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Current Opinion in Environmental Sustainability

Transformation beyond conservation: how critical social science can contribute to a radical new agenda in biodiversity conservation

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Multiple proposals for transforming biodiversity conservation have been put forward, yet critical exploration of how transformative change is conceptualised in this context is lacking. Drawing on transformations to sustainability scholarship, we review recent proposals for transformative change in biodiversity conservation, considering the suggested goals and means of transformation. We outline the crucial role for critical social scientific inquiry in transformative change by highlighting two core contributions. First, critical social science is an analytical device that politicises and pluralises debates and second, it can help facililitate the identification of transformative alternatives. We then show how such a critical social science approach is operationalised within the CONVIVA (Towards Convivial Conservation: Governing Human-Wildlife Interactions in the Anthropocene) project to pursue transformative change in biodiversity conservation.

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Introduction

Growing impacts of human activity on global biodiversity have led scientists to predict catastrophic and potentially irreversible devastation [1,2] and 'a sixth mass extinction event in Earth's history' ([2][2] p.142). This emphasis on human-led destruction has resulted in the current epoch being called the Anthropocene by some scientists, politicians and conservationists [3]. Consequently, there are urgent calls for transformation in biodiversity conservation to tackle the growing challenges of the Anthropocene [1,4]. Transformation is understood as a substantial, profound and fundamental change, which requires a paradigm shift in how we relate to and manage the environment [5••,6]. A range of possible approaches have been suggested to pursue this transformation [7••].

The 'transformative turn' is echoed across a wide range of environmental discussions and a rich body of work has emerged under the banner of 'transformations to sustainability', with which this special issue engages [8,9,10••,11••,12]. Closely linked to ongoing discussions of related concepts such as sustainable development, transitions and resilience, this growing field of social

science inquiry aims to understand the dynamics of transformation and to harness the 'momentum building around the possibility for paradigm shifts at multiple levels' ([5••] [5••] p.1207). While biodiversity is at times considered in transformations to sustainability literature, a specific focus on biodiversity conservation is currently lacking. This is partly because the concept of transformation presents something of a paradox for conservation, which, as the term implies, has historically sought to resist rather than promote particular forms of change [13,14].

We address this gap by outlining and critically interrogating current discussion around transformative change in biodiversity conservation and highlight the crucial role of *critical* social science within this agenda. The role of social science more broadly is increasingly acknowledged among conservationists [15]. However the emphasis remains on social science research that is compatible with existing conservation goals [16] and that can be a tool for 'effective conservation decision-making during planning, implementation and management' ([15][15] p.104). Critical social scientists take a different approach by challenging the taken-for-granted assumptions, values and power structures underpinning conventional conservation policy and practice [16,17•]. This includes interrogation of the complex linkages between social, political, economic and environmental change [18–20], as well as challenging socially and environmentally unjust conservation policy and practice [21–23]. This review brings together critical conservation social science inquiry with transformations to sustainability discussions to highlight potential pathways, as well as obstacles, to transformation in biodiversity conservation policy and practice.

In the next section, we examine how transformative change in biodiversity conservation is currently conceptualised in academic literature and within significant global biodiversity reports [1,2,24], identifying the proposed *goals* and *means* of transformative change. We then address the role of critical social science within the transformative change agenda in biodiversity conservation, arguing that the approach facilitates both politicisation and pluralisation of knowledge and practices. This makes critical social science a crucial, though often overlooked, component of transformative change, enabling better understanding of the complexity of change while facilitating transformative alternatives to business-as-usual approaches to biodiversity conservation. Finally, we present the theoretical and methodological positions of CONVIVA[12] (Towards Convivial Conservation: Governing Human-Wildlife Interactions in the Anthropocene): an international research project that is part of the global Transformations to Sustainability (T2S) programme, with which this paper's authors are affiliated. CONVIVA critically explores human-wildlife interactions, pluralises and politicises debates, and uses this knowledge to help develop a radical, transformative approach termed 'convivial conservation' [7••,13].

[12] https://conviva-research.com/.

