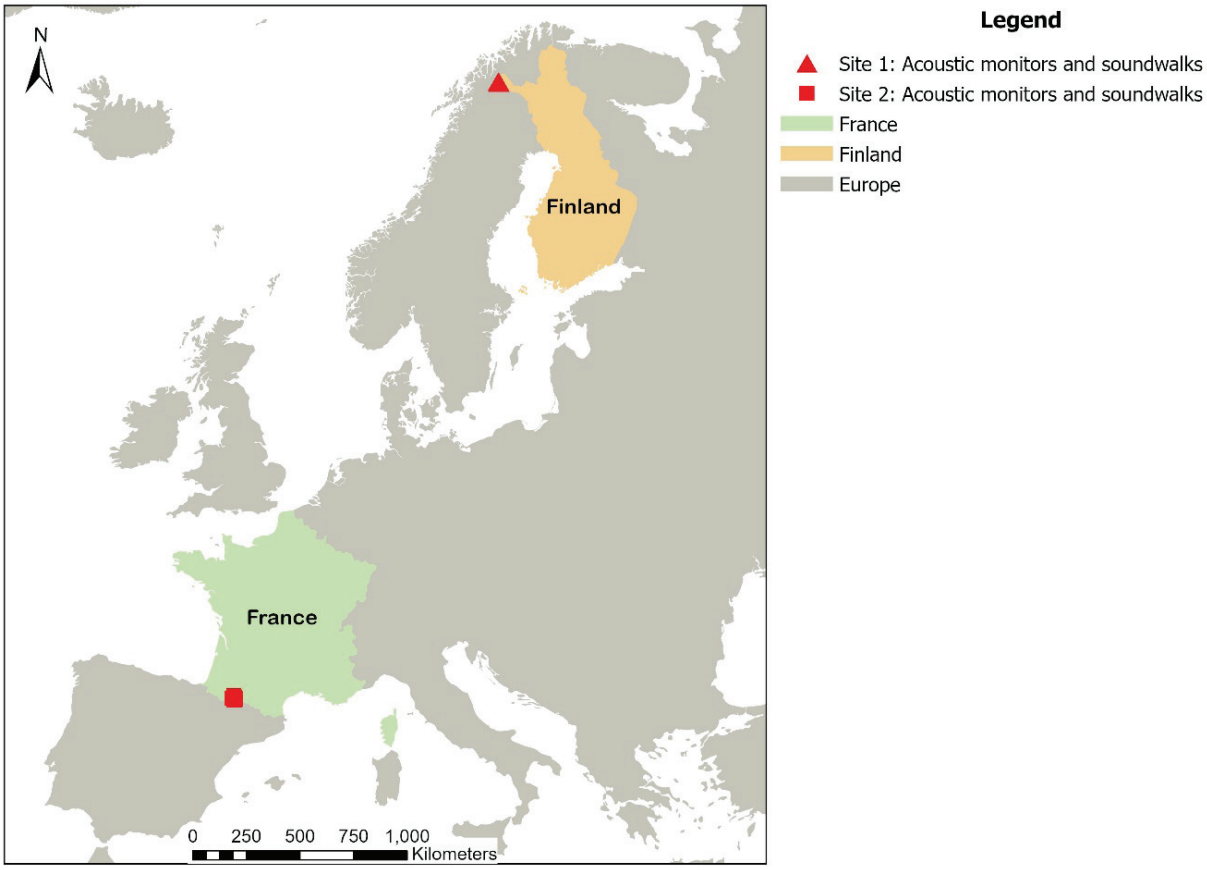

Figure 3. Project location map. Field site 1—Kilpisjärvi in northern Finnish Lapland, close to the border between Norway and Sweden. Field site 2—Hautes-Pyrenees in southern France close to the border with Spain. Passive acoustic monitors were deployed, and soundwalks were conducted at both sites.

In Finland, Kilpisjärvi in northern Lapland was identified by the CONTOURS project as a site of interest for the key themes of tourism, conservation and remoteness (Walter et al. 2024). An unstructured approach to recruiting interviewees was used that identified key spatial areas of interest for the themes at hand—such as National Parks—then invoked an 'accidental' approach to ethnographic recruitment (Fujii 2015) that sought opportunities for interviews with participants encountered along the path in these areas whilst snow shoeing and ski touring or in wilderness huts. In this sense, participants at field site 1 were identified using what has been called the 'convenience/haphazard' method, a description that characterises researchers' first encounters with participants in the field before a more formal 'snowball' method can begin (Guest 2014). These encounters were, by definition, less structured and often initiated by the future participant who enquired as to what the researchers were doing. Upon learning that we were researching the soundscape, the following conversation quickly turned to what they had heard or not heard that day

or which noises were the most pleasant for them or, indeed, the most annoying. This combination of a place-based accidental approach to identifying participants with the 'go-along' method (Kusenbach 2003) allowed us to reach participants in the field site who were often just passing through and who would have been very challenging to recruit using standard methods such as postal or on-line strategies.

