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REVIEW

Meeting at the crossroads: An environmental justice framework for large carnivore reintroductions and recoveries

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As global environmental changes continue to accelerate, research and practice in the field of *conservation biology* may be essential to help forestall precipitous declines in the earth's ability to sustain a diversity of life. However, many conservation programs have faced scrutiny for the social injustices they create, especially within the paradigm of demarcating protected lands. Currently, a new conservation paradigm emphasizing landscapes shared by people and wildlife is emerging, and with it, an opportunity to ensure that justice for both human and beyond-human groups is given consideration. Here, we examine a practice emblematic of this new conservation paradigm, the reintroduction and recovery of large carnivore species, and draw from theories in *environmental justice* to detail the many forms of justice at stake in these efforts. Our analysis shows that a pluralistic application of justice is required to ensure that new conservation practices do not produce and reproduce injustices for people. In addition, we show that the success of these emerging programs in meeting their conservation goals in fact depends on meaningfully addressing a range of justice concerns. By developing this framework, we also identify domains in which environmental justice scholarship can expand its scope. To this end, we introduce the novel concept of affective environmental justice, which describes the complex role of emotions as environmental harms, as disruptors of understanding other forms of justice, and as links between logics of oppression. Our framework offers a comprehensive resource to work through in planning and implementing large carnivore reintroduction and recovery programs, and we conclude by describing the challenges and opportunities for further aligning conservation and environmental justice in research and practice.

Keywords: Environmental justice, Conservation biology, Large carnivores, Multispecies justice, Reintroduction

1. Introduction

Over the past several decades, the signatures of global environmental change have become unmistakable, altering the conditions under which both human and beyond-human life can survive and thrive (Steffen et al., 2007; Barnosky et al., 2011; Agyeman et al., 2016). In response to these global changes, a set of theories and practices comprising the field of *conservation biology* has arisen to understand and forestall the catastrophic decline of the earth's biological diversity, ecosystems, and ecological processes (Soulé, 1985). Global changes have also produced unhealthy environments that pose disproportionate and unequal harms to vulnerable people, and e*nvironmental justice* has emerged as a field of scholarship and activism to identify, theorize, and oppose these outcomes (Bullard, 1990). Both fields have had transformational effects on the world. For example, protected areas, a cornerstone of conservation practice, have grown exponentially in size, now encompassing over 15% of the planet's land mass, and ambitions to protect as much as half the earth are under serious international consideration (Secretariat of the Convention on Biological Diversity, 2020). Environmental justice efforts have led to major grassroots movement successes (e.g., preventing the construction of numerous proposed power plants and waste incinerators in BIPOC communities and shutting down many existing facilities) and gained recognition as important policy issues, exemplified by the recent appointment of the first White House Environmental Justice Advisory Council in the United States.

In this article, we identify often overlooked intersections between the fields of conservation biology and environmental justice. By developing this dialogue through an explicit framework supported by key examples, we focus on ways in which both fields can expand their scope and

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Figure 1. Large carnivore reintroductions and recoveries can be technically complex undertakings, spanning multiple jurisdictions and agencies, and posing threats to individual animals for expected collective benefits. The bear pictured here, nicknamed "Daniza," was one of nine bears reintroduced to Italy from Slovenia between 1999 and 2001. In 2014, perceiving a person as a threat to her cubs, this bear conducted the only direct attack on a person that occurred during the program, an event that precipitated a sudden shift in public opinion from support to opposition of the project (Tosi et al., 2015). Italian authorities captured the bear to translocate it following the attack, but it died during the capture process (von Hardenberg, 2015). Our framework helps tie together many of the complex yet inextricable environmental justice concerns raised by examples like this one. Photo: Archivio Parco Naturale Adamello Brenta. DOI: https://doi.org/10.1525/elementa.2020.00172.f1

further advance their practices. Although environmental justice has primarily focused on harms to people and public health, emerging scholarship raises pressing questions regarding multispecies justice (Celermajer and O'Brien, 2020), bringing animals and ecosystems to the foreground of environmental justice considerations. The frameworks we develop here reveal tensions between categories of environmental justice across multiple species, but we also uncover shared logics that link oppression and violence of marginalized human and beyond-human groups (Kim, 2015; Gaard, 2017). Critics of conservation biology meanwhile have emphasized the frequent omission of human lives and livelihoods from the praxis of conservation efforts and have highlighted conservation programs that create and exacerbate social injustices (Brockington, 2002; Adams and Hutton, 2007). By applying an environmental justice perspective to a unique class of conservation programs, we show this framework's potential to identify hidden and vulnerable stakeholders, as well as hidden forms of injustice that these stakeholders experience. Crucially, our framework also highlights the connections across forms of justice at multiple scales and reveals the need for a comprehensive application of environmental justice theories to conservation practices to ensure their just and sustainable application.

We develop this interchange between conservation biology and environmental justice around a rapidly growing conservation practice: the reintroduction and recovery of large carnivore species. While cordoning off protected areas is perhaps the most well-known and widely applied practice associated with conservation, it has also been the source of the most powerful critiques of conservation's inattention to social justice concerns. Critics have argued that the success of protected areas conservation in some cases relies on unjust practices, especially when it involves the relocation of people or restricting their access to ecological and cultural resources. By contrast, large carnivore reintroductions and recoveries (LCRRs) reflect a broader paradigm shift in conservation theory and practice, which examines the possibilities for people and wildlife to coexist in shared spaces (Buscher and Fletcher, 2020). Improving our understanding of justice in its many forms is a critical missing piece in establishing this new conservation paradigm. In addition, we show that LCRRs illuminate environmental justice considerations that have rarely been considered in environmental justice theories, including the importance of affect and perception. Our analysis makes clear that unlike protected areas conservation, the ability of LCRRs to meet their conservation targets hinges on whether stakeholders feel the programs are just or unjust (**Figure 1**). We conclude our analysis by discussing

how and whether tensions between forms of environmental justice apparent in LCRRs can be resolved. Creating a conversation at the crossroads of environmental justice and conservation biology shows that an integrative and pluralistic consideration of justice has untapped potential to guide programs toward just ends for both human and beyond-human life.

2. Literature review — Intersections of environmental justice and conservation biology

First emerging in the United States in the 1980s, the field of environmental justice (EJ) offered the bold proposition that environmental quality and social inequality are linked. At the time, most contemporary environmental movements were concerned with the anthropogenic causes of widespread environmental harms (DeLuca, 2007; Kojola and Pellow, 2021). Environmental justice demonstrated that human-induced environmental degradation, in turn, also produced unequal and often devastating outcomes for human communities, especially for marginalized human communities (e.g., Bullard, 1990; Cole and Foster, 2001; Brulle and Pellow, 2006; Sze and London, 2008; Bullard et al., 2008; Pellow, 2017). EJ scholarship has traditionally focused on the uneven distribution of environmental harms, especially toxic contaminants (Elliott and Frickel, 2011; Elliott and Frickel, 2013; Taylor, 2016; Cannon, 2020; Bullard, 2000), and demonstrated their role in creating and perpetuating social inequality (Downey, 2005). As an action-oriented discipline (Sze and London, 2008), EJ scholarship is grounded in social movements, with academic research often following in the wake of community action.

A fundamental philosophical contribution of environmental justice has been the defining and redefining of the word "environment" to include not just "natural" habitats and ecosystems but also spaces where human beings live, labor, recreate, learn, and otherwise exist every day (Bullard, 2000). Continuing this conceptual lineage, new forms of EJ scholarship have made the case that the "we" of environmental justice can extend to "more-than-human" or "beyond-human" life (Schlosberg, 2013; Celermajer and O'Brien, 2020). Work in multispecies justice, for example, challenges the ontological and ethical dualisms that privilege justice for human groups and interrogates how justice might apply to other species and ecosystems (Brisman, 2007; Srinavasan and Cochrane, 2020). Critical Environmental Justice (e.g., Pellow, 2016; Pellow, 2017) has also expanded its constituencies beyond humans and identified parallel logics of inequality across human social groups and beyond-human life.