How transformative change is conceptualised in biodiversity conservation

Transformation is a highly contested concept that 'is shaped by and ultimately shapes our understanding of the world' ([6][6] p.101). Myriad framings of transformation exist [5••], reflecting different visions or *goals* of what an alternative future should look like [25,26]. Similarly, a wide range of proposals for the *means* by which transformation can be brought about have been suggested. Proposals for transformation thus reflect, and become vehicles for promoting the frames and agendas of those calling for change [27], making it important to critically interrogate proposals for transformative change in biodiversity conservation. Here we unpack different *goals* of transformation, asking for what and whom is this transformative change intended? We highlight three overarching conceptualisations of the goals of transformative change found in conservation literature. We then ask what are the main approaches being proposed as the *means* of bringing about transformative change in biodiversity conservation? We highlight some of the characteristics that most often feature in proposals. The conceptualisations and characteristics of transformative change that we identify here frequently overlap, and they are not exhaustive but instead highlighted to reflect dominant discourses. For example, many elements we identify can to some degree be found in the IPBES [1] and GBO-5 [24] reports, as well as in systems-based approaches to conservation and transformative change that aim to incorporate multiple approaches at different scales [28].

The goals of transformative change in biodiversity conservation: transformation to what and for whom?

The first conceptualisation aligns with the 'naturalism' paradigm [29], which envisions a world in which 'wild' and 'self-willed' nature flourishes separately from humans [30]. This goal is the basis of proposals for transformative change, such as 'Half Earth' [31] and 'Nature Needs Half' [32,33], both of which call for major increases in strict protected areas worldwide until at least 50% of biodiverse terrestrial and marine areas are protected. The transformative goals of the naturalism paradigm are largely based on imaginaries of pre-human wilderness and a nature/human dichotomy that have driven much historical international conservation policy and practice [7••,34]. While most conceptualisations of transformation assume a forward trajectory towards something new, the desire here is instead to transform towards pre-existing states.

In the second conceptualisation, transformative change is framed within the idea of the Anthropocene: we are living in a 'post-wild' world where nature no longer exists separately from humans, so biodiversity conservation

must align with this reality [3,14]. Proponents, often referred to as 'new conservationists', advocate a shift away from ideas of wilderness as the basis of conservation and instead envision a world where people and nature coexist in dynamic configurations, including in urban areas [14,35–38]. This shift also involves an increased focus on humans as both beneficiaries and managers of nature, in line with what has been labelled a 'mastery' paradigm [29]. In practice this approach involves, among other things, the restoration and rewilding of abandoned farmland and wood-pastures towards multi-use landscapes [39,40]. Conservation goals are seen as being intertwined with development goals, and opportunities for integrating markets and businesses into conservation are often highlighted [e.g. Ref. [13]].

A third conceptualisation is grounded in the pursuit of justice, with the goal of transformative change in conservation being a more equitable world for both humans and nonhumans [11••,41–43]. Here, the goal is 'just transformations' whereby change is combined with the pursuit of environmental justice [44]. This goal can be identified in some broader transformations to sustainability literature [8,45–47]. Just transformations highlights power, politics and persistent injustices in environmental discourses and management [34,48], reconciling past injustices [6], and questioning whose perspectives, values and worldviews are driving transformative change [47,49,50]. In biodiversity conservation, just transformations is the vision favoured by many social movements, civil society groups and scholar-activists [11••,51,52••,53–55], and international associations like the ICCA Consortium, who support and promote indigenous peoples' and community conserved territories and areas [56]. Justice is also increasingly included in mainstream conceptualisations of transformation [1,4]. Imaginaries of justice in conservation are sometimes expanded to include non-human species through lenses of 'ecological' or 'multi-species' justice, and a rights-based approach beyond the human realm is advocated [43,57]. Just transformations is the least dominant of the three goals explored here, but is increasingly considered in conservation debates [e.g. Refs. [58,59]].

The means of transformative change in biodiversity conservation: what are the main approaches being proposed?