As a counterpoint to this, in the Pyrenees at field site 2, the walking interviews were participant-led, and participants were identified using a pre-structured snowball method informed by local conservation experts that aimed to include all those with an interest in the question at hand, to be given a voice (see, for example, Reed et al. 2022). Rather than the research team selecting a walking transect that would impose our idea of wildness or naturalness, we invited individuals or pairs of participants to take us on a walk from an area of low naturalness to high naturalness so that the resulting transects reflected their ideas of naturalness or wildness. We interviewed participants at a series of stops (n = 118) during these day-long walks (n = 25). An initial stop was made at the start of the walk, usually in an urban area; then, participants were asked to identify periodic stops along the walk at locations where they felt that the naturalness of the landscape changed significantly in character. This gave us a set of interview stops along a participant-defined gradient of naturalness. At each stop, we used high-quality, lightweight audio–visual equipment (GoPro Fusion, Zoom H4N and Tascam lavaliere microphones) to record 2 minutes of the soundscape with no talking, then participant answers to a series of questions: (1) How wild/natural does the surrounding landscape sound?; (2) How wild does the surrounding landscape look?; and (3) How likely is it that bears, wolves or lynx move through this area? Participants provided a numerical score (1 (low)–10 (high)) for each question, then an explanation of what landscape elements, thoughts and experiences were driving their score.

At both field sites, these mixed-method qualitative interview techniques were complemented by quantitative ecoacoustic sampling. As outlined above, ecoacoustics is an emerging interdisciplinary science that investigates natural and anthropogenic sounds and their relationships with the environment over multiple scales of time and space. It is used in conjunction with the conceptual framework of the soundscape (Sueur and Farina 2015) that divides the acoustic space into sounds based on their (1) *geophony*, which denotes the sounds made by abiotic processes in the landscape, such as wind and rain; (2) *biophony*, the sounds of animals, birds and insects; and (3) *anthrophony*, the sounds of humans—although the term *technophony* (Gage and Axel 2014) is increasingly used to differentiate the sounds of human speech from those of human machines. At a subset of the same locations as the participant interviews, we deployed long-term passive acoustic monitoring (PAM) devices to record the soundscape. There was a total of 8 recording locations in Kilpisjärvi (Field site 1) and 14 recording locations in the Pyrenees (field site 2), which were used to measure changes in the soundscape over time. These locations served to characterise the interview locations beyond the moment of encounter with participants and included a diverse range of habitats that were also representative of a gradient of landscape change, including (1) highly modified landscapes such as the centre of town or an access car park for a protected area; (2) modified natural areas such as managed forest or areas close to paths where there is high tourism activity; (3) semi-modified natural areas where there is heavy grazing by cattle or sheep in the Pyrenees or reindeer in Finland; and (4) intact natural areas, often at higher altitudes such as birch forests or old-growth forests far from footpaths and often on steep slopes. The distance between the recorders was controlled to ensure that they were not recording the same sounds. By analysing the sound recordings, a suite of acoustic indices can be calculated to quantify the proportion of the soundscape that is coming from these various sources. More simple acoustic descriptors can also be used to

measure basic attributes of the soundscape, such as the amount of noise. These can then be plotted to statistically analyse the sonic activity across frequency ranges.

3. Notes from the Field—Findings and Reflections

Walking Interviews

In 2015, the Finnish Tourist Board amended its core destination values to include "Silence, please" (See Figure 4).

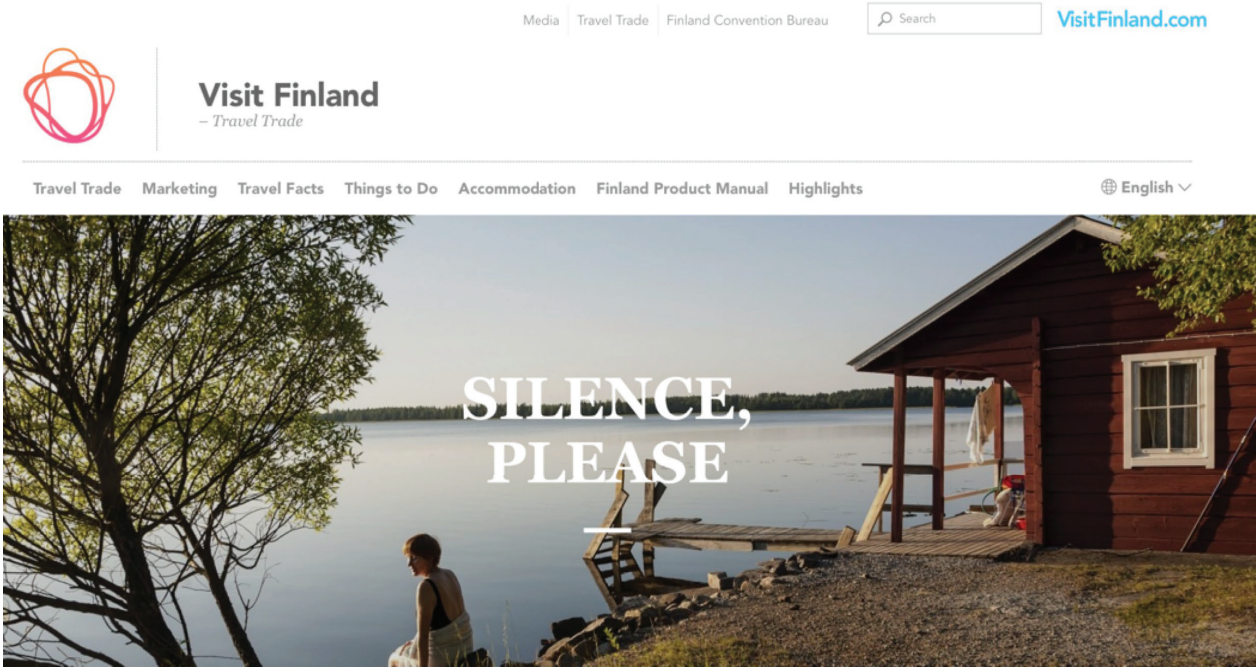

Figure 4. Space, time, peace and quiet—the four elements modern life lacks. Finland offers a chance for downshifting even in the heart of the city, and untouched nature is never more than half an hour away. Stay at a cottage, enjoy a sauna and listen to birds warbling across the lake. Take in the sound of quiet. Hear yourself think.