Debates around biodiversity conservation programs contain similar questions about who constitutes the "we" of the environment, and so EJ scholarship is well poised to add clarity to these discussions. Biodiversity conservation programs seek to curtail the rapid global decline of biodiversity by limiting human activities and impacts, especially in and around protected lands. In many of these protected lands, governments and private foundations purposefully exclude local and Indigenous peoples, on the assumption that removing all human presence will protect endangered species. However, critiques in fields like political ecology and critical anthropology have revealed that such practices produce social injustices for those peoples by restricting their access to resources and cultural sites, forcing relocations, or transforming local economies (Brockington, 2002; Adams and Hutton, 2007; Duffy, 2014). In many cases, protected areas inordinately impact vulnerable groups like Indigenous peoples, forest peoples, immigrants, hunters, and other rural folk who may have used the land for centuries or millennia (Nelson, 2003; Colchester, 2004; Igoe, 2006; Schmidt-Soltau and Brockington, 2007; Agrawal and Redford, 2009; Dowie, 2009; Holmes, 2014; Kelly and Gupta, 2016). These revelations have encouraged a perception that biodiversity conservation and social justice cannot be reconciled (Shoreman-Ouimet and Kopnina, 2015), especially as the ambitions of biodiversity conservation programs grow (Wilson, 2016; Buscher and Fletcher, 2020).

Similar debates have taken place over programs of global sustainability, and here, EJ scholarship has played an instrumental role by suggesting that sustainability and social justice can be plausibly aligned (Agyeman et al., 2003; Agyeman et al., 2016). Conservation is likewise undergoing a major transition in its scope and goals as it increasingly incorporates concepts and priorities defined by the social sciences (Buscher and Fletcher, 2020). This transition offers a moment of opportunity for environmental justice to make a vital intervention in conservation thinking and practice. By incorporating environmental justice as a core element of conservation, new conservation paradigms hold great promise to render benefits and reduce harms to both human and beyond-human groups. LCRRs are a class of practice emblematic of this new approach to conservation, and their unique characteristics, challenges, and contexts make them an instructive case study in understanding how environmental justice can be intertwined with conservation.

3. Unique characteristics of LCRRs and their implications for environmental justice analysis

We define large carnivores as terrestrial mammals in the order *Carnivora* with bodies larger than 15 kg (Ripple et al., 2014). Throughout the world, 31 such species exist, including highly recognizable species like wolves (*Canis lupus*), brown bears (*Ursus arctos*), and African lions (*Panthera leo*). LCRRs are an increasingly popular conservation program for both historical and ecological reasons (Hayward and Somers, 2009; Lorimer et al., 2015; Pettorelli et al., 2019). Historically, large carnivores have been some of the species most impacted by human activities and development. Nearly all of the 31 extant species have experienced precipitous declines in their populations and range sizes over the past century, and the majority are now designated as threatened with extinction by the International Union for Conservation of Nature (Ripple et al., 2014; Wolf and Ripple, 2017; IUCN, 2020).

Conflicts between large carnivores and humans date back millennia, and both local and total extinctions of

Table 1. Descriptions and examples of large carnivore reintroduction and recovery (LCRR) projects. DOI: https://doi.org/10.1525/elementa.2020.00172.t1

LCRR Type	Description	Example
Reintroduction of historical large carnivore (LC) populations	Populations that have been extirpated from their historical range are reintroduced to it by humans. Individuals from another area where the species currently exists are translocated to the destination area. The source and destination populations may be isolated from one another following reintroduction.	Lions, wild dogs, cheetahs, and other large carnivores have been reintroduced into conservation areas in South Africa. Beginning in the 1990s, individuals were moved from nearby but physically isolated conservation areas to other areas where they had historically occurred but had been extirpated.
Managed LC population recovery	Populations return, without reintroductions, to an area from which they were extirpated. Humans typically still play a role in these recoveries by managing the recovering populations.	Gray wolves, originally reintroduced to Yellowstone National Park, United States, from individuals captured in Canada, have now made recoveries to other parts of their historical ranges in neighboring U.S. states like Washington, Oregon, Idaho, and California without further reintroductions. Each of these states differs in the management of these recovering species.
Augmented LC population recovery	Species that are naturally recovering in an area they once populated more densely are augmented by additional translocated individuals to increase population sizes.	Eurasian lynx (*Lynx lynx*) populations have expanded their ranges in Central Europe in recent decades, and reintroduction programs have further complemented these natural range expansions.

large carnivores have resulted from direct overexploitation or from the indirect consequences of human activities (Woodroffe, 2000). For example, in North America, government-sponsored persecution of large carnivores, often using particularly vicious methods, played an important role in Euro-American colonization of the continent, removing species like grizzly bears and gray wolves from much of their historic ranges to support livestock production (Reynolds and Tapper, 1996; Coleman, 2006). Today, species like African lions and Snow leopards continue to experience a range contractions and population declines due to habitat losses and conflicts with people (Li et al., 2013; Ripple et al., 2014).

In the last half century, changing economies and value systems have led to increasing legal protections for large carnivores in many parts of the world and have underpinned LCRR programs to address these historical losses (**Table 1**; George et al., 2016; Bruskotter et al., 2017; Manfredo et al., 2017; Johns, 2019). The last 50 years have also witnessed major advances in the science of predator ecology that have centered LCRRs in conservation planning. Research has demonstrated that large carnivores often act as "keystone" species (Crooks and Soulé, 1999; Ripple and Beschta, 2003; Smith et al., 2003; Soulé et al., 2005). Through their consumption of prey species and even through the fear they produce in their prey, the effects of carnivores cascade from the largest to the smallest species in their ecosystems, as well as to the processes and functions resulting from species interactions (Prugh et al., 2009). The keystone roles of carnivores are made clearest upon their removal, which often precipitate state shifts across entire ecosystems, lowering diversity and inhibiting ecosystem processes (Estes et al., 2011). When large carnivores return to ecosystems they once inhabited, their effects are similarly unmistakable, perhaps most famously exemplified the reintroduction of wolves to the Greater Yellowstone Ecosystem in Wyoming, United States, where researchers have documented effects on a host of mammals, trees, and even hydrological processes (Ripple and Beschta, 2012). As a result, conservation efforts have sought to incorporate LCRRs not just to mitigate the historical loss of large carnivores themselves but to restore their ecologically crucial roles (IUCN, 2013; Wolf and Ripple, 2018). This potential to repair past harm and benefit the future of multiple species and ecosystems intersects with new theories emerging in multispecies justice (see Section 4.1).

The same ecological characteristics that attract conservationists to LCRRs also create conflict with human communities. The ability of large carnivores to function as keystone species relies on their vast ranges, carnivorous diets, and large body sizes, all of which often put them in direct or perceived conflict with humans and human livelihoods. Large range sizes mean that these species will inevitably encounter human activities and cross multiple political jurisdictions. Large carnivore diets and body sizes mean that these animals often consume livestock, which can have life-changing economic impacts, especially for subsistence livestock producers. Infrequent attacks on humans can injure or kill humans, and they also lead to lasting negative opinions and retaliatory killings that drive large carnivore declines worldwide (Kissui, 2008; Ripple et al., 2014). For example, in Italy, where brown bears were reintroduced with widespread public support, a single fatal human encounter with a brown bear led to vanishing support that quickly turned into opposition (Tosi et al.,

2015). From economic harm to human injury and even mortality, LCRR programs thus have important material consequences that may be distributed unevenly, making them apt for consideration in an environmental justice analysis (see Section 4.2.2).

