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REVIEW AND SYNTHESIS

Peopled landscapes: Questions of coexistence in invasive plant management and rewilding

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Abstract

1. The concept of 'peopled landscapes' is based on the notion that it is not possible, nor socially or politically desirable, to remove people from the environment in the era of the Anthropocene. As such, it is necessary to document and develop ways to coexist and flourish.
2. This review examines emergent scholarship about peopled landscapes and biodiversity conservation by considering invasive plant management and rewilding as social processes. While invasive plant management and rewilding are often understood as separate, thinking through social scientific research and examples from Australia and the UK, we demonstrate how both forms of human action in landscapes can be more usefully understood as social relations with nature involving social change and social action.
3. Drawing attention to agency, practices and capacity, we show how diverse forms of human and nonhuman actions are recognised, attributed or acknowledged in biodiversity conservation in peopled landscapes.
4. In practice, centring the idea of peopled landscapes (rather than conceiving of the environment as where the impact of people is minimised) shows how invasive plant management and rewilding can be understood as related responses to environmental problems.
5. Flourishing and coexistence in peopled landscapes require recognition of the diverse human and nonhuman agencies that shape the politics of acceptable action, and illustrate the inseparability of environmental and social justice.

KEYWORDS
agency, capacity, human–nature coexistence, invasive plant management, practice, rewilding, social justice

1 | INTRODUCTION

Peopled landscapes are increasingly being articulated as beneficial for biodiversity conservation[1] and are the focus of debates about restoring and coexisting with biodiversity (Sayer et al., 2021; Wittmer et al., 2018). The concept of peopled landscapes has a long history in geography, archaeology, landscape ecology and other disciplines and acknowledges the deep heritage of cultural influences on environments (Haberle & David, 2012; Slack & Ward, 2002), the social co-constitution of nature (Castree, 2013; Mathewson, 1998) and the 'end of nature' (Morton, 2010). In particular, new palaeoecological evidence since the 1990s of human influence in environments across the globe presents a paradigm shift for conservation (Birks, 2012; Head, 2000). More recently, the 'Anthropocene' recognises that landscapes are always already enmeshed with human elements, even if we might debate the use of the term itself (Head, 2016). Reference to peopled landscapes thus acknowledges that conservation 'has to be adapted to the rich diversity of both ecological and human conditions' (Sayer et al., 2021: 973), which builds upon earlier understandings of the need for inclusion of people in conversation efforts but also signals the need to assertively enter a new conservation 'phase'. It also recognises the conceptual, political and relational questions of human–nature coexistence and the normative positions of landscape management (Pooley, 2021). Indeed, the fundamental question we are facing is 'how can humans create a place of coexistence and cohabitation with non-humans[2] that maximises multispecies flourishing?'. In this paper, we explore these questions, examining the diverse agencies involved, what is required of people in terms of practices, and whether we have the capacities to create and sustain the landscapes that are desirable.

The notion of peopled landscapes is used to illustrate how the environment is often best protected by having people enmeshed within. It builds on the critical rethinking of environmental histories and paradigms demanded by palaeoecological evidence (David et al., 2012; Plumwood, 2002), extinction narratives (Jørgensen, 2019) and critical reflection on diverse representations and interpretations of landscapes (Ward, 1999). Research into local and Indigenous practices in biodiversity conservation (Fa et al., 2020) and the necessity of people in meeting global biodiversity and sustainable development goals (Bennett et al., 2022; Wittmer, 2018) means that people's presence is imperative. For many Indigenous and local people, peopled landscapes are not a new idea, but one that is being resocialised in an era of global biodiversity decline and accelerated loss (Hernandez et al., 2022; Kemp et al., 2023). In this context, the deployment of peopled landscapes is an empirical and political project of decolonising conservation with new scientific evidence, renarrated histories and social imperatives (Ellis et al., 2021) that run alongside efforts for more inclusive conservation (Raymond et al., 2022). So while we have seen increasing pressure for radical conservation ambition to address the climate

[1]We use the term biodiversity conservation, rather than the broader concept of environmentalism, to indicate the focus on land, species and nature 'management'.

[2]In this article, we are referring to *living* nonhumans and the ecological processes and relations of which they (and we as humans) are a part.

Case 1: Trees, deer, sheep and (absent) wolves in Scotland

Soon after the end of the last ice age, plants and animals colonised Scotland from refugia in continental Europe. They moved at different speeds, but together travelled as a functional ecological assemblage. As the ice melted, sea levels rose and the British Isles became islands again. It became harder for some plants and animals to arrive. What was there then was somewhat arbitrary, and in other interglacials, different plants and animals came and went (including hippos and elephants). Nonetheless, what was in the British Isles c. 8000 years ago is now commonly taken as one of the desired baselines for British rewilding. This would have been a more wooded landscape, rather like what is found in parts of Norway today.

The trophic relations in Scotland at this time would have been heavily shaped by predators like wolves, bears, lynx and humans. All of these would have eaten deer and created the 'ecology of fear' that influenced their behaviour, particularly shaping where and when they grazed. There are no free-ranging wolves, bears or lynx in Scotland now. Historical processes led to the clearance of local animal and human populations from the land and enclosure, resulting in a very high concentration of private land ownership, which has enabled much of Highland Scotland today to be given over to sheep farming and the elite leisure industry of grouse and deer shooting (or stalking). Deer populations have been encouraged to grow to very high levels in a system of land management where the value of a stalking estate is often determined by the number of deer it supports, despite outstripping the regenerative capacity of the native woodland cover (Pepper et al., 2019). Together with introduced sheep, deer prevent the regrowth or regeneration of the pine trees and scrub and generally reduce the biodiversity of the landscape. George Monbiot (2012)—a popular advocate for rewilding—describes upland Britain as 'sheep-wrecked' but in the Highlands, deer husbandry is as much to blame for the impoverished nature of the land and its current, largely treeless condition. Furthermore, large areas of land were given over to plantation forestry in the 1980s, where they were mostly planted with non-native larch and Sitka spruce.

In short, rewilders want more trees—especially native trees like Scots pine (the charismatic flagship, *Pinus sylvestris*), alder, oak, birch, ash, hazel, willow, juniper and rowan (Brown et al., 2011; Painting, 2021)—and fewer sheep and deer. In some places, 'granny pines' remain that can seed this revival, and in others, seeds remain in the soil and can be carried in from elsewhere. Such forest regeneration can be accelerated by assisted planting. In the absence of predators, whose reintroduction is presently too politically

difficult, extensive deer shooting and fencing are required to enable regeneration to take place. Removing non-native plantation forests and taking out the residual seed stock can also aid naturalistic regeneration (Mcmullen, 2019).