At both of our field sites, the results of the walking interviews with members of the local community, as well as tourists, highlighted that silence is not, in fact, the absence of any sound, as we commonly understand it but, rather, the absence of human-made sounds. During the more unstructured interviews at field site 1 in Kilpisjärvi in northern Finland, this was summarised by a member of staff at the local national park visitor centre, who highlighted the fact that "*silence includes the sounds of the nature, even the wind. It just does not include human made sounds*". For them, human-made sounds included both the *anthrophony* of human voices, as well as the *technophony* of snowmobiles. In the open topography of sub-Arctic landscapes, with their dwarf birch forests, both of these sound sources can travel long distances, unhindered by the dense forest typical of central and southern Finland. Inevitably, as the number of tourist visitors in these landscapes has grown, this pristine silent promise of the 'Far North' has begun to be threatened. Neither *anthrophony* nor *technophony* 'belongs' in the narrative of these landscapes. Interviews in the picnic hut at the foot of Saana Fell quickly turned to a vision of a pristine landscape where there was a remoteness—often characterised by participants as the sounds of '*the nature*' (*biophony*) and the '*extremes*' of snow and wind (*geophony*). It was this imaginary that had drawn many of the tourists here, whether they had come from other parts of Finland or farther afield in Europe and Asia. Interestingly, the idea that we were in this landscape studying

the 'soundscape' was almost always initially greeted with surprise, yet without further prompting, this concept resonated intuitively with all participants, whether they were local residents or tourists. Amongst tourists, this also developed into detailed reflections on sound sources they viewed negatively—such as snowmobiles and helicopters—and how they impacted on their experience of the landscape they had travelled so far to visit. Amongst members of the local community who practiced fell skiing or non-mechanical activities, these negative sentiments about snowmobiles and helicopters for recreational activity in the remoter parts of the landscape were shared—several commented, "*Why should the actions of one person impact so many others across such a large area?*". In this narrative, the recreational snowmobilers were often perceived as outsiders who had travelled to the area from Norway, coming across the border from the nearest big town, Tromsø, where this kind of recreational winter activity is no longer allowed. The presence of "*weekenders*" from Norway, who come to buy the cheaper food and alcohol at the local K-Market, is a well-established trend, at least according to the local residents and those working at the K-Market. Researching the content of this narrative amongst the visitors from Norway, we spoke, for example, to one weekender who explained that, actually, he towed a caravan from his home in Tromsø to Kilpisjärvi each autumn, then left it there for six months so he could spend his weekends with his friends snowmobiling and drinking in the local bar. As long as he left the caravan there for less than six months, there were no tax implications. He recounted in detail why he loved Finland for its lax legislation on snowmobiling and shared tales of his run-in with the Finnish police who had stopped him to check the depth of the track on his snowmobile. A large man, he had customised his snowmobile so that the tread on his drive track was double the legal limit so that he had better traction in deep snow; but, as he was keen to tell us, "*they never fine me. . ..*". This archetypical local vs. non-local narrative and the negative impact of the behaviour of snowmobilers coming from outside Finland was also emphasised by local tourist operators who organise snowmobile 'safaris'. Operating within local legislative requirements and observing the restrictions on where snowmobiles can go, they do not perceive their activities as a threat to the ecological functioning of the area or as negatively impacting people's experience of place. As we have already noted, however, this stands in stark contrast to the experience of other local people whose winter activities, such as cross-country skiing or snowshoeing, make no sound at all.

In the more structured interview format used in the Pyrenees at field site 2, the idea of soundscapes and a specific set of questions on sound were introduced to participants from the outset (see Section 2 above for more details). Analysis of the transcribed interviews revealed several key themes. Firstly, the interviews clearly highlighted the importance of sound to people's experience of place, an obvious-seeming fact that is, nevertheless, often overlooked in histories and geographical characterisations of landscapes (Farina et al. 2014). Silence was an equally treasured quality of naturalness that, again, was defined not as the absence of any sound but, rather, the absence of human-made sounds. Distinguishing silence from naturalness, the importance of biophony to how natural a place sounds was highlighted by one participant who observed, "*For me, the absence of nature sounds also reduces the [naturalness] score because there isn't the life, the natural life that we would imagine here*". A second key theme to emerge from these interviews was the important difference between the visual quality of a place and the acoustic quality of the same place. This was revealed in the difference in the visually and acoustically perceived naturalness scores given by participants. Usually, this was in the direction of a place sounding much less natural than it looked, often because—as in field site 1—anthrophony or technophony was travelling significant distances or because a single sound source (a rubbish van, for instance) made so much noise that, alone, it was capable of transforming a person's experience of a

place. Even in the most natural and remote corners of the Pyrenees, there was still a lack of silence. Prominent technophonic sound sources in the beauty spots of site 2 were drones, and no matter how far we walked into the wilderness and strictly protected corners of the valleys of the Pyrenees, there was still the regular passage of airplanes and the occasional gunshot from a hunter's rifle. This technophony was, as we might expect, highlighted as a key dimension of participants' acoustic experience: "*We haven't heard any cars come past, so we can listen to everything that is happening, without the bruit parasite [background noise] disturbing us, no man-made sounds masking our experience of the natural background noise [which is] a pureness of sound, the soundscape—the fond sonore*".