The planning and execution of LCRRs also bears consideration from an EJ perspective, especially in terms of *who* plans and executes these programs. There is a diversity of LCRR programs throughout the world, including grassroots efforts led by local people to return large carnivores to historic landscapes. This is especially common in America and Europe, where "rewilding" programs have rapidly risen in popularity (Lorimer et al., 2015). In many cases, LCRR programs require coordinated action over large spaces of land, involve multiple stakeholder groups, and impose diverse risks and benefits at different scales. These complexities often lead to the involvement of state agencies and large nonprofit organizations, which often work at a distance from the sites and peoples where efforts occur on the ground. Both support and opposition for these programs merit consideration from an environmental justice perspective, especially in terms of who is able to participate in decision-making and implementation (see Section 4.2.2).

While participation in the planning and implementation of LCRRs raises many important practical questions, the symbolic role of large carnivores and their conservation cannot be overlooked. There is a growing understanding that human–carnivore conflicts are often driven by underlying conflicts between human worldviews and that many battles over LCCRs are fought in symbolic territory (Madden, 2004; Dickman, 2010; Redpath et al., 2015; Riley and Sandstrom, 2016; Ward, 2019). For many, both in the public and at work in conservation efforts, large carnivores are emblematic of a zeal for wilderness (Johns, 2019). Simultaneously, for others, large carnivores symbolize the overextension of state power (Jacobsen and Linnell, 2016) or the erosion of rural lifestyles and landscapes (Skogen et al., 2019). This symbolic significance helps explain why reintroduced populations of large carnivores like wolves and brown bears have experienced high rates of mortality due to illegal killings, even when the economic costs of these reintroductions are limited (McLellan et al., 1999; von Essen et al., 2014; Mech, 2017; Treves et al., 2017). Behind this tension between LCRR advocates and opponents, the perspectives of Indigenous people are often overlooked entirely, even when large carnivores have significant cultural and material roles (Pinkerton et al., 2019). Environmental justice has an important role to play in better understanding whose worldviews are recognized or ignored in the implementation of LCRRs (see Section 4.2.3).

The symbolic importance and biological characteristics of large carnivores combine to set up another unique and important phenomenon, which is the stark difference between perceptions and realities of the risks they may pose to humans (Lescureux and Linnell, 2010; Suryawanshi et al., 2013; Miller et al., 2016). While other conservation projects may introduce herbivores like elephants or buffalo that ultimately pose much greater measurable risk to life and livelihood than many large carnivores, the effects of large carnivores are often perceived to be more severe, and retaliations against them are thus often more severe as well (Brashares et al., 2010). Fear may play an important role in creating the difference between perception and reality, as few animals impose the same burden of fear on people as large carnivores (Røskaft et al., 2003; Flykt et al., 2013). Fear itself is an important consequence of carnivore presence and one that should be taken seriously as an environmental justice issue, but it also has the potential to distort both measurable risks and political narratives (Kojola and Pellow, 2021). Affect and perception are of particular importance in understanding the potential benefits and impacts of LCRRs, and understanding their importance offers a generative opportunity for dialogue between environmental justice and conservation biology (see Section 4.3).

In summary, the tragic histories and enormous ecological importance of large carnivore species make them targets for conservation, yet, at the same time, the unique characteristics of these species mean that their presence and the efforts to conserve them both produce important and unique environmental justice concerns. Taken together, these characteristics of large carnivores and LCRRS create a challenging but instructive case study for the role of EJ in supporting new conservation paradigms and the opportunities for EJ to address new problems.

4. An environmental justice framework for LCRRs

In this section, we examine LCRR programs through an environmental justice lens. In doing so, we show that EJ frameworks have much to offer to the unique challenges posed by LCRRs. Applying these frameworks can identify hidden stakeholders as well as demonstrate overlooked forms of justice inherent to LCRRs. While we point out that LCRRs have in the past implicitly addressed some forms of justice, the interconnections between multiple forms of justice revealed in our analysis emphasize the importance of thinking more comprehensively about the roles EJ can play in planning and implementing LCRRs. By considering how questions of justice apply to multiple species, our analysis reveals parallel logics of oppression that have exerted injustice on human and beyond-human groups simultaneously, as well as opportunities for resolution between justice concerns for people and large carnivores.

We organize this section according to 3 major categories of environmental justice as they relate to LCRRs: *multispecies justice*, which extends questions of justice to humans and beyond-human species; *social justice*, which considers the inequities for human communities in terms of procedural, distributive, and recognitional justice; and *affective justice*, a term we introduce that describes ramifications for EJ from complexities introduced by affect, perception, and implicit bias.

4.1. Multispecies justice

Knowingly or not, advocates of LCRRs often appeal first and foremost to arguments articulated by theories in

multispecies justice. Advocates of LCRR programs often assert that humans bear a "special moral obligation to heal the damage to non-human species and ecosystems they have caused" (Schlosberg, 2007; Johns, 2019). This kind of "reparative justice" across species seeks to rectify the harms of the past. For large carnivores, these harms have been enormous, both in terms of the incredible numerical declines these species have experienced and the cruel means by which they have been extirpated (Taylor, 1986; Elliot, 1997; Coleman, 2006; Ripple et al., 2014). As keystone species, large carnivores also enable the provision of justice to the ecosystems that depend on them, thus extending the scope of the "we" of justice to include collective communities and habitats, not simply individual organisms or species. Some EJ scholars have argued that this extension is central to multispecies justice (Schlosberg, 2007; Srinavasan and Cochrane, 2020). For example, both scholarly and popular commentators have widely praised the reintroduction of wolves in Yellowstone National Park, arguing that restoring this keystone species has also restored the surrounding ecosystem (Ripple and Beschta, 2012; Ripple et al., 2015). Multispecies and reparative justice are implicit in these praises, especially in popular literatures (Monbiot, 2014), which describe the moral rectitude of an ecosystem restored. Related arguments supporting LCRRs parallel those offered by Nussbaum (2006), who claims that sentient animals merit consideration from a "capabilities justice" lens, deserving the same kinds of opportunities to "flourish" typically afforded to many (though certainly not all) humans. It is clear that LCRRs implicitly take up several contemporary EJ theories related to multispecies justice and concretely expand notions of "we" from human to nonhuman animal communities.

However, 2 critiques of the role of multispecies justice in LCRRs demonstrate the need for an explicit and multifaceted EJ analysis of these programs. A first critique is that the logic of multispecies justice can serve particular human agendas, especially that of powerful actors, if they are not considered alongside other forms of social justice. For example, Celermajer and O'Brien (2020) warn that the logic of "reparative justice" for beyond-human life suggests that past harms can be atoned for through future actions, a logic that, for some, justifies the activities that cause these harms by promising that they can be rectified at some later time (Katz, 2012; Celermajer and O'Brien, 2020). Other scholars have critiqued conservation programs that impose grave risks on individuals (e.g., a large carnivore translocated as part of a reintroduction program) for the sake of collectives like species or ecosystems (Favre, 1978; Hutchins and Wemmer, 1987; Cripps, 2010). Srinivasan and Cochrane (2020) explicitly frame this trade-off as one that primarily satisfies particular human preferences, even when there is scientific uncertainty about the outcome for both individuals and ecosystems. This is a trade-off inherent to the logic of large carnivore reintroductions in particular: Individuals can be injured or even killed for presumed benefits to species and ecosystems. Because human preferences will always inhabit arguments for multispecies justice, it is vital to render these preferences explicit and to attend that the preferences of 1 group do not disadvantage other more vulnerable groups. Linking multispecies justice with other forms of justice described in Sections 4.2 and 4.3 can help to ensure this outcome.