Within the transformations to sustainability literature, transformative change is frequently framed as a complex, dynamic process that happens via both deliberate intervention and emergent processes across scales [8,10••]. However, in biodiversity conservation we find that transformative change is still largely presented as a product of deliberate intervention [60], with accelerating biodiversity loss framed as a global problem that requires global governance solutions [61]. Such intervention requires global-scale mapping, as exemplified by the 'ecoregions' approach of the Nature Needs Half [33], and the 'biodiversity hotspots' approach of Half Earth [62]. Maps identify the most important areas of biodiversity globally so that frameworks can be developed and interventions targeted, with the aim to transform biodiversity conservation at scale [63]. Within these top-down approaches, the knowledge driving transformation is concentrated among scientists and experts working at the global scale [44,64•]. However, references to both incremental change and alternatives to modern scientific approaches can be found in some mainstream framings of transformative change. The UNEP GEO-6 report, for example, talks about the need to scale-up incremental policy change [2], while the IPBES report advocates inclusion of other knowledge systems including social science and indigenous knowledge [1]. However, there is little consideration of how such alternatives could be operationalised and they are largely framed as being complementary to dominant approaches rather than viable alternatives.

Many dominant framings of transformative change in biodiversity conservation also focus on 'strengthening governance systems' and 'improving policy frameworks' ([65][65] p.167). It is argued that transformative change at the national and subnational scales can be sparked by developing new tools and methods to support decision-makers, strengthening enforcement of laws and regulations in protected areas, and ensuring that there is increased participation of marginalised communities in local-scale resource management [2,24]. At the global scale, strengthening policy mechanisms, improving agricultural methods, introducing more incentives for sustainable use of resources, and significantly increasing the global network of protected areas are all examples of policy and governance improvements suggested towards transformative change [2,24]. Calls for new technology, modelling and scientific analysis to enable 'evidence-based' decision-making is considered crucial [66,67] — a trend identified in transformations to sustainability discourse more broadly [10••,64•]. New ways of measuring biodiversity are also promoted, including natural capital accounting [68], which involves 'the assessment, measurement, aggregation and valuation' of 'nature's contribution to people' to 'ensure that this value is reflected in the economic activities of production, consumption, trade and investment' ([2][2] p.67). The natural capital approach aligns strongly with the aforementioned new conservation goals, and reflects the popularity of market-based mechanisms as solutions to conservation challenges [69,70].

The need for transformative change in values and behaviour is a central theme in both the academic and policy-oriented literatures [2,24,71,72]. There is a strong focus on the need to change values and behaviour of individuals and communities living in or near biodiversity hotspots — a focus that has long been central to mainstream biodiversity conservation [13]. Local-level interventions often

focus on 'human dimensions' of conservation, with an emphasis on understanding and changing people's attitudes, values and behaviour [71,73]. However, there are also growing calls for transformation in overarching societal attitudes and behaviour [14,72]. Such calls include raising awareness of the importance of biodiversity [24], re-framing human-nature relationships away from a sense of separation from, and commodification of, nonhumans [74], transforming people's experiences with nonhuman nature [75], and enacting a 'global paradigm shift on a deeply personal level' in our interactions with animals ([43][43] p. 145). As part of this broader agenda, a need to transform production and consumption patterns is highlighted [67], including global food production [24,76], and corporate codes of conducts and supply chain management [77].

What can critical social scientific inquiry contribute to the transformative change in biodiversity conservation agenda?

Feola [10••] argues that there are two central research agendas for critical environmental social scientists regarding transformations to sustainability. The first is analytical in nature: critically interrogating the complex relationship between humans and environmental change, and questioning power structures within which conservation solutions are developed and implemented. The second is change-oriented: supporting and catalysing 'transformative human responses' to environmental change that challenge hegemonic power structures and embrace political and social struggle ([10••] 10●●] p.386). Reflecting on the analysis in Section 'The conceptualisation of transformative change in biodiversity conservation', and drawing on critical conservation scholarship, we now explore the role of critical social science in understanding and promoting transformative change in biodiversity conservation.