4. Integrating Acoustics Data

Whilst we have a wealth of quotes and anecdotes from both sites, as we highlighted above, at both these field sites, we tried to go beyond a traditional qualitative analysis to include other methodological lenses, notably ecoacoustics. The goal of this more integrated and pragmatic approach was twofold. The first goal was to enrich our understanding of the localised interview data by linking the insights from these interviews with data for the same locations collected via passive acoustic monitoring, thus combining momentary qualitative data with a scalable, long-term, quantitative data collection method. Doing so allowed us to apply our research conclusions to areas beyond our field sites, where there are other existing ecoacoustic datasets, thereby supporting informed decision making with respect to conservation across larger areas.

Descriptive Analysis of Sound Recordings

Analysis of the sound recordings for the same locations as the interviews at field site 1 reveal the scale of the impact of these regular technophonic impacts. Mention was often made by participants of the volume of heavy goods traffic in the area. Kilpisjärvi sits on the E8, a major access route for trucks bringing food and supplies to the area and onwards into northern Norway. Simple listening and visual analysis of these sound recordings shows us that even in the dark depths of the sub-Arctic winter at field site 1, across the 8 recorder locations, we see a wide range of soundscapes. This includes high levels of anthropogenic noise dominating the daily soundscape in the form of heavy lorries travelling on to Norway, which are visible as regular peaks, even in the middle of the night (see Figure 5, top), as well as bursts of loud noise from snowmobiles appearing out of the relative silence (see Figure 5, bottom).