A second critique of multispecies justice is made apparent in case studies in which arguments for enacting conservation programs, framed using the logic of multispecies justice, have legitimated human oppression. In protected area conservation, powerful actors like governments and international NGOs have shown willingness and facility in using the language of multispecies justice to disempower vulnerable groups of people, particularly those living in or subsisting on resources available in protected lands (Brockington, 2002; Colchester, 2004; Hari, 2010). Similarly, activism and discourses around animal welfare and animal rights have in some cases been promoted at the expense of the rights and well-being of people of color, immigrants, and Indigenous peoples (Pellow, 2014). In the case of LCRRs, the symbolic and charismatic appeal of large carnivores allows them to be used as tools of the powerful. This is convincingly demonstrated by programs of forced human "relocations" for tiger (*Panthera tigris*) conservation in India. In these programs, human relocations have occurred over the course of several decades, wherein state-sponsored efforts in coordination with international NGOs, often using paramilitary force and racially charged justifications, have coerced thousands of families, primarily comprised of Indigenous pastoralists, living in Indian tiger reserves to move to new locations (Bijoy, 2011; Torri, 2011; Rai et al., 2019). In many cases, these villagers were exclusively blamed for declining tiger populations in spite of their long histories of coexistence with tigers and with little regard for evidence showing that broader patterns of land use change and urban-centered commercial networks are key drivers of tiger declines (Rangarajan and Shahabuddin, 2006). This example of forced relocations not only represents a glaring social injustice, but it has also allowed the continuation of unsustainable practices driving tiger declines, thus undercutting the purported rationale of provisioning multispecies justice to tigers. However, when this critique is viewed another way, multispecies justice arguments for LCRRs that do not focus *only* on beyond-human species, but rather consider how human and beyond-human life can be considered in tandem, can help build agency for vulnerable communities. Campaigns for the legal rights of nature as led by Indigenous peoples offer useful case studies for LCRRs in promoting justice for both human and beyond-humans (O'Donnell et al., 2020).

Multispecies justice offers a meaningful and groundbreaking rationale for LCRRs. However, as this section makes clear, it is difficult to separate considerations of multispecies justice from human preferences, goals, and social justice. Instead of taking up distinct multispecies justice rationales, LCRRs must broaden their aperture and

integrate multiple forms of justice into their theory and practice.

4.2. Social justice

Environmental justice scholarship offers a robust theoretical framework and organizational vocabulary for identifying different forms of justice at stake in LCRRs, as well as their connections to one another and to multispecies justice. We organize our discussion around 3 major social justice categories that are frequently addressed in EJ literature on conservation: participatory, distributive, and recognition justice (Schlosberg, 2004; Martin et al., 2013). Defining these justice categories and applying them to specific LCRR examples can identify opportunities to mitigate harms, reveal blind spots in current policies and practices, and identify ways of thinking, knowing, and living that enrich the possibilities for co-occurrence and coexistence between people and large carnivores.

4.2.1. Participatory justice

Participatory justice examines who gets to participate in the processes of decision-making (Schlosberg, 2007). Injustice in the realm of participation can take many forms. Groups may be excluded from participation based on race, document or economic status, gender, other social or geographic locations, or simply by lack of education or access to the halls of power. This kind of exclusion from participation has been identified as a feature of many protected area programs globally (Brockington, 2002; Igoe, 2006; Igoe and Brockington, 2007; Büscher et al., 2012). In these analyses, many such programs begin with participatory injustice and end with distributive injustice (Section 4.2.2), when local disempowered groups lose territory, access, or livelihoods as a result of decisions made by other groups, especially powerful states or international organizations (Nelson, 2003; Colchester, 2004; Hari, 2010).

In response to participatory injustice, EJ scholarship has effectively identified hidden and marginalized stakeholders and critiqued their inability to participate across a range of environmental issues (Agyeman et al., 2003). For LCRRs, an EJ perspective can help ensure that programs include all relevant stakeholders in the political decision-making process. Participatory practices can help bridge a problem of scale faced by many LCRRs, wherein government agencies or large organizations working from distant locales, and often with little public accountability, plan and implement programs with effects felt most acutely by local people. For example, in a rare empirical study of LCRRs and environmental justice, Bredin (2018) emphasized the importance of participatory justice to local stakeholders involved in jaguar (*Panthera onca*) recoveries in Brazil. Here, local stakeholders desired increased local empowerment and collaborative governance over the LCRR program, in which they felt underrepresented relative to more powerful outside groups and state actors. The stakes of excluding local support are high and threaten the potential for LCRR programs to satisfy their multispecies justice goals. Reintroductions of bears and wolves, for example, that have excluded meaningful public participation have often been perceived as government imposition and overreach and produced damaging conflicts for people and large carnivores (Clark, 2009; Morzillo et al., 2010; Manfredo et al., 2017; Mech, 2017). Thus, a lack of participatory justice can produce the conditions under which carnivores are opposed on symbolic (Section 4.2.3) or affective (Section 4.3) grounds.

Forms of "collaborative governance" around LCRRs have been gaining popularity and work to involve citizens at multiple points before, during, and after decision-making processes to ensure participation (Carter et al., 2021). Redpath (2017) argues for collaborative processes that develop "psychological ownership" of the process of recovering wildlife, which improve trust between involved parties, create a shared sense of responsibility for project outcomes among diverse groups, and strengthen involvement in local management (but for a critique emphasizing multispecies justice, see Treves et al., 2019). Such approaches often reveal local enthusiasm for LCRRs, as long as local involvement is assured (Clark, 2009). Thus, in addition to reducing the potential for injustice for humans, participatory and collaborative governance approaches can foster public support that reduces illegal killings and other retaliatory actions that threaten large carnivore persistence (Jackson and Ale, 2009; Linnell et al., 2009; Madden and McQuinn, 2014).

Taking up an EJ perspective thus offers multiple contributions to the just practice of LCRRs: EJ methods have an established history of identifying and including disempowered stakeholders; processes that reflect principles of participatory justice garner public support rather than opposition; and retaliations against large carnivores themselves decline when public support is high. Addressing participatory justice can also reveal relevant perspectives on distributive and recognition justice (Sections 4.2.2 and 4.2.3, respectively), helping ensure that access to participation addresses a range of justice concerns. In some cases, public participation may expose unjust aspects of LCRRs that prevent their implementation. However, as the above examples show, participation may also strengthen links between public support and multispecies justice goals, thus buttressing LCRR program effectiveness.

4.2.2. Distributive justice

Distributive justice considers who is materially affected by institutional actions and whether and how they are recompensed (Schlosberg, 2007; Walker, 2012). EJ scholarship has previously identified distributive injustices for rural poor communities related to conservation projects, especially protected area conservation, with effects including loss of access to land and resources and increased exposure to wildlife conflicts (Martin et al., 2013). For LCRRs, distributive injustice is most pronounced in contexts where local rural groups are already marginalized and where their livelihoods are intimately tied to forest and agricultural production, especially of livestock (Mishra, 1997; Kissui, 2008; Muhly and Musiani, 2009; Widman and Elofsson, 2018). For example, a study in Zimbabwe found that livestock predation by large carnivores in an area of communal land bordering the Sengwa

Wildlife Research Area cost livestock producing households 12% of their net annual income, which was already at a subsistence level (Butler, 2000). Even when livestock are not killed, some evidence suggests that the presence of predators can slow livestock growth rates and thus impose costs on producers that outpace direct losses (Steele et al., 2013; Ramler et al., 2014). Attacks, both fatal and nonfatal, on humans and pets are much rarer and resist economic quantification, but they can be tragedies for those involved and can reverberate more broadly through society. As a result, these attacks can have profound effects on the ways in which local people perceive large carnivores and the landscapes on which they occur (Linnell et al., 2002; Tosi et al., 2015; Penteriani et al., 2016; Kelly et al., 2019), with important implications for affective justice (Section 4.3). Any program intending to reconcile environmental justice with LCRRs must consider these diverse forms of damage.