The growing popularity of rewilding has prompted much debate among those involved in land management in Scotland (MacDonald, 2018). Diverse representatives of farmers, those employed in traditional land management, and others advocating for wider access to the land, suggest that rewilding risks perpetuating colonial ideas of the Highlands as an unpeopled wilderness (Lorimer, 2000; Toogood, 2003). They suggest that rewilding threatens the already marginal economics of the crofting agricultural system and is inimical to the idea of the Highlands as a worked and working landscape (Fry, 2023). Debates continue about whether rewilding gives rise to a new set of 'green lairds' who perpetuate the unequal political economy of land in Scotland, or whether it might enable a 'just transition' towards social and natural recovery in rural Scotland (Davidson, 2021; Martin et al., 2023; Sharma et al., 2023).

and nature emergencies (Kopnina et al., 2018), debate over 'degrees of human influence' (Corlett, 2016: 453) and proposals for accepting novel ecosystems (Hobbs et al., 2006), we are no longer trying to 'go back to nature' but instead find new ways forward (Adams, 2004; Corlett, 2016). Recognition of social and ecological justice imperatives, especially those concerning Indigenous peoples (Massarella et al., 2021; Salomon et al., 2018), are as critical to informing this approach as philosophical discussions of what counts as nature.

Our entry point as social scientists is to ask how landscapes might best be peopled or, indeed, repeopled *in order to* achieve environmental and/or conservation goals (Kennedy et al., 2019; Lindenmayer & Fischer, 2013). Our aim is not to weigh into well-trodden debates about keeping people in or out of landscapes (Fischer et al., 2014; Kremen, 2015), nor is it to present a new or revised typology of interventions or their modalities (Prober et al., 2019). Instead, we draw attention to the *relational* qualities of interventions that are already being undertaken or might be desirable in this quest for flourishing coexistence. By relational, we are referring to an understanding that entities (human and nonhuman) and phenomena (we discuss agency, practices and capacities) are constituted through relationships, knowledge of which is contextual and situated (Eyster et al., 2023). In this framing, conservation can be understood as a social relation between the human and nonhuman worlds, creating or producing new natures.

Our focus is on two forms of managing biodiversity—invasive plant management and rewilding. Both of these forms require human intervention and are practised in the name of biodiversity conservation, raising questions about when and how people intervene for future landscape sustainability. For different reasons, they both suggest that some aspects of human intervention are more acceptable than others. Scientific rewilding discourse has been dominated by a focus on reintroducing animals/megafauna, with less attention paid to plants (Jørgensen, 2015), hence our focus on plants here. Regarding invasive plants, recognition of the scale of the threat to ecological, social and economic life posed by invasive species is growing. They are noted as the fifth driver of biodiversity loss on a global scale (IPBES, 2018) and the first in Australia (Sheppard & Glanznig, 2021). There is significant debate and ongoing controversy about how invasive species are defined, reflecting the socio-natural complexity of the term (Head, 2017). Recent analysis shows how views of invasive species and related terminology are different and can be polarised in academic, practitioner and geographic settings (Shackleton et al., 2022). There is also recognition that people are critical to addressing the problem. Human perspectives, attitudes and behaviours are all relevant for understanding the histories and ecologies of invasive species (Shackleton, Richardson, et al., 2019) and to questions of how to intervene and manage increasingly novel landscapes (Hobbs et al., 2006). Yet, within efforts to remove and control invasive plants, people are curiously made absent by a lack of attention to the social dimensions (Head, 2017). Reflecting the difficulties and contradictions of attending to plant agencies (Atchison, 2019; Head et al., 2015) and cultivating effective management and coexistence with invasive plants requires ongoing attention to the challenges of social and ecological responsibilities, and how these are juggled in the context of everyday life (Gill et al., 2022).

Second, rewilding has emerged as a new paradigm for nature conservation, serving as a 'plastic' term (Jørgensen, 2015) with a range of definitions (Gammon, 2018). For conservation biologists, rewilding captures the shift from a 20th century focus on ecological composition—saving rare and threatened species and habitats—towards a focus on ecological functions and processes (Carver et al., 2021; Svenning et al., 2016). Often this involves interventions to secure the presence and abundance of keystone species with disproportionate ability to restore ecological interactions—wolves, beavers and tortoises are the flagship examples—as well as efforts to scale up conservation efforts, territories and targets (Carver et al., 2021; Soulé & Noss, 1998). Rewilding is promoted as a central response to the crises of rapid global environmental change (Svenning, 2020). Some versions of rewilding hold on to a traditional idea of the wild as wilderness, whose authenticity is indexed to human absence, leading to the exclusion of local or Indigenous people and the erasure of long histories of land management (Fletcher et al., 2021; Plumwood, 2002; Sayer et al., 2021). Other versions of rewilding—which are more aligned with our focus on peopled landscapes—recognise the long history of anthropogenic land use that informs the diagnosis of the Anthropocene (Boivin et al., 2016; Ellis, 2015) and argue that adaptation to climate change requires working with non-analogue and peopled ecosystems; thereby, the term 'wild' in rewilding is not tacit acceptance of the existence of wilderness. Recognising the cultural history and colonial 'artefact' of this term (Ward, 2019), here conservation is less about the search for authenticity and more about 'controlled decontrolling' (Keulartz, 2012), using life to manage life to secure and deliver diverse and abundant ecologies (Lorimer, 2020). Done well, this requires working closely with people cognisant of the long and often violent histories of the land and its management. This acknowledgement of the social dimensions of rewilding establishes a spectrum of approaches,

including those dubbed 'rewilding lite' (Gordon et al., 2021), that aim to make the principles of rewilding compatible with models of regenerative agriculture, agroecology, sustainable fishing and forestry.