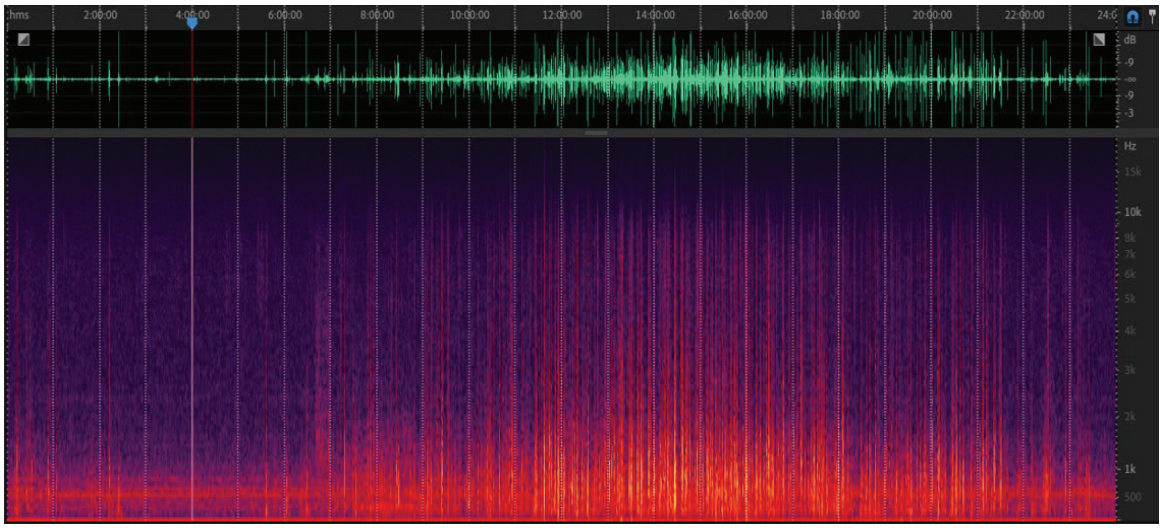

Figure 5. *Cont.*

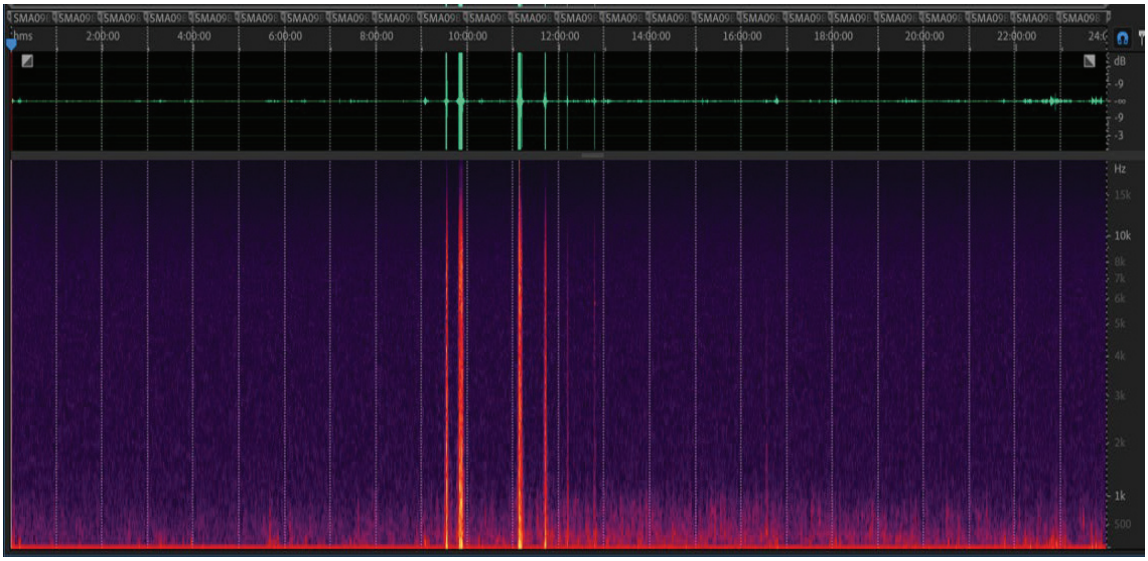

Figure 5. Acoustic plots for a single day (20 November 2022) at two of the eight recorder locations at field site 1 showing sound level (top in green measure in decibels) and the frequency spectrogram (activity in a frequency range in red and yellow). The spectrogram shows how the frequency of sound signals varies over the time duration of a given recording. Lorries travelling on to Norway can be heard and are made visible as regular peaks through the day and even in the middle of the night (**top** image) or as bursts of loud noise from snowmobiles in an otherwise quiet landscape (**bottom** image).

The raw sound recordings can then also be used via advances in machine listening techniques to identify individual bird species (Kahl et al. 2021) and, using community-based confidence thresholds, accurately quantify the different species found at a given location (Funosas et al. 2024). The BirdNet tool can be run on hundreds of thousands of recordings made across the year, providing information on birds present at that location in a way that is difficult and costly to achieve with traditional bird counts. Even the information for a single day at a single location produces results of interest that describe one of the key biophonic attributes of a soundscape—the diversity and abundance of bird species present—which was mentioned by participants (see Figure **??**). Walking the landscape with tourist visitors has highlighted the importance of these biophonic sounds to their experience of silence (see above), as well as the possible encounters with other species they represent.

Selection	View	Channel	Begin Time (s)	End Time (s)	Low Freq (Hz)	High Freq (Hz)	Species Code	Common Name	Confidence
234	Spectrogra	1	1671	1674	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9524
314	Spectrogra	1	663	666	150	12000	grswoo	Great Spotted Woodpecker	0.9519
166	Spectrogra	1	1506	1509	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9429
218	Spectrogra	1	1638	1641	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9391
119	Spectrogra	1	1314	1317	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9355
232	Spectrogra	1	1668	1671	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9319
220	Spectrogra	1	1641	1644	150	12000	leswoo1	Lesser Spotted Woodpecker	0.921
301	Spectrogra	1	525	528	150	12000	grswoo	Great Spotted Woodpecker	0.9184
207	Spectrogra	1	1602	1605	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9141
170	Spectrogra	1	1512	1515	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9128
404	Spectrogra	1	981	984	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9086
117	Spectrogra	1	1311	1314	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9076
297	Spectrogra	1	510	513	150	12000	grswoo	Great Spotted Woodpecker	0.9025
64	Spectrogra	1	1161	1164	150	12000	leswoo1	Lesser Spotted Woodpecker	0.9005
318	Spectrogra	1	669	672	150	12000	leswoo1	Lesser Spotted Woodpecker	0.8995
124	Spectrogra	1	1326	1329	150	12000	leswoo1	Lesser Spotted Woodpecker	0.8909
11	Spectrogra	1	1020	1023	150	12000	leswoo1	Lesser Spotted Woodpecker	0.8901
174	Spectrogra	1	1518	1521	150	12000	leswoo1	Lesser Spotted Woodpecker	0.8854

Figure 6. Extracted results of a BirdNet machine listening analysis for a single day and a single location at field site 1. Each time a bird is identified, the tool records the time of day the recording was made, when during the sound recording the bird was detected, the species name and the level of confidence that the algorithm has correctly identified the species.

5. Statistical Analysis of Sound Recordings and Spatial Data

Advancing the integrated analysis, in addition to quantitative species-focused biophonic data, we also have the first glimpse of the results of a statistical analysis of the ecoacoustic data from field site 2 in the Pyrenees. Our goal here was to *combine* biological and social analysis of the soundscape for the same point in space and time for a better understanding of what types of sounds and silences there are in the landscape, what is producing them, how they might be understood and their implications for conservation. Using acoustic and spatial data, this integrated analysis looked more specifically at how natural a place sounds—is it dominated by biophony or anthrophony—and, when combined with the interviews, provides insights of relevance to human perceptions of soundscapes in terms of biophony, silence and naturalness. This opens up a pathway to make the knowledge measured and useful across multiple scales for both policy makers and those that implement policy in the landscape, such as national parks (Ritson et al. 2024).

For field site 2, we used acoustic indices to analyse the momentary sound recordings made during the 2 min period of silence at the start of the interview stops. As described above, we can analyse the sound frequency spectrum over time to describe different properties of the soundscape, specifically to identify who or what is producing the noise and how much of it is being produced. Simple spectro-temporal features are captured by indices such as the spectral centroid (SC), which are good proxies for the amount of anthrophonic noise in the soundscape (Carruthers-Jones et al. 2019). The spectral centroid can be combined with data on the diversity and abundance of bird species at a given location to identify places where there is a low level of anthrophony and high level of biophony. A group of alpha acoustic indices such as the Acoustic Complexity Index (ACI), Acoustic Diversity Index (ADI) and Biophonic Index (BI) is generally considered to capture the amount of biophony present in the landscape, predominantly coming from bird vocalisation and, depending on the landscape, insect noise (Metcalf et al. 2023). Amongst them, the Normalised Sound Difference Index (NDSI) combines in a single index the proportion of acoustic activity in the lower range of 0–2 KhZ compared to the amount in the higher range of 2 kHZ–10 KhZ. Activity in the lower range is predominantly caused by technophony, and that in the higher range is predominantly caused by biophony.