Direct compensation from the state to individuals for damage caused by large carnivores has long been a strategy surrounding LCRRs (Montag et al., 2003). Such programs, however, often lack important nuances that an EJ perspective can provide. In some cases, compensation programs may be used to justify LCRRs in spite of compensation payments falling short of losses by livestock producers. Villagers surrounding the Kibber Wildlife Sanctuary in the Indian Trans-Himalaya, for example, estimated livestock losses to large carnivores at up to half of their annual income, but compensation programs only returned approximately 3% of perceived losses, thus inciting retaliatory killings of predators that threatened reintroduction programs (Mishra, 1997). In other sites around the world, the complexities accompanying local contexts, rapid economic and land use changes, make the calculations needed to provide fair compensation prohibitively complex (Naughton-Treves et al., 2003; Nyhus et al., 2005; Maclennan et al., 2009; Næss et al., 2011; Agarwala, 2010). Furthermore, efforts that have historically focused solely on compensation schemes may work in tension with or even produce other forms of environmental injustice, especially regarding recognition justice (Martin et al., 2013; Martin et al., 2014). As demonstrated by a study of wolf recovery efforts in Norway, if stakeholders feel that decision-makers are attempting to buy their consent and downplay the noneconomic significance of LCRRs, compensation programs may fail to achieve distributive justice while also creating new recognition justice concerns (Jacobsen and Linnell, 2016). The importance of understanding the multiple forms of justice simultaneously at stake cannot be overstated.

Aside from compensation for losses, there are other ways in which LCRR programs must consider distributive justice. The potentially enormous material benefits provided by LCRRs through their effects on ecosystem recovery are still poorly understood and rarely quantified, and so there is little understanding of how such benefits might be equitably or inequitably distributed. These benefits range widely from direct benefits of trophy hunting and photography of carnivores themselves (Funston et al., 2013), the "existence value" enjoyed by some in knowing that such animals are present (Kellert et al., 1996; van Eeden et al., 2021), indirect benefits of increased tourism in ecosystems inhabited by large carnivores (Dickman et al., 2011; Rode et al., 2021), and the more distributed benefits provided by ecosystem services generated or augmented by the presence of large carnivores (Nelson, 2009; Gilbert et al., 2017). Although the difficulty in calculating these benefits makes them easy to ignore, EJ work on distributive justice has previously established the importance of considering such nonquantifiable benefits (Čapek, 1993; Sexton, 2000), making this an important site for future research on this topic.

Questions of access also bear further interrogation from a distributive justice point of view, as restricted access to critical resources is a form of distributive injustice. For example, research involving Maasai respondents in Kenya showed that when they were restricted from grazing cattle in protected areas, especially during droughts, this local group had more negative attitudes toward lions, a recovering large carnivore, and were more likely to kill them (Hazzah et al., 2013; Redpath et al., 2017). This example demonstrates one of the many ways in which the success of LCRRs is tied to the perception of justice. In some cases, communities near LCRRs may bear additional financial and labor costs in implementing programs to reduce the direct harms imposed by large carnivores that may or may not be offset by the benefits of increased tourism (Nelson, 2009; Dickman et al., 2011; McManus et al., 2015; Lyngdoh et al., 2017; Tortato et al., 2017). Finally, as we discuss in more depth in Section 4.3, even the *perception* of material harm, especially perpetrated by the state, drives conflicts between people and wildlife (Bruskotter and Wilson, 2014), and amplifies concerns around recognition justice to produce deep antipathies that undercut LCRR programs (Madden and McQuinn, 2014). An environmental justice perspective can thus link distributive justice to other forms of environmental justice and help navigate the complex challenges imposed by LCRRs.

4.2.3. Recognition justice

EJ scholarship has increasingly called for expanded dimensions of environmental justice, especially recognition justice (e.g., Massarella et al., 2020). Recognition justice asks whether human identities, histories, ways of knowing, and ways of living have been acknowledged and included in environmental decision-making. Recognition justice differs from participatory justice in that it does not question who can or cannot participate in existing decision-making structures, but instead it asks whether those structures themselves privilege or exclude particular identities, epistemologies, histories, and ways of life. Studies examining recognition justice around conservation programs often focus on disparities between Indigenous ontologies or epistemologies and those imposed exogenously and the subsequent colonizing and dominating effects of conservation programs that overlook Indigenous ways of knowing and living (Martin et al., 2014).

Little research currently links recognition justice with LCRRs and Indigenous peoples. A related study of the

reintroduction of sea otters (*Enhydra lutris*) in Canada showed that scientific management principles were privileged over Indigenous knowledge and practices in guiding the reintroduction process of this species (Pinkerton et al., 2019). This failure of recognition justice led to a distributive injustice, the depletion of important local fisheries to which local Indigenous communities have constitutionally protected access. The authors (Pinkerton et al.) advocated for an alternative comanagement system for the fishery, combining First Nations epistemologies and ontologies with ecological research, to simultaneously improve the sustainability of the fisheries and recognize the presence and worldview of the Nuu-chah-nulth First Nations.

In other contexts, the recovery of large carnivores may represent an important step toward recognition justice, where large carnivores have cultural, spiritual, or other ties to local groups. In Mammoth Lakes, California, a campaign to identify local black bears (*Ursus americanus*) as "our bears" has proven effective in creating a sense of shared value and recognition across diverse stakeholders, helping to limit conflict between people and bears in the area (Nark and Rabut, 2020). Indeed, in many parts of the world, the removal of large predators was a colonizing practice, meant to deprive local peoples of their material, symbolic, and spiritual import and make possible the simultaneous subjugation of human and carnivore. In both North America and England, for example, wolves and Indigenous people were linked in metaphor and action, and policies of violence against both were thought to be self-reinforcing practices by colonial powers (Kellert et al., 1996; Arnds, 2020). The connections between large carnivores, Indigenous groups, and recognition justice remain a blind spot in LCRR programs, and there is an urgent need for research on this topic (Schlosberg, 2013; Martin, 2017).

Some of the most pressing challenges for LCRRs come from their symbolic importance, which demonstrates the significance of recognition justice. As mentioned in Section 3, large carnivores have powerful importance as symbols, as emotional touchstones, and as mirrors, for both proponents and opponents of large carnivore conservation (Saunders, 1998; Nie, 2003; Skogen et al., 2006; Li et al., 2014). Reintroduction efforts that fail to engage with these symbolic aspects are bound to overlook their significance. This symbolic role manifests in some of the most acute human–human conflicts around large carnivores, when these animals loom large in the worldviews of different stakeholder groups. For example, in an empirical study of environmental justice concerns prompted by wolf recoveries in Norway, Jacobsen and Linnell (2016) suggested that while questions of distribution were nominally important, recognition justice was essential to both proponents and opponents of this LCRR program. Skeptics of wolf recovery suggested that the return of wolves threatened traditional rural activities, including hunting and pastoral activities, that were not just livelihoods, but ways of life with deep connections to personal identity. Additionally, these stakeholders felt aggrieved that their concerns along these lines were not being meaningfully regarded, often overshadowed by efforts toward compensation for livestock losses, a common approach to addressing narrowly distributive justice concerns. Simultaneously, wolf advocates made arguments not only on behalf of multispecies justice concerns for wolves but also for the importance of wolves to their own sense of identity and community, an often-underappreciated aspect of LCRRs. For all of the stakeholders in this study, "identity, lifestyle, knowledge and viewpoints, and seeking mutual respect for differences constituted a good in itself" (Jacobsen and Linnell, 2016).

Other studies have addressed the importance of recognition justice in resolving conflicts surrounding LCRRs. For example, Madden and McQuinn (2014) and Vucetich et al. (2018) describe an approach, praised in North America, for addressing conflicts with large carnivores called "carnivore conflict transformations," which draws from principles and processes from the peacebuilding field. Central to this practice is the concept that conflicts about carnivores are really conflicts between people who feel that their identity and autonomy are threatened. Before distribution or participation injustice can be addressed, a "humanizing of the other" and a "reconciliation of relationships" must take place. The success of this focus on identity, acknowledgment, and reconciliation speaks to the underlying importance of recognition justice to conflicts surrounding LCRRs. As a field, EJ has an important role to play in further elaborating the theoretical underpinnings of recognition justice, linking it to more familiar forms of justice, and testing methods and approaches that can contribute meaningfully to the challenging contexts demanded by LCRRs.