In this paper, we consider invasive plant management and rewilding as socially, practically and politically related responses to the challenges of biodiversity conservation, where 'who people are coexisting with' and 'what is allowed to flourish' are both at issue. These questions were explored at a workshop held in late 2021 among the collaborating authors. As social scientists—social, environmental and Indigenous geographers with common interests in human–nature relationships—we draw together examples from Australia and the United Kingdom (UK) to demonstrate how forms of management can be usefully understood as responses to similar environmental problems, provoking questions about how people manage nature in contemporary conservation and for what purpose. These two contexts face starkly different biodiversity conservation challenges, yet they are also closely historically and socially entwined through the ongoing colonial project (Adams & Mulligan, 2012). In the first part of our review, we consider through case studies how invasive plant management and rewilding can be usefully considered in relation, despite their differences. In the second part, our discussion is structured by three key themes that emerged in our workshop—agency, practices and capacity—through which we bring together ideas and critical insights from contemporary social scientific work on human–nature relationships. This discussion addresses how diverse forms of human and nonhuman actions are being recognised, attributed and/or acknowledged in peopled landscapes, contributing constructive insights on fostering the social change that is required. We conclude by illustrating how recognition of diverse agencies underpins a desirable coexistence, where opportunities exist to improve understanding, governance and practice in aid of social and environmental justice, and the need to work carefully in enacting social change to avoid unintended consequences.

2 | INVASIVE PLANT MANAGEMENT AND REWILDING EXAMPLES

While ecological science has tended to consider invasive plant management and rewilding as separate, emerging analyses demonstrate how they are related and how those relations present challenges (Sandom et al., 2019; Sweeney et al., 2019). Perhaps the most obvious is that (passive) forms of rewilding that invoke succession or 'letting nature take its course' can promulgate invasive plants (and other species) (Nogués-Bravo et al., 2016). Some have even argued invasive species are a 'key fault line' (Lennon, 2019: 14) and the 'pandora's box' (Nogués-Bravo et al., 2016) for rewilding. On the other hand, more active approaches to landscape management, including the clearing of invasive plants to promote rewilding, are challenged by the scale of action required. In practice, both forms of intervention have consequences for nonhuman species and the people who live with them. Here we introduce two case studies from the UK (case 1) and Australia (case 2) to illustrate how invasive plant management and rewilding can also be processes that are related socially and what this means for coexistence. In broad terms, both are rooted in decisions to influence and/or change environments.

Case 2: Invasive grasses, fire and (absent) dingoes in northern Australia

For at least 65,000 years, Aboriginal and Torres Strait Islander peoples have creatively managed the diverse ecologies of the Australian continent. Patterns of burning, protection from fire and other cultural practices have helped shape the diverse and unique flora and fauna that developed through biogeographic isolation over millennia. The long and deep heritage of Indigenous care cultivated for Country is only recently being recognised in Anglocentric scientific knowledge systems and is yet to be fully acknowledged in contemporary landscape management. Despite growing recognition of the role of Aboriginal practices in conservation, the perception of landscapes as wilderness, unmanaged or unoccupied persists.

Colonial occupation in northern Australia came relatively late[3] (c. 1880s), and the extensive tropical ecosystems there are recognised as some of the most intact globally. However, species including Gamba grass (*Andropogon gayanus*), introduced for 'pasture improvement' in the mid-20th century, have invaded widely and are transforming ecosystems via increasing fire intensity and species dynamics (Setterfield et al., 2010; Rossiter-Rachor et al., 2008). Invasive species are thus listed as the leading driver of biodiversity loss and also threaten these distinctive landscapes.

Growing ecological awareness of Australia's biodiversity marks out introduced and invasive species for concerted biosecurity interventions. Attempts to control Gamba are spatially demarcated by the state in distinctive zones that reflect contrasting tolerances to its presence. Interventions to kill invasive species are part of a suite of practices increasingly promoted as rewilding—in the sense of returning to a predominance of native plant species. Numerous interventions aim to reinstate ecosystem functioning, often with reference to the ecological baseline of European arrival. These include: reintroduction of small mammals; cessation of Dingo (*Canis lupus dingo*) culling—a species recast as native, in order to exert competitive predatory pressure on feral foxes and cats (Hytten, 2009); improved fire management; or controlled grazing.

Invasive species management practices are also promoted through distinctive moral landscapes (Setten, 2016) that condition a broader set of authorities as relevant. Thus, invasive plant management according to the state (NTG, 2021) includes activities such as feral animal control (culling of donkeys, pigs and others) in an effort to limit the

[3]1787 is commonly referred to as the ecological baseline for Australia based on the arrival and establishment of a British penal colony in south-eastern Australia in 1788. In practice, the use of this baseline ignores over 65,000 years of continuous Indigenous presence and landscape management, and the different geographies and impacts of colonial invasion across the continent.

spread of weed seeds. These ideas may or may not align with the cultural traditions of Indigenous people (Head & Atchison, 2015b). Indeed, many Aboriginal and Torres Strait Islander people maintain that wild or unmanaged landscapes are anathema to proper human relations and care responsibilities, while also developing distinct attachments to introduced species (Bach et al., 2019). There is increasing awareness that Indigenous values and priorities must be protected and more widely supported (Bach et al., 2019; Bangalang et al., 2022), but perceptions of landscapes as wilderness persist in popular imaginary and management discourse because they are sparsely populated or because dynamic practices may not be aligned to western notions of 'traditional' management (Fletcher et al., 2021).

As in the cases of forest regeneration in Scotland (case 1) and Gamba grass in northern Australia (case 2), both invasive plant management and rewilding make reference to particular ecological baselines that inform ideas about landscape manipulation and desirable outcomes. Implicit in both is that different kinds of human agency might be addressed, skilfully wielded or choreographed in order to control the agencies of nonhumans, which in turn might bring about desirable change. Less obvious, but significant, is the extent to which local and Indigenous people have contributed to envisaging those possible and desirable futures.

The current ecological focus tends to overlook invasive plant management and rewilding as social relations with nature. This is evident first in the broad philosophical sense that conservation is a relationship with nature developed and socialised through particular histories, knowledges and priorities, and second in that particular forms of human intervention respond to and evolve as part of ecological change. Conservation thus requires social change, including attention to relevant agencies and consideration of the wider societal context of how decisions to intervene (or not) are received, facilitated and practised by communities or invested publics. Practices are critical since processes such as land abandonment (case 1) or absentee ownership (case 2) can drive the spread of invasive plants and influence which land parcels are released or selected for rewilding. Further, such environmental decisions involve choices and taking responsibility for processes, priorities and outcomes that affect local and Indigenous people in the context of complex histories, with both practical and ethical implications. Both invasive plant management and rewilding are thus entwined in debates about conservation and coexistence, diverse agencies, the practices that are relevant to change and the capacities that exist or are required for social change.