Whilst this approach provides quantitative numerical values to describe attributes of the soundscape, we sought to take this further by extending the potential of spatial

data on landscape naturalness, as well as to assess the implications of acoustic indices for our ideas on how natural a landscape looks and sounds (Carruthers-Jones et al. 2019; Carruthers-Jones et al. 2025) (see Figure 4). In particular, we wanted to know what kinds of sounds were in places that people thought of as more or less natural and how we could scale this up to consider the characteristics of the larger landscape and soundscape.

Looking at the data from a subset of 30 of the stops at site 2, we used a random forest approach to calculate which out of a set of four acoustic indices and five spatial datasets was the best predictor of the scores given by human participants in answer to the question, 'How natural does it sound?'. Four AIs were chosen as the most relevant to the question at hand: the Acoustic Complexity Index (ACI), Acoustic Diversity Index (ADI), Biophonic Index (BI) and Normalised Sound Difference Index (NDSI). Numerical values for the degree of biophysical naturalness, built density, ecological flow, landscape naturalness and tree density were extracted for the area of the 30 stops from national spatial data using the Focal Statistics tool in ArcGIS Pro (ESRI 2024). Multivariate random forest regression models (Breiman 2001) were built using these four AIs, with five spatial datasets used as predictors and human perception of acoustic naturalness as the response (see Figure 7).

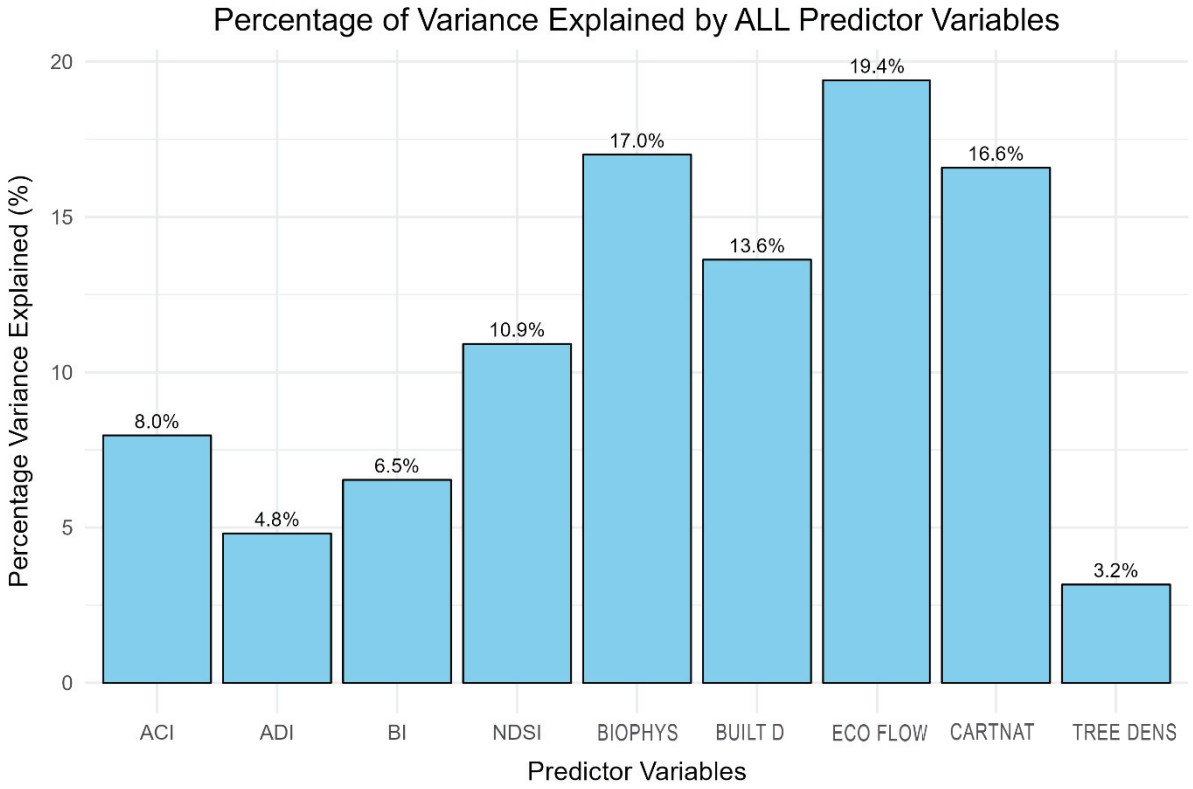

Figure 7. Random forest plot showing percentage variance explained in human perception scores for a set of acoustic indices (Acoustic Complexity Index (ACI), Acoustic Diversity Index (ADI), Biophonic Index (BI) and Normalised Sound Difference Index (NDSI)) and spatial data on biophysical naturalness, built density, ecological flow, landscape naturalness and tree density.