4.3. Affective environmental justice

Recently, EJ scholars have begun examining the importance of the emotional consequences of environmental injustice, broadening the horizons of the field, yet new case studies are needed to articulate the important connections between emotion and justice (Kojola and Pellow, 2021). In sections above, we discussed the unique ability of carnivores to provoke strong emotions in stakeholders toward large carnivores and their conservation. In a comprehensive "history of emotions" of wildlife reintroduction and recovery programs, Jorgensen (2019) makes clear that emotional responses have been overlooked as a driving force behind the conceptualization, implementation, success, and even failure of these programs. Large carnivores stir particularly powerful affective responses within human communities, especially fear, reverence, and loss (Røskaft et al., 2003; Flykt et al., 2013; Jørgensen, 2019). In this section, we introduce the term *affective environmental justice* and discuss its particular relevance to LCRRs. We discuss 3 major dimensions of affective environmental justice. First, we describe affective responses to LCRRs as an environmental harm that is inequitably experienced but rarely considered. Second, we identify the ways in which affective responses cloud understandings of previously described environmental justice categories, further emphasizing the need for understanding all of these categories cohesively. Third, we discuss the powerful role of fear in contributing to logics of oppression against vulnerable human and beyond-human groups.

The emotional consequences of environmental change are the first dimension of affective environmental justice. These consequences have long been considered (e.g., Bullard, 2000), but only recently have they been emphasized in EJ scholarship (Kojola and Pellow, 2021). Human fear of large carnivores is one of the most salient affective response to their presence (Flykt et al., 2013). In fact, ecologists have taken the role of fear seriously in research on the "landscape of fear." This concept describes the cascading effects of the fear that large carnivores inspire in their prey, and ecologists increasingly recognize the role that fear plays in delivering the ecosystem-scale benefits of large carnivores (Laundre et al., 2010; Gaynor et al., 2019). Although the term "landscape of fear" arose in the social sciences (Tuan, 1979), humans' fear of large carnivores is rarely measured or considered as an environmental harm in decision-making and planning of LCRRs (Johansson et al., 2016). The people living near many LCRR sites are often already marginalized, and an exposure to acute fears of large carnivore attacks, of injury, of loss of livelihood, or even of death, will amplify their precarity in ways that have not been adequately assessed. Research on risk perceptions suggests that this fear can be heightened several orders of magnitude by a lack of control, especially when risks are imposed from the outside (Starr, 1969; Skogen et al., 2008; Dickman, 2010; Carter et al., 2012). In other words, injustice through exclusion from participation will frequently amplify affective injustice, and these effects are typically experienced by groups that already experience other forms of vulnerability.

However, fear is not the only contributor to harm at stake in considering LCRRs and affective environmental justice. LCRRs are not always imposed by the powerful on the powerless, and they often enjoy local support, especially from communities with strong emotions of attachment, reverence or loss regarding large carnivores. Indigenous people in particular may regard the absence of large carnivore species in terms of recognition, as described above, but also affectively through a sense of loss and the "colonization of attachment" (Groves, 2015). Research has shown that this sense of loss around animals and the "sense of place" to which they are intimately connected can be a source of trauma and affect mental health, and the particularly powerful affective responses that large carnivores provoke will likely magnify these effects (Lockie, 2016; Willette et al., 2016; Norgaard and Reed, 2017). As with fear, the distribution of harms related to emotions around loss are felt most acutely by groups that have already been the targets of violence associated with settler colonialism, racial capitalism, and environmental injustice (Kojola and Pellow, 2021). These topics require further research, and LCRRs offer an opportunity for the field of EJ to expand its scope and application by studying the unique, intense, important affective responses to these programs.

The second dimension of affective justice is its interactions with other categories of social justice. The strong affective responses described above, while poorly understood on their own terms, also have the potential to cloud an analysis that adheres strictly to categories of distributive, participatory, and recognition justice. In research on human–carnivore interactions, perceptions of the risk of carnivores to human life and bodies have been shown to strongly influence the way in which people interact with both individual animals and with LCRRs as programs (Lescureux and Linnell, 2010; Suryawanshi et al., 2013; Ohrens et al., 2019; McInturff et al., 2020). In many cases, risk perceptions differ markedly from the measurable risks and outcomes that carnivores often impose. In North America, for example, public discourses about the reintroduction and recovery of wolves often center on the risks they impose to livestock and people. While direct wolf mortalities and fear of wolves may impact individual livestock operations, there is little evidence to suggest that the livestock industry as a whole has been meaningfully affected by the return of wolves (Muhly and Musiani, 2009), and wolf attacks on humans are extremely rare (Linnell and Alleau, 2016). Similarly, public discourse in the United States surrounding mountain lions (*Puma concolor*) remains dominated by reports of rare attacks on outdoor recreationists (Conover, 1995; Gilbert et al., 2017). By centering the negative consequences of LCRRs, overly elevated risk perceptions mask the benefits of keystone carnivores to the health and welfare of humans and ecosystems alike (Estes et al., 2011; Levi et al., 2012; Brashares et al., 2014; Wallach et al., 2015). Returning to mountain lions, a study in the northeastern United States demonstrated that the reintroduction of mountain lions to this region would drastically reduce the populations of white-tailed deer (*Odocoileus virginianus*), their primary prey, and in turn prevent thousands of human injuries and deaths caused by deer–vehicle collisions (Gilbert et al., 2017). Elevated risk perceptions can thus crowd out other aspects of justice related to LCRRs. Future research and practice in EJ must work carefully to take fear seriously as an environmental harm while also judiciously incorporating risk perceptions into broader EJ analysis. Doing so can not only help guide LCRRs to more just and sustainable ends but also expand EJ theory and practice on this important topic.

The third dimension of affective justice draws from several examples, especially in North America and Europe, in which elevated risk perceptions become tools of the powerful against the vulnerable and align logics of oppression against marginalized human and beyond-human groups. The strong affective responses, especially fear, provoked by large carnivores can cloud who is at risk from their presence. Exaggerated claims of wolf "invasions" in North America, for example, often pose wealthy rural landowners as victims of LCRR programs, even when there is little evidence to suggest that distributive or participatory harms are significant (Nie, 2003; Berger, 2006; Muhly and Musiani, 2009; Linnell and Alleau, 2016). While LCRRs may be at odds with the worldviews of such stakeholders, which link sense of place with dominion over and eradication of large carnivores, such worldviews are widely recognized publicly and validated politically, emphasizing again that affective issues can blur a sober understanding of recognition justice. Importantly, examples from both North America and Europe suggest that this stance can

link logics of oppression against people and animals who are in precarious circumstances.

For example, both in the United States and in Europe, politicians have deployed similar and overlapping rhetoric when articulating anti-immigrant and anti-wolf positions (Lusher, 2016; Nors, 2018; Arnds, 2020). In North America in particular, this linkage is not new. Brown (2018) describes the historical construction of black males in America as "subhuman" or as "predators." By drawing on an American tradition of fear of large carnivores, this rhetoric has been used to justify vigilante and state violence against Black men for generations, while simultaneously reinforcing a fear of nonhuman predators (Jacobs et al., 2012; Brown, 2018). Illegal killings of wolves, frequently because of their symbolism as outsiders, are in many cases the chief source of mortality of reintroduced and recovering wolf populations (Liberg et al., 2012; Suutarinen and Kojola, 2017; Treves et al., 2017). These examples do not constitute a rule governing the logics linking oppression of vulnerable human and beyond-human groups, and we acknowledge that their geographical and historical context is important. However, these examples do point EJ scholarship toward a line of inquiry regarding the role of affect in inverting claims of vulnerability and victimhood, and LCRRs offer a revealing site for future work on this topic.