3 | QUESTIONS OF FLOURISHING AND COEXISTENCE: AGENCY, PRACTICES AND CAPACITY

As renegotiations of human relations with nonhuman natures, invasive plant management and rewilding both require substantial changes to how environments are managed. Changes in society are always grounded in—both produced and productive of—changes in what people do; however, change is never only about an individual entity. As our case examples illustrate, nonhumans are active in shaping human action and in reshaping social relations. Along with shared social norms, knowledge, meanings, understandings, values and more, social change can come together in shaping people's actions, whether in a field or in a national government office. Working from the assumption that landscapes are peopled and that people are relevant to decision-making and action, we suggest that understanding diverse agencies, practices and capacities focuses constructive thinking about how coexistence can be fostered, enabled and facilitated. In the following sections, we turn to questions of what agencies, practices and capacities are relevant and required in peopled landscapes.

3.1 | Agency

The concept of agency is interpreted differently across disciplinary fields. For some social scientists, agency is a distinct and uniquely human capacity that results from intentional *human* action. Meanwhile, ecologists have long been interested in the agencies of plants and animals to shape ecosystems in different ways, developing concepts like keystone species and ecosystem engineers to describe organisms with disproportionate ecological agency (Derham et al., 2018). Equally, some humans have disproportionate agency and alter environments as a result of intentional and unintentional action (Goudie, 2006; Thomas, 1956). There is also work documenting how the agencies of plants, animals and microbes shape individual and collective human behaviour through mechanisms like biophilia (Wilson, 1986), nonhuman charisma (Lorimer, 2015), domestication (Clutton-Brock, 1999; Pollan, 2001; Scott, 2017), species relocations and invasions (Crosby, 2004), epidemics (Diamond, 1998), climate fluctuations (Davis, 2002) and aliveness (TallBear, 2017).

Informed by these diverse approaches, we propose a symmetrical account that attends to the agencies of the human *and* nonhuman actors that shape peopled landscapes. We do not suggest that agency is equally distributed between all humans, or between humans and nonhumans, but that we need an approach that can account for both. We thus understand agency as inherently relational, incorporating biophysical, socio-cultural and political elements (Abram, 1996; Whatmore, 2002).

Rewilding and invasive plant management can be understood as relational processes in which people seek to choreograph diverse forms of nonhuman agency. This involves managing the space–time rhythms of different parts of a peopled landscape. Considerations of nonhuman agency are part of a wider interest in different frameworks of knowledge and practice used to govern behavioural, ecological and evolutionary processes that are central to biodiversity conservation. This work can be gathered under the label 'biopolitics': systematic efforts to manage life at the scale of the population or the ecosystem through selective interventions to make some live and let others die. There has been a shift, albeit geographically

uneven, in the biopolitics of conservation in recent years away from conserving or restoring the composition of species towards securing and enhancing ecosystem functions, a shift captured by our focus on rewilding and invasive plant management (Lorimer et al., 2015). The management or choreography of ecological agencies is arguably the central concern of conservation in peopled landscapes, including in our two case study examples. Significant literatures focus on two connected illustrations of this conservation biopolitics: biodiversity and biosecurity.

For the biopolitics of biodiversity, conservationists are concerned with enabling the resurgence of species and ecologies whose futures are threatened by anthropogenic activities. Conservationists actively manage habitats to enhance species abundance and diversity through planting, breeding, translocation and interventions into the productive land management practices of other land users, like farmers, fishers or foresters. We see examples of this in our Scottish case, in which rewilders aim to make desired forest ecologies live by optimising the reproduction, movement and ecological and evolutionary interactions of plant species. They plant trees, build fences and change burning practices. In other cases in the UK, rewilders have (re)introduced keystone species—like beavers (Crowley et al., 2017)—that are understood to have disproportionate ecological agency and be capable of restoring desired material flows and interspecies interactions.

But the biopolitics of biodiversity shown in rewilding is often coupled to a biopolitics of biosecurity (Barker, 2015; Hodgetts & Lorimer, 2021), in which conservationists work to restrict the agencies of undesired species or processes. In Scotland, this involves culling large numbers of deer, removing Sitka spruce and invasive *Rhododendron ponticum*. Making native trees live involves making others die. A biopolitics of biosecurity also describes the invasive plant management example of Gamba grass in Australia (Head & Atchison, 2015a). Here, great efforts are taken to control agencies of weeds and other invasive species through culling, spraying and interventions designed to reduce the geographic range and reproductive potential of undesired plants and animals. In some cases, the reintroduction of absent keystone species is presented as a tool for modulating the undesired dynamics of degraded ecologies, including the use of non-native predators of invasives, or non-native surrogates for now extinct indigenous keystone species. For example, there has been a proposal to introduce African elephants to control Gamba grass in Australia (Bowman, 2012), as it is the primary herbivore for these grasses in their home range.

In practice, however, invasive plant management and rewilding can be conceived as two manifestations of the same broad set of processes (Hodgetts & Lorimer, 2021). Both seek to choreograph the agencies that comprise ecosystem dynamics through targeted interventions that enable desired forms of life to flourish and to suppress undesired others in an effort to maximise multispecies flourishing. Both are experiments in control; sometimes increasing ecological control, at others trialling 'the controlled decontrolling of ecological controls' (Keulartz, 2012; Lorimer, 2020). Taken together, these examples involve people either enhancing or degrading the resilience of existing ecological systems to catalyse a transition across a threshold to a more desirable state.

Conservationists could make it clearer that multiple ecological futures are possible. There is no single nature to which a peopled landscape can be restored, and different people, who may also be rights holders, may have different visions or desires for future ecologies. The colonial history and ongoing legacy of conservation means that there are gaps and biases with regards to understanding the past and predicting futures (Fletcher et al., 2021; Kemp et al., 2023). However, it is not the case that anything goes: for example, conservation interventions can be measured against metrics for abundance, diversity or functionality. An understanding of conservation as the choreography of agencies helps us explore the internal politics of conservation, in which different conservationists favour different ecological outcomes. It also highlights the cultural politics that arise between conservationists and other stakeholders when management strategies involve, for example, killing charismatic species or shifting the appearance of valued landscapes. To date, ecological debate has tended to reinforce an idea that such actions are separate conservation trajectories rather than acknowledging their social entanglements and ethical implications (Kemp et al., 2023). If examined through a social justice framework, these complexities demonstrate the commonalities between forms of biodiversity and biosecurity conservation that rely on human intervention. Any human intervention cannot be separated from questions of justice, livelihood, land ownership and Indigenous reparations (Wittmer et al., 2018).