Analytical role of critical social science: politicising and pluralising debates

Critical conservation social scientists, including those working in the fields of political ecology, environmental justice, environmental sociology and anthropology, frequently challenge the status quo of embedded power structures in international conservation. Their inquiry includes critiquing dominant conservation discourse and practice [34,78,79], questioning the assumed linear relationship between policy and practice [80–82], interrogating knowledge production [17•,83–85] and highlighting unintended consequences and injustices caused by some conservation interventions, such as strict protected areas [44,86]. Critical social scientists working in the broader transformations to sustainability literature emphasise the need to bring such issues into transformative change debates, in order to promote what is referred to as 'axial' change [27]. Axial change is defined as breaking through the status quo by questioning the entire system, in order to identify novel and radical approaches to change [27]. It is contrasted with 'circular' change, whereby new things are tried, but within the same hierarchies of knowledge and power [27,44,64•]. Radical transformation requires 'systematic analyses of dominant trends that pursue unsustainable paths' and exploration of structural and political obstacles to axial change ([87][87] p.26).

Although it is beyond the scope of this paper to provide an exhaustive overview of critical perspectives on transformative change in biodiversity conservation, we highlight a few core elements. First, critical perspectives do not typically focus only on behaviour change, as this risks shifting the burden of responsibility from states and destructive political-economic structures onto individuals [5••]. In biodiversity conservation, the focus is often on changing behaviour of rural people [7••], despite elite actors, including commercial agribusiness and extractive industries, and broader global processes being identified as the main drivers of biodiversity loss [88]. Second, by focusing on behaviour change, governance tools, and corporate codes of conduct, actions towards transformative change remain circular, as issues are depoliticised and broader processes of power and politics are ignored [5••]. In the words of Li [89], transformation is 'rendered technical' so as to be operationalised as intervention: a process that exacerbates cross-scale injustices inherent in conservation practice [46,90]. Critical social science inquiry politicises debates on transformative change in biodiversity conservation and in doing so opens up opportunities for axial revolution [5••].

Critical social science inquiry into transformative change in biodiversity conservation can also encourage pluralisation of debates by exposing the particular assumptions and forms of knowledge that drive prominent proposals. Such assumptions include a supposition that the current global economic system is the only model for development [7••,51], and that better policy will ostensibly lead to better practice [80,81]. Critical inquiry seeks to learn from and make space for alternative ways of understanding and approaching conservation, including those developed by social movements and indigenous communities, who in many places are already successfully managing areas of high biodiversity [11••,51,52••]. Critical social scientists highlight the need for increased collaboration between the fields of natural science and human dimensions, and critical perspectives on conservation, in order to both pluralise and politicise transformations *and* provide the foundations for fundamental change [5••,17•].

Proposing and supporting alternative approaches to transformative change

Politicising and pluralising transformations debates enables new, radical, axial, transformative alternatives to be identified [5••,91]. The focus of transformation is on the need for radical, structural change of the existing global capitalist political economy [7••,91–93], as it is

argued that biodiversity loss, along with climate change and other ecological crises, are not side effects but logical consequences of this system [7••,91–93]. A structural approach to transformation encourages problematisation of global systems and processes that produce ecological crises and social/environmental injustices, and pursues alternatives that challenge embedded structures and paradigms [13,52••]. Within the typology developed by Wright, these fundamental shifts can be seen as *symbiotic* (working with the state to shift social power), *interstitial* (empowering alternatives found in the margins of capitalist society), or *ruptural* (breaking with capitalism through political struggle) [94]. Such fundamental shifts are advocated — to differing degrees — by high profile reports, including the IPBES Global Assessment [1] and the Luc Hoffmann Biodiversity Revisited report [95], both of which draw on critical social scientific insights.