5. Opportunities and obstacles for aligning forms of justice

The framework we developed in Section 4 makes clear that numerous EJ issues are at stake in the practice of LCRR programs. While some of these issues are familiar to previous EJ analyses of conservation programs, many are new and distinct due to the unique characteristics of LCRRs. While protected area programs sometimes meet their conservation targets in spite of—or even because of—their lack of consideration for aspects of social justice (Brockington 2002), this is much rarer for LCRRs, which are often predicated on human–wildlife coexistence on shared landscapes. When stakeholders feel that such programs are unjust, they can oppose these programs directly on the ground. Retaliatory killings of large carnivores have been documented across the world in response to LCRR actions and ensuing conflicts (Liberg et al., 2012; Suutarinen and Kojola, 2017; Treves et al., 2017). Clashes between stakeholder worldviews, heightened by affective stances on carnivores, are often politicized and have the potential to derail LCRRs, as recently evidenced by a brown bear reintroduction effort in the northwestern United States (U.S. Department of the Interior, 2020). Even where attention to questions of distribution and participation helped LCRRs proceed with a measure of success, as in the recovery of wolves in Scandinavia, conflicts rooted in recognition and affective justice still may threaten long-term sustainability of these programs (Jacobsen and Linnell, 2016; Skogen et al., 2017). Thus, for LCRRs, social justice is foundational to multispecies justice and to the sustainability of LCRR programs. Below, we discuss the conditions under which LCRR programs may prove incompatible with social justice and under which an EJ framework would suggest curtailing these programs. Just as importantly, we also discuss how an EJ framework, when included in both the planning and practice of LCRRs, can support LCRR programs that promote multiple forms of justice for people, large carnivores, and ecosystems.

Contextual differences are crucial to understanding justice and LCRRs, but our EJ analysis suggests that some conditions are part of a genotype of unjust practices. One of the key takeaways of our analysis is the interconnectedness of the social justice categories we describe. Many LCRR programs adopt siloed approaches to environmental justice. Even if multiple forms of justice are given consideration, programs that privilege one form over another a priori will overlook essential context-dependent concerns and interrelations across forms of justice. Compensation for material damages is the most frequent example of how LCRRs address EJ concerns, but this approach only considers distributive justice, neglecting other important forms of justice we have elaborated above (Naughton-Treves et al., 2003; Nyhus et al., 2005; Maclennan et al., 2009; Agarwala, 2010; Næss et al., 2011). Justice is fundamentally pluralistic (Schlosberg, 1999; Sen, 2009; Martin et al., 2013; Schlosberg, 2013), and its plural forms are interrelated, and even further complicated by affective environmental justice. Programs that ignore these connections are likely to provoke unexpected antipathy and opposition from stakeholders, including from those they may even have failed to identify. In some cases, these forms of justice may even be in tension, where ensuring one form of justice may heighten another form of injustice. We should not assume that all such tensions can be resolved, and by identifying such tensions, an EJ framework can single out LCRR programs that simply should not proceed when they cannot yield pluralistically just outcomes. However, by applying the comprehensive EJ framework that we outline above, LCRR programs can better understand the stakes involved in their program and the diverse constituents who may be hidden by narrower conceptions of justice.

Another key takeaway from our analysis centers the issue of scale and its importance in linking the multiple forms of justice we have included in this framework. Recent advances in EJ scholarship, particularly in Critical Environmental Justice, have called attention to such issues of scale (Pellow, 2016; Pellow, 2017). Rather than focusing on a single scale of analysis and effect, critical environmental justice examines how questions of justice are interlinked across scales, from individual bodies to communities and even to global concerns. LCRRs call attention to questions of scale in dramatic ways. In many (but certainly not all) cases, LCRR programs may be developed by organizations and agencies in urban areas far removed from the rural places and surrounding peoples where these actions will take place. Environmental justice must thus consider not only the local implications of LCRRs but also the often-multinational institutions and procedures that orchestrate or obstruct such programs, and what actions might better link these divergent scales. Programs that narrowly envision stakeholders and their

situations, characteristics, and risk perceptions will precipitate injustice for those groups left out of consideration. LCRR programs that are instituted from afar, especially by agencies or organizations with little local coordination or consultation and with predetermined strategies about their responses to injustice, are unlikely to ensure participatory and recognition justice for people subsisting on the land, establish sustainable conditions under which multispecies justice is possible, or attend to the complexities introduced by questions of affective justice. Unfortunately, these conditions are common in the practice of LCRRs, especially given the economic cost and jurisdictional complexity of conducting these activities. As a result, some of these programs have unsurprisingly produced unjust outcomes for people, have failed to support long-term success for large carnivores, or both. Questions of scale thus demand the incorporation and interlinking of the multiple forms of justice we have presented in this framework.

In spite of these challenges, our analysis points to opportunities for aligning the many forms of environmental justice at stake in LCRR programs. The framework that we detail in Section 4 offers a comprehensive resource to work through in planning and implementing an LCRR. By embedding this justice framework into the planning process, LCRRs have the potential to identify and avoid or mitigate the many potential forms of harm they may impose on vulnerable people and simultaneously clarify and emphasize the benefits that programs provide to both human and beyond-human groups. A cornerstone of EJ theory is that "a functioning environment provides the necessary conditions to achieve social justice" (Agyeman et al., 2016), meaning that, as keystone species, large carnivores have a central role in restoring and repairing these underlying conditions for justice. While carnivores have well established ecological relations, their relations to human community and culture are often overlooked. For Indigenous peoples, in particular, who have been excluded from decisions about dewilding and extirpation in both the present and the past, restoring or recovering large may provide a measure of reparative justice, and further research is needed in this domain (Tuck and Yang, 2012; Groves, 2015; Whyte, 2018).

We argue that the application of an environmental justice framework can help ensure that LCRRs do not inevitably pit justice for human life against justice for beyond-human life. LCRRs can impose material, symbolic, and emotional risks for people already living in precarity, but EJ offers a flexible, broad, and pluralistic framework for understanding and adapting to local contexts. There is not one programmatic response that EJ can provide to LCRRs, but EJ offers a theory and vocabulary needed for context-specific practices. Context and adaptability are critical elements of this framework: an LCRR in North America, for example, will look very different from one in South America, with an entirely different set of stakeholders, justice concerns, and relevant theories and resolutions (Root-Bernstein et al., 2017). Our framework provides a diagnostic approach for thinking through individual cases in context and helping to resolve tensions between forms of justice.

Our analysis suggests that social justice and biodiversity conservation are not predestined to be in opposition. Instead, while tensions within and between forms of justice are inherent to conservation practice, thorough EJ analysis can help move these tensions toward resolution. We argue that integrating multiple forms of justice within an EJ framework has untapped potential for guiding conservation programs beyond just LCRRs toward outcomes that address justice concerns for multiple constituents, both human and beyond human. Such a framework allows for a shared vocabulary, a complete accounting of stakeholders, an organized set of concerns, and clearly defined outcomes. While an integrated EJ framework may offer pathways toward just ends, it is critical to remark that conservation practitioners must also be open to a conclusion in which an EJ analysis cannot resolve underlying tensions and thus favors inaction or a different approach. We recommend that research in EJ occur alongside ecological research and that together these findings inform context-specific policies regarding specific conservation actions.

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References

Adams, WM, Hutton, J. 2007. People, parks and poverty: Political ecology and biodiversity conservation. *Conservation and society* **5**(2): 147–183.

Agarwala, M. 2010. Paying for wolves in Solapur, India and Wisconsin, USA: Comparing compensation rules and practice to understand the goals and politics of wolf conservation. *Biological Conservation*: **143**(12): 2945–2955.