Current debates over agency in the social sciences can provide challenging understandings of how nonhumans actively shape human social and economic relations. If agency is understood as having an effect on the world, it can be argued to be a relational achievement. Few human actions have an effect other than through the relationships those actions involve, always with the nonhumans they act with or upon. In ecological management, actions are often seeking to have influence more broadly, depending on networks of relationships between organisms and ecological processes. Such accounts of relational agency can emphasise the open-ended and dynamic nature of landscapes where invasive 'plants accommodate, cooperate with or struggle against human aspirations' (Head, 2017: 4). In the case of Gamba grass, that agency challenges the rhetoric of control and the assuredness of biosecurity policy (Head & Atchison, 2015a). In their study of aquatic invasive weeds, Le Floch and Ginelli (2021) follow the implications of distributed, distant and future plant agencies to consider how human communities are responding to the challenges of living with weeds. Attention to agency is useful in shifting or widening the geographic or temporal scale of analysis from the broad continental, regional or landscape scales of policy actions to the everyday struggles to manage plants, which can be successful at the local scale (Le Floch & Ginelli, 2021). This shift can provide momentum and new perspectives on management practices and their effectiveness over time (Atchison & Head, 2013).

Diverse understandings of nonhuman agency are exemplified by knowledges and perspectives held by Indigenous peoples and vernacular social groups like Scottish farmers and foresters that do

not necessarily conform to scientific epistemologies or conservation agendas. Indigenous scholars have emphasised relational ontologies that illustrate connectedness between human and the nonhuman worlds, reflecting themes of identity, responsibility and care (Arnold et al., 2021; Hall, 2011; Martin & Mirapoopa, 2003; McKnight, 2016; Neidjie et al., 1985; Ungunmerr, 1988). For example, Yolŋu people in Arnhem Land, Australia, frame agency as the land knowing (Bawaka et al., 2016). Bardi Jarwi Elders from the Kimberley, Western Australia, view land management as 'caring for Country' and seek to make 'sick' Country better by removing invasive species and planting native plants (Bach & Larson, 2017). Indigenous rangers have identified how Gamba grass dries out early in the year and increases fuel loads—demonstrating its nonhuman agency—highlighting risks to culture and Law, and plants and animals. People may also identify an introduced 'cheeky' plant but refrain from taking action if it is not considered to be causing significant problems or it offers benefits in the form of food (Bach & Larson, 2017). Relationships with nonhumans and knowledge of Country and its health are thus founded on recognising and respecting nonhuman agency in multiple forms. These ideas are increasingly recognised as important for questions of justice for Indigenous peoples and are also valued for the broader socio-cultural and environmental benefits they can bring.

Similarly, historical and ethnographic work has explored the relational ontologies of Scottish farmers, gamekeepers and foresters involved in traditional forms of land management, noting how they differ from those of conservationists in their emphasis on time-deepened, productive relations with a working landscape (Fry, 2023; Gray, 1999; Hunter, 1991; Mackenzie, 2012). These relations are often steeped with the memories of past labours, of population decline, sense of identity and of resistance to state and private landlord intervention (Toogood, 2003). These accounts emphasise the role of human agency in shaping the landscapes and see the peopling of the Scottish Highlands as being conditional on the productive use of the land, in ways that differ from the management strategies of rewilding. While rewilding offers new forms of employment in land management (e.g. fencing, deer management, tree planting and tourism), such employment is understood by critics to be founded on ahistorical and unproductive human–environmental relations (Rebanks, 2020).

As such, it is clear that the ways agents and interactions between them shape social and economic relations among people are significant, as they affect how people view their own agency, whether they can control and benefit from landscape processes or how they might influence others to take action. For example, in a context where there is an absence of knowledge about how to manage an invasive plant—such as African Lovegrass (*Eragrostis curvula*) in southern Australia (McKiernan et al., 2021)—people might adopt experimental practices that seek to limit spread via a process of relational learning. A relational approach to agency posits that more can be learnt about how people respond in conditions of uncertainty and also that pragmatic responses can be taken where seemingly intractable questions about how people coexist with weeds might otherwise promote inaction (McKiernan et al., 2021). Questions of agency and coexistence might thus intersect with and extend to considerations of practice and capacity (McKiernan, 2018).

3.2 | Practices

Thinking about invasive plant management and rewilding as purposes and outcomes of social practices allows us to draw on social science theories that offer 'distinctive and challenging ways of understanding human action, and its relation with social order and change' (Watson, 2012: 489). A practice can be understood as a socially shared understanding of how a recognisable pattern of action is done through the skilled bringing together of the different materials, meanings and competences by a practitioner. Undoubtedly, research focused on the practices of landscape management has tended to assume that the practices under investigation are an exclusively human domain. Emerging work questions those assumptions (Maller & Strangers, 2019), reflecting the relational agency of nonhumans (including non-living materials and technologies) and their role in producing, sustaining and shaping those practices. For example, invasive plants can shape invasive plant management practices in ways that are not predictable or foreseen by human managers (Atchison, 2019), while keystone species are valued in rewilding for the practical 'ecological work' they do (Barua, 2019). While we do not attempt to settle the matter of nonhuman practices (Arcari, 2019; Schatzki, 2019) here, we do note the relative neglect of living nonhumans in conceptual and empirical work and the reduced range of practices that have been investigated as a result. Here we outline three ways in which thinking about practices provides a lens for understanding what humans do in peopled landscapes.

First, thinking through practices can help us recognise human action as both produced by and reproductive of broader social phenomena (Schatzki, 2001). The landscapes at stake in our cases result from the layering through history of the effects of patterns of practices through which people have acted in relation with, or with consequences for, nonhuman nature. In the Scottish Highlands, uplands are predominantly ecologically impoverished as a result of how practices of deer stalking, sheep husbandry and grouse moor management have dominated land uses (Lorimer, 2000; Ross et al., 2016). Those practices retain dominance in the landscape through their dependencies on patterns of land ownership and related legislation, historic agricultural subsidies, the leisure of social elites, contingent and normative ideals of landscapes and more. They inform the visions of both aristocratic lairds and those seeking community land ownership, both of whom index their futures to the continuation of sheep farming, deer stalking and forestry. Domination of landscapes by Gamba (in Australia) is rooted in how settler farmers and agricultural scientists integrated the grass into pasture management practices (Cook & Dias, 2006) and then in how the plant's capacity for propagation exceeds the capacity for control (Head & Atchison, 2015a). Invasive plant management and rewilding are attempts to create peopled landscapes that enable the flourishing, coexistence and cohabitation with nonhumans, requiring different

systems of, sometimes experimental, practice and usually among existing practices.