Many ideas for radical alternatives already exist. For example, there are calls to re-frame what is considered as 'success' in biodiversity management, challenging the dominance of strict protected areas and including indigenous lands, ICCAs and 'other effective area-based conservation measures' (OECMs) [44,96,97]. The different approaches taken by ICCAs demonstrate alternative ways of managing biodiversity conservation that draw on non-dominant worldviews and knowledge systems [56], including *Buen Vivir* [98] and *Ubuntu* [99]. Other suggestions for transformative change in biodiversity conservation draw on post-growth and post-development models [52••,93,100]. However, rather than trying to find catch-all or win-win solutions [101], structural transformation requires a raft of interconnected approaches to 'reduce repressive forms of power' ([44][44] p.28) and 'make space for radical alternatives' ([102][102] p.979). Critical social science inquiry provides insights that support this agenda.

The CONVIVA project: towards transformative change in conservation

CONVIVA is an interdisciplinary, transnational research project that critically explores shifting human-wildlife interactions (HWI) in the Anthropocene. CONVIVA's aim is to contribute to development of *convivial conservation*: a 'vision, a politics and a set of governance principles that realistically respond to the core pressures of our time' by promoting 'radical equity, structural transformation and environmental justice' ([7••][7●●] p.283). Convivial conservation conceptualises transformation as axial change in global political-economic structures and knowledge production systems and questions dominant 'assumptions and beliefs, including those that are the foundation of paradigms of economic growth' ([103][103] p.385). Human-wildlife conflict (HWC) is highlighted as a core challenge in biodiversity conservation in the Anthropocene, especially in relation to large carnivores [3,104]. CONVIVA critically interrogates HWC debates, with the goal of transforming knowledge and practice. We use four diverse place and species-based cases to study the complexities of HWI related to large carnivores. The in-country teams consider jaguars in Brazil's Atlantic Forest; wolves in Eastern Finland; lions in the Greater Ruaha-Rungwa Landscape in Tanzania; and grizzly bears in California, USA. The cases are supported by broader investigation of international structures and systems that both support and hinder transformative change in HWI.

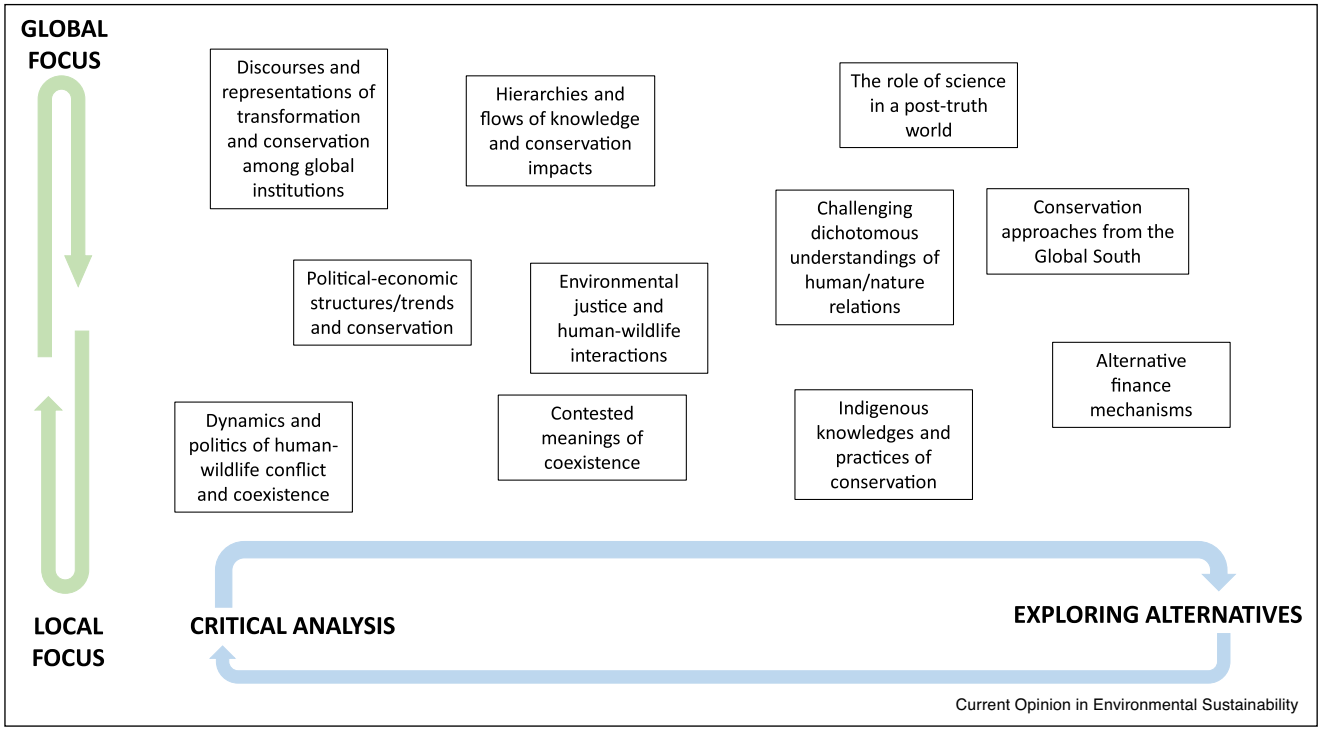
In alignment with the approach set out in the previous section, CONVIVA employs multi-disciplinary, multi-layered and multi-scale methodologies to pluralise and politicise debates. This includes ethnographic engagement to understand polarised perspectives on human-wolf conflict in Eastern Finland and exploration of diverse environmental narratives about jaguar presence and reintroduction in the Atlantic Forest in Brazil. We also explore transforming HWI management, including the potential for alternative, grassroots compensation schemes to address wildlife-related livestock losses, and whether *Ubuntu* philosophy can facilitate transformative change in Tanzania. In addition, we investigate opportunities for transformative change in the methodologies used in studies of HWI, including interrogation of what constitutes 'suitable habitat' for species reintroductions in California, through consideration of political and historical factors such as human tolerance and propensity for conflict. Despite the diversity of cases and approaches, there are many overlapping themes within the project. Figure 1 provides a visual representation of some of these themes, demonstrating their diversity and interconnectedness in relation to scales of inquiry and whether they focus on analysis or identifying alternatives.