Random forest models of this type allow us to test which of the AIs or spatial data best predict the response variable (human perceptions) and are tolerant of deviations from parametric assumptions and skew in the data. Overall, the predictor variable that best explains the human perception scores of how natural a place sounds is the spatial data on ecological flow. This dataset was built to identify the largest and best structurally connected natural landscape areas in France, as ecological flow is recognised as an indicator of natu-

ralness (see Carruthers-Jones et al. 2025 for details). Amongst the Ais, NDSI scored most highly, suggesting that high human perception scores for acoustic naturalness correlate with high NDSI values, which represent relatively higher levels of biophony compared to anthrophony. This is in line with what participants describe as an important aspect of naturalness and the definition of silence that goes along with this—higher levels of biophony relative to anthrophony.

Using long-term PAM at the same field sites, an additional analysis step is now underway to explore whether the momentary sound recordings used in this analysis are representative of a given location over longer time frames and assess the seasonal shifts in anthrophonic and biophonic activity.

6. From Sound to Conservation Action

This approach has great potential to be extended to other locations and ecosystems. Passive acoustic monitoring is being conducted at many thousands of sites across Europe and beyond. These ecoacoustic indices and BirdNet data are regularly calculated for these locations as part of long-term ecological monitoring, primarily of bird populations. Beyond this biological focus, the insights from our walking interviews, combined with the results of the ecoacoustic analysis, provide conservation planners with an additional ethnographic perspective for the same areas—that sites with high NDSI values are likely to have soundscapes that people value for their natural quality—which can both inform and give additional weight to the importance of these areas and how they are valued in decision making. Extending our overall integrated conservation humanities approach to demonstrate the connection between human values with respect to a location, acoustic metrics and the spatial data for that same location allows us to interpolate beyond the localised interview and sound recorder locations (Aumond et al. 2018). The spatial data that show potential here—ecological flow data—exist for the whole of France, and similar datasets exist that cover many parts of Europe, highlighting a clear pathway to the scalability of this approach. One ongoing challenge for ecoacoustic monitoring is that PAM data are limited to individual spots where recorders have been placed, and consequentially, the spatial coverage of sound recordings can be limited. A clear advantage of our integrated approach of combining ethnography with ecoacoustics and spatial data that are often available at the national scale is that it offers repeatable and robust methods for use in conservation decision making across larger spatial scales. Additionally, it can then form part of a long-term monitoring strategy to provide decision makers with concrete evidence of how landscapes change over time and support national conservation planning for the recently passed EU Nature Restoration Law (European Commission 2024).

In the process of researching soundscapes, our work had some additional and serendipitous impacts. Our participatory and cross-disciplinary methods brought us into contact with a diverse range of local and regional actors, thereby generating practical impacts beyond the academy. The act of working with the local biological research station at field site 1 in Kilpisjärvi, as well as being out in the field installing sound recorders brought us into contact with a team at the University of Helsinki developing a publicly accessible science trail mobile phone app. The research station is owned by the University and has been active for 60 years. The goal of the science trail is to make the diverse research activities in the area known to the increasing number of people that visit this remote part of the world. Historically, research at the station was exclusively dominated by biological studies on subjects such as lemming populations, lichen and fish species in Arctic lakes. As part of this science communication activity, they were seeking projects that span multiple disciplines and introductory text on the concept of the soundscape and the importance of

silence. Sound recordings from our PAM sensors were also included in this app. The local national park visitor centre now encourages tourists to download and use the app to guide their interactions in the landscape (see Figure 8).

At a more political and administrative level, the process of walking with all those who have an interest in the question at hand necessarily involves time spent outdoors with local planners and conservation managers discussing soundscapes and the importance of silence. Walking interviews with specific individuals generated conversations that have now crystallised into the creation of a consortium that recently submitted an application for European Regional INTERREG Aurora funding to design and implement soundscape conservation legislation in national park areas across the three countries adjacent to field site 1 (Finland, Sweden and Norway). In parallel, the local research station manager at site 1 introduced the idea of the soundscape as something worth preserving to the Regional Council of Lapland, and it has now been written into the regional development strategy as a one of several key themes to consider in going forward. Finally, at field site 2, the evidence created by ongoing participatory research and mapping on sound and naturalness has added weight as 'ground truthing' to a national-level spatial analysis, 'CARTNAT', which is now used in the French National Strategy for Protected Areas to identify new areas for strong protection in France in respect of the European Commission biodiversity targets for 2030 and the EU Nature Restoration Law (see Carruthers-Jones et al. 2025).