Second, for the changes to landscapes sought by either rewilding or invasive plant management, practices have to change. A focus on practices enables analysis at a meso-level to understand dynamics across the times and sites involved in the wider process of change (Shove et al., 2012). There are few specific practices on the ground that are distinctive across invasive plant management or rewilding; both are pursued principally through established practices of land management and approaches to nature conservation or biodiversity management—such as fencing, weeding, spraying, felling, planting, stalking, killing etc.—and the more obscured practices that support those actions in governance and policy making, grant writing, regulation, monitoring and so on. What is distinctive is how these are brought together with other practices and valued (or not) in configurations oriented to distinct and/or open ends; for example, working towards ecological renewal rather than particular ways of generating revenue, elite leisure pursuits, competing management goals or cultural maintenance. Gamba grass management practices in Australia are focused on fire suppression, including through vegetation clearing and the creation of fire breaks, but not necessarily in ways that align with what might be understood as 'best practice' in terms of weed management (Head & Atchison, 2015a; Neale, 2018). Likewise, significant incursions of weeds may mean that the work of local ranger groups is consumed by weed control activities to the extent that cultural practices are sidelined (Head & Atchison, 2015b). Changing practices may thus involve complex decisions and choices about priorities and values that implicate people differently.

Practices of boundary making offer insights for changing practices because they are integral to invasive plant management and rewilding and are also contested. The boundaries at stake in ecological management can take many forms, from hard features like fences to the physical differences instantiated through different management regimes (usually, but not necessarily, enabled by hard boundaries). Boundaries may also be formed largely by practices of regulation, legal ownership and other methods of governance, but only having consequence for ecological management through the differential effects of management on the ground. Here we expand on fencing as both a common and highly contested boundary form that has material and discursive elements. For projects that aim to enable the flourishing of ecological processes, dependence on fencing is somewhat paradoxical, both functionally and semiotically. For example, there are divergent views on fences as either exclusionary or inclusionary devices, in that they are recognised as both necessary (the best tool available) and an acknowledgement of a failure to coexist (Hayward & Kerley, 2009). In essence, boundaries—physical (material) and discursive (non-material)—aim to 'separate biodiversity from the processes that threaten it' (Hayward & Somers, 2012: 1). Boundary making tends to impose or suggest a 'treatment' binary: that which occurs on one side of the fence or the other. Yet, it is the process of separation as effective or justified control that is both contested and at odds with questions of flourishing coexistence because it intersects with, aligns with or forecloses other kinds of practices. In Scotland, for example, fences are essential to protect saplings from grazing by deer (Carver & Convery, 2021; Deary & Warren, 2017). In some experiments in ecological renewal in the Highlands, such as on the slopes of Ben Lawers, fencing off an area of land is the only significant active management practice. By simply excluding deer and sheep, it can take a remarkably few years for tree saplings to re-establish and a verdant understorey to develop, making a dramatically contrasting patch of ecological complexity on an otherwise bare hillside. Relatedly, fences can be beneficial for the survival or re-establishment of biodiversity in a wide range of circumstances; small mammal enclosures in Australia have been very successful in excluding invasive cats and foxes (Dickman, 2012) and can facilitate wider landscape retention (Ens et al., 2016).

Given the continued domination of the wider landscape by problematic and ecologically destructive practices, boundary making with fences is deemed necessary even while it represents limited potential for realising ambitions for wider landscape processes (Hayward & Kerley, 2009). Critiques of fences include: their potential to act as vectors for the spread of invasive species (McInturff et al., 2020); their expense; their permanence (or even their temporariness in that they require maintenance); and because they represent a 'fortress' or 'enclave' (Schulte to Bühne et al., 2022) approach that may have a limited lifespan and foreclose other opportunities. In Scotland, erecting fences was understood as both a (material) rewilding practice, as a means of enhancing wildness by protecting seedlings from deer, and also as undermining rewilding (a discursive or semiotic practice), with a presumption that any human intervention compromises or is the antithesis to the 'wildness' aimed for (Deary & Warren, 2017). In this way, fences have material and non-material consequences in that they limit the possibilities and imagination of relating otherwise. In the case of Gamba grass in Australia, the scale of the problem and the spread of seed via wind means fences are mostly ineffectual. However, the legal practices of weed management, which impose spatial boundaries through different treatment zones, also have limitations in terms of how they intersect with existing practices on the ground and political practices of resource prioritisation. In this case, regulatory boundaries are juxtaposed against limited natural resource management budgets and more differentiated patterns of land management and willingness to participate (Adams & Setterfield, 2016).

Third, thinking about invasive plant management and rewilding through the lens of practices draws attention to the people doing or enacting the practice. Asking or requiring people to support, undertake or enact particular practices might seem to be straightforward when the aims of invasive plant management or rewilding are shared, but when they are not problems arise. Material practices can be instrumental to ecological recovery, but they cannot escape the non-material legal and governance practices that accompany them, nor their loaded meaning and politics. Both in Australia and in Scotland, enclosure of land with fences has a historical weight of political and contested meaning, whereby land ownership has seen privileged people and institutions dispossess

local populations of land that had been understood and engaged with in very different ways up to that point. In Scotland, the historical politics of land ownership have contemporary expressions in the statutory right to roam on hill ground (Land Reform (Scotland) Act, 2003). Fences can be resisted as a potential deterrent to responsible access. In Australia, fences, enclosures and the delimiting and disconnection of Indigenous people from particular places are emblematic and material manifestations of colonial control (Instone, 1999). In contemporary conservation settings where new power relations between Indigenous and conservation interests are being established, some fences are argued to constitute 'provocative containment', acting as biopolitical 'world-making' materials that evoke and thus articulate a discursive boundary between the past and the future (Hawkins & Paxton, 2019). In these examples, the discursive practices of boundary making may be contested even if the immediate goals of management are supported, demanding attention to historical or ongoing injustices of which such practices are a part.