Through ongoing, project-wide discussions that bring together insights from the themes shown in Figure 1, we consider obstacles and opportunities for transformative change in HWI and biodiversity conservation, grounded in critical social science. Analytically, this includes framing HWI as a political-economic issue that cannot be understood by looking only at the immediate context of human-wildlife conflict and local financial impacts, and unpacking different ideas of what it means to coexist. Similarly, justice issues — including around the production of knowledge — are explored. Via this cross-case and cross-scale inquiry, the CONVIVA project demonstrates the value of pluralising and politicising debates through critical social science inquiry to facilitate transformative change in biodiversity conservation.

Conclusion

In this paper we have critically interrogated how growing calls for transformations to sustainability are manifesting in discussions of biodiversity conservation. We have demonstrated the important contribution that critical social science makes to discussions: through politicisation and pluralisation of debates, and by identifying

Figure 1



Summarising CONVIVA themes and showing how they interconnect across scales of inquiry (green arrows) and research approaches (blue arrows).

alternatives that cultivate radical transformations. Social science continues to receive just a small portion of global conservation research funding [2], despite its critical role in understanding human-nature relations, exposing barriers to transformation, and developing innovative ideas — some of which we have touched on in this review. We thus conclude by joining calls for directing more attention and resources to social science, and critical social science in particular, in order to find ways to move from circular to axial transformation in pursuit of a more just and convivial conservation.

Conflict of interest statement

Nothing declared.

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Papers of particular interest, published within the period of review, have been highlighted as:

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- •• of outstanding interest

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The authors take a critical look at the idea of transformation and how it is being translated from academic concept into policy and practice. Five risks are identified with the mainstreaming of transformation, which stem from the depoliticization of the concept. From this, the authors suggest a critical social science focus on 'the politicisation and pluralisation of transformations discourse' (p.1217).

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Through critical analysis of the state of biodiversity conservation in the Anthropocene, the authors appraise proposals for change, arguing that they lack the ability to be truly transformative as they do not sufficiently engage with root causes of destruction. They put forward the vision for an alternative approach called convivial conservation, which moves beyond the capitalist system and provides the basis for transformative change.

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