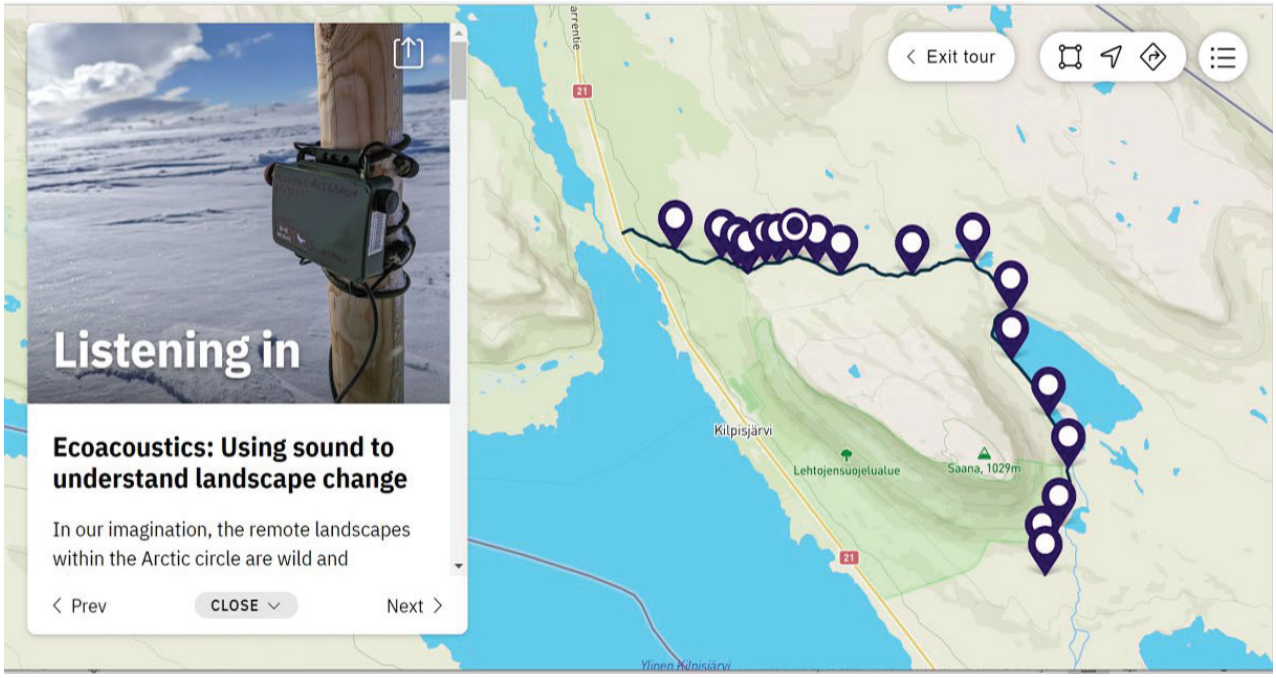

Figure 8. An extract of the soundscape research content from the project that was featured in the Kilpisjärvi Science Trail App (https://www.helsinki.fi/en/research-stations/science-trails/locations/kilpisjarvi-science-trails/download-science-trails-app (Accessed on 28 January 2025)).

7. Conclusions

Together, these projects aimed to respond to the limitations and lack of interdisciplinary conversations in conservation and humanities research. We sought to demonstrate how conservation humanities research could be used to develop a more pragmatic and integrated transdisciplinary approach to conservation and to emphasise the importance of sound to conservation and the humanities. This research does this by advancing methods

for understanding and managing soundscapes in the more remote corners of Europe. Our main contributions here are twofold.

Firstly, we show how sound and soundscapes are important subjects of study in both conservation and the humanities and are also of interest to policy makers seeking to maintain biodiversity and preserve landscape characteristics and human relationships to these landscapes. We have argued that the conservation of soundscapes is necessary because it is a critical ecological niche for species communication and for human wellbeing. Recognising the acoustic environment as the nexus of atmospheric, biospheric and anthropogenic processes, the discipline of ecoacoustics provides a methodological framework within which to integrate ecological and anthropogenic perspectives on wilderness (Carruthers-Jones et al. 2019). As such, ecoacoustics can help us respond to calls for new approaches to conceptualising and measuring remote and wild spaces as the site of complex and dynamic human–environment relations (Lesslie 2016; Hennig and Künzl 2016). Equally, the humanities can help us understand the values ascribed to different 'natural' sounds by different groups—for example, whether the sounds of non-native and native species are considered equally 'natural' by the local population or whether indigenous herders in Lapland value or, indeed, use sound differently than other social groups.

Ethnographic walking interviews using a combination of unstructured 'go-along' and structured 'transect'-style approaches highlighted that silence can best be understood as the lack of anthropological or technophonic noise. Biophonic noise such as birdsong is considered an essential part of that 'silence' and is facilitated by the absence of competing machine noise, thereby allowing species communication. These *natural* soundscapes provide space for functional communication between other species and also create space for humans to encounter and enjoy nature. *Methodologically* exploring this space requires that we leverage insights across multiple disciplines, and conservation humanities is well placed to do this because it brings multiple academic disciplines to bear and requires scholars to conduct research in an engaged way with partners from other academic disciplines. To enrich our existing methods, we recognise that a broader humanities approach including, for example, scholars from environmental history could help us understand the tensions and contradictions that might emerge in the future, such as how the influx of tourists and tourist infrastructure might erode the silence and solitude that attracts tourists in the first place.

Secondly, our work demonstrates the potential of the conservation humanities in *conservation* and a means by which we can move beyond disciplinary silos for new ways of thinking about conservation, as well as new policy insights, which the humanities are well placed to provide. Here, we show how a focus on a shared object of study—in our case, sound and soundscapes—can, via situated research, allow multiple methods and datasets to be analysed together and essentially 'speak' to each other. Although our focus here is on sound and soundscape, we consider that other concepts that are of interest to humanities scholars and conservation scientists, such as resilience, restoration and extinction, could also be a basis for this kind of approach.

The humanities are often criticised for lacking a way through from the complexity they reveal to the challenges they might hope to address. Through our two case studies, we have shown how integrated conservation humanities methods can lead to rich local-level insights on key conservation themes that can then be scaled via existing large-scale acoustic monitoring and spatial datasets to support decision making across much larger areas. We have also highlighted how the participatory methods implemented at the field sites show potential to generate change in the real world and meet the classic *operationalisation* challenge that academia faces. We see great potential for the co-development of these

methods with conservation managers and planners to explore how they can be incorporated into existing spatial planning tools to support more informed social, ecological and cultural decision making.

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