3.3 | Capacity

Agency and practices produce new possibilities for generating coexistence, enabling us to consider *who* creates peopled landscapes and *what* they do, but which then provoke questions of *how* to create and sustain desirable peopled landscapes. Capacity builds on and utilises the competencies of a practitioner but requires additional elements. Here we give primacy to human capacities, first because human influence on the capacities of nonhumans is itself a matter of human capacity (to so influence) and, second, because of the need to acknowledge some of the political and economic questions of invasive plant management and rewilding (Moorcroft & Adams, 2014). Therefore, this approach to capacity is deliberately different to ecological carrying capacity, which focuses on understanding the maximum uses of ecosystems before irreversible damage (Qian et al., 2017), or of capacity as drawing explicitly on singular 'expert' perspectives. It is also different to frameworks that may limit the scope of capacity to skills and knowledge as they directly relate to a conservation project (Salafsky et al., 2002), drawing in also its relationship to power. Having, or generating, capacity (the 'how') to enact changed practices and agency is obviously vital in invasive plant management and rewilding attempts. Capacity is reliant upon a heterogeneity of phenomena—a complex array of knowledge, skills, material resources, temporalities, legal rights and cultural capital—that can be effectively accessed and mobilised (Cohen et al., 2016). In other words, capacities are more than just skills and knowledge; they encompass broader political structures that limit or empower people to act, land tenure regimes, the soft skills of negotiation and more. Capacity is more productively understood as diverse, plural and place based, extending its meaning far beyond the narrow definition as expert knowledge.

Capacity in invasive plant management and rewilding requires attention to three elements: that at first glance, many of the capacities required to enact invasive plant management and rewilding are not necessarily new but perhaps need to be; that capacity is best understood as collective, though this further raises complex questions about co-management, lay knowledges, power and participation; and that multiple structures and scales interact in enabling, shaping and challenging what is possible in particular places.

First, as previously discussed, the use of fencing—boundary making—as a key practice in invasive plant management and rewilding does not necessarily require new capacities. However, if the capacities required for fencing are understood as requiring the navigation of political structures of planning, tenures and ownership and new purposes, then new forms of capacity are required, and the ways fencing-as-a-practice limits future possibilities are revealed. Fencing does not only prevent deeper shifts towards flourishing coexistence but is unlikely to be able to be implemented at scale due to land tenures. The reasons are twofold and contested. First, in Scotland, especially (despite rights of community buyouts), land ownership remains dominated by a few wealthy individuals, whereby land development interests, landowning groups, tenants and conservationists are pitted against each other in contestations about land tenure (Walker & Hurley, 2011). Second, while there is similar large-scale land ownership in parts of Australia, there is also an increasing fragmentation of rural land, which prevents landscape-scale action (Buxton & Choy, 2007). In other words, fencing-as-a-practice appears relatively simple, but when understood as a capacity (how it is actioned) that includes consideration of politics, justice and power, it is clear that new capacities are required.

Existing work on capacities in relation to flourishing coexistent futures has tended to look to the past to suggest what these capacities might be. This includes calls for a revival of hunting and foraging (Adams, 2013, 2016) and the associated skills of self-provisioning, local food networks and embodied and knowledgeable relations to land and animals. Others suggest developing the capacity to use fire purposively and to appreciate its ecological role (Edwards & Gill, 2015, 2016). Indigenous approaches to building capacity through 'respectful relationships' between people and Country are particularly important here (Pyke et al., 2021). Yet while it is hopeful that traditional skills are being revived as part of the emerging nature-based economy approaches, we need to ensure that the broad political and economic phenomena in which capacity emerges is taken account of, otherwise the revival of traditional skills will be ineffective. Put bluntly, while such traditional skills can effectively manage land, they cannot necessarily repair decades of colonisers' damage to land without broader structural changes and support, nor can they create new capacities, which might require more radical intervention (see Lane et al., 2011). Therefore, as Cohen et al. (2016: 310) argue, capacity includes an adaptability to anticipate and respond to change and is 'shaped by socio-institutional factors, including social identities and power relations, which include gender inequalities', a point we return to below.

Second, meaningful change is rarely enacted by one 'expert' individual because practices require structural changes to operate. The capacity at stake in invasive plant management and rewilding is

therefore more usefully thought of as collective. Belonging to a collective can enhance the capacity of individuals, and collectives can take on distinct identities, making a more significant actor in negotiation processes and sometimes taking on characteristics of an institution, such as a legal identity, which can link the collective into different flows of resources and legitimacy (Fischer et al., 2019). As Fleischman et al. (2020) warn, simplistic strategies and actions imposed from outside and that largely capture benefits for others can marginalise local people and erode their capacities to maintain livelihoods and manage local environments and resources. Capacity as collective, a co-capacity (as in co-production), will likely require the participation of a variety of people, including those with lay knowledges, landowners (McKiernan & Gill, 2022) and Indigenous traditional owners (Hill et al., 2020). In the case of Scotland, for example, it will by necessity need to include local communities beyond the landowners or the conservationists. Integration of these different capacities is vital to the success of invasive plant management and rewilding (Maclean et al., 2022).

Third, attention to capacity 'on the ground' necessarily concerns how capacity is always contextual and how structure shapes capacity. The capacity needed to effect change in a place is dependent on the different relations present. This includes potential friction and active resistance to processes of change from other local individuals and collectives who pursue different purposes, from legal arrangements, land ownership and national and international processes of policy, regulation and resource flows. These different structures interact in enabling, shaping and challenging what is possible in particular places. Land ownership significantly shapes what invasive plant management and rewilding are attempted or possible, but as Epstein et al. (2022) note, even highly wealthy owners cannot entirely distance themselves from regional ecologies and social and material localities. Often, Indigenous land management approaches are restrained by state frameworks (Bach et al., 2019), especially in Australia, where co-governance is the preferred model (Hill et al., 2012). More often than not, structures of participation designed by the state only enable passive engagement (Shackleton, Adriaens, et al., 2019). Issues of scale compound these structures, with the larger landscape approaches struggling with fragmented land ownership (Epanchin-Niell et al., 2010) or disagreements on methods, such as the use of pesticides (Norgaard, 2007). McIntosh (2023), in discussing rewilding in Scotland, also argues that without adequate governance structures—not just ownership but systems of community vetoes, profits being retained by local communities and ongoing processes of repeopling—rewilding risks enabling new forms of land colonisation. As such, the complexity of existing structures is crucial to understanding capacities and to the possibilities of invasive plant management and rewilding.

4 | DISCUSSION: ATTENTION TO JUSTICE, POLITICS AND POWER; TOWARDS A DESIRABLE COEXISTENCE

We have offered 'peopled landscapes' as a framing for thinking through questions of the flourishing of human and nonhuman coexistence. It is an ontological position that recognises the depth and breadth of human influence across the biosphere. It is also a political position that it is necessary to document and encourage coexistence, recognising that instances of peopled landscapes will not lead to flourishing for all but require the death of some nonhumans so that others can live. Ultimately, we are arguing that any attempts at ecological renewal, including invasive plant management and rewilding, are innately social questions that require biodiversity conservation to engage with issues of justice, politics and power. This requires engagement with the specifics of landscapes (and therefore of history, colonialism, uneven ecosystem baselines and conflicting generational memories and landscape values), with nonhuman agency and with what is practically possible for those deemed responsible. It is in these entanglements that we have identified three points of leverage.

First, attention to peopled landscapes involves an understanding of diverse human and nonhuman agencies, addressing questions about how we deal with uncertainty and therefore, what futures are possible in contexts where control may be neither politically nor practically possible. In Scotland, rewilders work with the temporalities of trees and their commensal species to plan recovery over timescales that exceed human generations. In doing so, they re-interpret the ecological baselines offered by palaeoecology in light of the predicted non-analogue future of climate in Scotland due to anthropogenic climate change. In northern Australia, the long history of biogeographic isolation and Indigenous human occupation contrasts with the recent history of colonisation and the rapid spread of introduced species, meaning that nativism and a concern for pre-settler ecological baselines[3] dominate contemporary invasive plant management. Although different baselines are invoked, in both examples, managers are appealing to an ecology previous to 'contemporary' modes of social organisation and spatially extended divisions of labour while still recognising ecologies encompassing of and shaped by humans. In this sense, invasive plant management and rewilding are related as forms of management that involve 'value judgements' (Decker et al., 2012: viii) and invoke human actions (including human withdrawal), based on ideas about how those landscapes have been or are being damaged, altered or made dysfunctional by humans. The extent to which these forms of management as value judgements are shaped by and reflective of local input is an open question.

More specifically, however, rewilding and invasive plant management are practices that can involve difficult decisions, contradictory and confronting choices for people, with ethical and legacy issues. Asking people to kill plants is rarely as difficult or as controversial as asking them to kill animals, but it can bring to light conflicting cultural values that make such practices contested. A survey in the Scottish Highlands found that Rhododendron bucks the trend of general support for control of invasive plants due to its aesthetic values (Bremner & Park, 2007). Further, work to enable (native) plant flourishing requires the death and killing not only of (invasive) plants but also of animals (see Kirkland et al., 2021). Killing plants has other ethical problems in relation to chemical

exposure, fair pay and safety (Head & Atchison, 2015b). Even when killing is relatively non-controversial, the scale of action involved or achievable can be confronting (Atchison, 2015). It is vital then that we acknowledge how diverse agencies shape the politics that determine what is, and is not, deemed acceptable action. Also vital is understanding how these politics will take more account of those with certain kinds of power, meaning the social processes involved in invasive plant management and rewilding will be experienced unequally and can be deeply affective (Mahanty et al., 2023).

Second, attention to peopled landscapes illustrates the inseparability of social and environmental justice. The damaging effects of colonialism are far-reaching and ongoing, but increasingly, Indigenous and lay knowledge and perspectives in biodiversity conservation and land management are being called upon. There has been significant critique about how (so called) non-expert knowledge and perspectives are integrated, often only when they are deemed valid or chime well with existing conservation approaches (Ludwig, 2016). Rather than empowering Indigenous communities, knowledge consolidation often replicates existing hierarchies by ignoring knowledge that does not meet the needs of scientists and resource managers. Plans may appear tokenistic or narrow in scope and ignore forms of knowledge that reject or are more difficult to integrate, such as spiritual, sacred or gendered knowledge or where histories of mistrust pervade (Raymond et al., 2022). As part of relational and holistic worldviews, Indigenous and lay knowledges are significant examples that are reflective of distinctive expertise in particular environments. They can provide essential and 'testable' insights (Pierotti & Wildcat, 2000: 1339), but they should not be regarded as just another type of data.

Finally, asking what is feasible or can be sustained in the name of a flourishing coexistence offers wider ownership of biodiversity conservation problems and responses to them. Capacity as collective is a more accurate representation of what is required in invasive plant management and rewilding than a sole expert. But generating socially shared understandings of what is at stake and how best to enact change is slow, complex work where conflict and difference have to be navigated across uneven skills and knowledges, with due recognition to associated power imbalances. Developing capacity with people already in-place and of 'lay' expertise recognises the necessity for participation in (or at least securing support for) invasive plant management and rewilding projects. Of significance also is acknowledging and anticipating that diverse communities are likely to disagree or contest formal approaches (Gill et al., 2022). Accepting diverse senses of responsibility, capacity and willingness to engage are crucial in understanding what might be possible. Likewise, more specific attention to the structural and systemic conditions that limit or impede engagement and participation is required. Concerningly, though, there are few existing best practice examples of institutional settings that support and facilitate this necessary generation of collective capacity.

Progress towards a flourishing coexistence needs multiple changes, but the most fundamental have to happen in specific places, shaped by the practices of particular people. Capacity is likely to require us to diverge from existing expertise or knowledge holders to create space for potentially acting differently. Given that, and with increasing recognition of the 'unsettling uncertainty' (Garforth, 2018: 153) of an unclear future in the Anthropocene, developing different or new capacities is vital. We need to reflect on how capacities might be developed by humans in their relations with nonhumans. These capacities might be best fostered through spending time on Country or landscapes in ways that develop and nurture relationships (Gill, 2005), such as canoe journeys and the performance of rituals and songs (Kimmerer, 2013), which might not at first appear to generate capacities that science might value. Equally, it must be acknowledged that developing capacities is a dynamic, iterative process through which humans learn, fail, succeed, adapt and change their practices. In other words, capacities will continue to develop in relation with and to nonhuman agencies. Given that we might be working with novel ecosystems, we must create space for these dynamic processes (Jones et al., 2021).

By centring the idea of peopled landscapes through the examples of invasive plant management and rewilding, we have sought to demonstrate how the social processes of agency, practices and capacity are vital to the generation of a flourishing coexistence between humans and nonhumans. But more than this, we hope this paper has outlined vital considerations for making biodiversity conservation work for all.

AUTHOR CONTRIBUTIONS

Jennifer Atchison led the writing of the manuscript. All authors contributed critically to the drafts and gave final approval for publication.

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