Agrawal, A, Redford, K. 2009. Conservation and displacement: An overview. *Conservation and Society* **7**(1): 1–10.

Agyeman, J, Bullard, RD, Evans, B. 2003. Towards just sustainabilities: Perspectives and possibilities, in Agyeman, J, Bullard, RD, Evans, B eds., *Just*

sustainabilities: Development in an unequal world. London, UK: Earthscan Ltd: 323–355.

Agyeman, J, Schlosberg, D, Craven, L, Matthews, C. 2016. Trends and directions in environmental justice: From inequity to everyday life, community, and just sustainabilities. *Annual Review of Environment and Resources* **41**(1): 321–340. DOI: http://dx.doi.org/10.1146/annurev-environ-110615-090052.

Arnds, P. 2020. Rewilding the world in the postcolonial age: On the nexus between cultural production and species politics. *Journal of Postcolonial Writing* **56**(4): 568–582. DOI: http://dx.doi.org/10.1080/17449855.2020.1764203.

Barnosky, AD, Matzke, N, Tomiya, S, Wogan, GOU, Swartz, B, Quental, TB, Marshall, C, McGuire, JL, Lindsey, EL, Maguire, KC, Mersey, B, Ferrer, EA. 2011. Has the Earth's sixth mass extinction already arrived? *Nature* **471**(7336): 51–57. DOI: http://dx.doi.org/10.1038/nature09678.

Berger, KM. 2006. Carnivore-livestock conflicts: Effects of subsidized predator control and economic correlates on the sheep industry. *Conservation Biology* **20**(3): 751–761. DOI: http://dx.doi.org/10.1111/j.1523-1739.2006.00336.x.

Bijoy, CR. 2011. The great Indian tiger show. *Economic and Political Weekly* **46**(4): 36–41.

Brashares, JS, Abrahms, B, Fiorella, KJ, Golden, CD, Hojnowski, CE, Marsh, RA, McCauley, DJ, Nuñez, TA, Seto, K, Withey, L. 2014. Wildlife decline and social conflict. *Science* **345**(6195): 376–378. DOI: http://dx.doi.org/10.1126/science.1256734.

Brashares, JS, Prugh, LR, Stoner, CJ, Epps, CW. 2010. Ecological and conservation implications of mesopredator release, in Terborgh, J, Estes, JA eds., *Trophic cascades: Predators, prey, and the changing dynamics of nature*. Washington, DC: Island Press: 221–240.

Bredin, YK, Lescureux, N, Linnell, JDC. 2018. Local perceptions of jaguar conservation and environmental justice in Goiás, Matto Grosso and Roraima states (Brazil). *Global Ecology and Conservation* **13**: e00369. DOI: http://dx.doi.org/10.1016/j.gecco.2017.e00369.

Brisman, A. 2007. Crime-environment relationships and environmental justice. *Seattle Journal for Social Justice* **6**(2): 727–818.

Brockington, D. 2002. *Fortress conservation: The preservation of the Mkomazi game reserve, Tanzania*. Indiana University Press.

Brown, AL. 2018. From Subhuman to human kind: Implicit bias, racial memory, and black males in schools and society. *Peabody Journal of Education* **93**(1): 52–65. DOI: http://dx.doi.org/10.1080/0161956X.2017.1403176.

Brulle, RJ, Pellow, DN. 2006. Environmental justice: Human health and environmental inequalities. *Annual Review of Public Health* **27**: 103–124.

Bruskotter, JT, Vucetich, JA, Manfredo, MJ, Karns, GR, Wolf, C, Ard, K, Carter, NH, López-Bao, JV, Chapron, G, Gehrt, SD, Ripple, WJ. 2017. Modernization, risk, and conservation of the world's largest carnivores. *BioScience* **67**(7): 646–655. DOI: http://dx.doi.org/10.1093/biosci/bix049.

Bruskotter, JT, Wilson, RS. 2014. Determining where the wild things will be: Using psychological theory to find tolerance for large carnivores. *Conservation Letters* **7**(3): 158–165. DOI: http://dx.doi.org/10.1111/conl.12072.

Bullard, R. 1990. *Dumping in dixie*. Boulder, CO: Westview.

Bullard, R. 2000. Environmental justice in the 21st century. *Phylon* **49**(3): 151–171.

Bullard, RD, Mohai, P, Saha, R, Wright, B. 2008. Toxic wastes and race at twenty: Why race still matters after all of these years. *Environmental Law* **38**(2): 371–411.

Buscher, B, Fletcher, R. 2020. *The conservation revolution: Radical ideas for saving nature beyond the Anthropocene*. New York, NY: Verso Books.

Büscher, B, Sullivan, S, Neves, K, Igoe, J, Brockington, D. 2012. Towards a synthesized critique of neoliberal biodiversity conservation. *Capitalism Nature Socialism* **23**(2): 4–30. DOI: http://dx.doi.org/10.1080/10455752.2012.674149.

Butler, JRA. 2000. The economic costs of wildlife predation on livestock in Gokwe communal land, Zimbabwe. *African Journal of Ecology* **38**(1): 23–30. DOI: http://dx.doi.org/10.1046/j.1365-2028.2000.00209.x.

Cannon, C. 2020. Examining rural environmental injustice: An analysis of ruralness, class, race, and gender on the presence of landfills across the United States. *Journal of Rural and Community Development* **15**(1): 89–114.

Čapek, SM. 1993. The "Environmental Justice" frame: A conceptual discussion and an application. *Social Problems* **40**(1): 5–24. DOI: http://dx.doi.org/10.2307/3097023.

Carter, NH, Nelson, P, Easter, T. 2021. A call for a national collaborative predator coexistence programme. *People and Nature* **3**(4): 788–794. DOI: http://dx.doi.org/10.1002/pan3.10245.

Carter, NH, Riley, SJ, Liu, J. 2012. Utility of a psychological framework for carnivore conservation. *Oryx* **46**(4): 525–535. DOI: http://dx.doi.org/10.1017/S0030605312000245.

Celermajer, D, O'Brien, A. 2020. Transitional justice in multispecies worlds. *Contemporary Political Theory* **19**: 502–508. DOI: http://dx.doi.org/10.1057/s41296-020-00386-5.

Clark, JD. 2009. Aspects and implications of bear reintroduction, in *Reintroduction of top-order predators*. John Wiley & Sons, Ltd.: 126–145. DOI: http://dx.doi.org/10.1002/9781444312034.ch6.

Colchester, M. 2004. Conservation policy and indigenous peoples. *Environmental Science & Policy* **7**(3): 145–153.

Cole, LW, Foster, SR. 2001. *From the ground up: Environmental racism and the rise of the environmental justice movement*. NYU Press (Vol. 34).

Coleman, JT. 2006. *Vicious: Wolves and men in America*. New Haven, CT: Yale University Press.

Conover, MR. 1995. What is the urban deer problem and where did it come from, in McAninch, JB, Hansen, LP, Kelly, KA eds., *Urban deer: A manageable resource?* St. Louis, MO: The North Central Section of the Wildlife Society: 11–18.

Cripps, E. 2010. Saving the polar bear, saving the world: Can the capabilities approach do justice to humans, animals and ecosystems? *Res Publica* **16**(1): 1–22. DOI: http://dx.doi.org/10.1007/s11158-010-9106-2.

Crooks, KR, Soulé, ME. 1999. Mesopredator release and avifaunal extinctions in a fragmented system. *Nature* **400**(6744): 563–566. DOI: http://dx.doi.org/10.1038/23028.

DeLuca, K. 2007. A wilderness environmentalism manifesto: Contesting the infinite self-absorption of humans, in Sandler, RD, Pezzullo, PC eds., *Environmental justice and environmentalism: The social justice challenge to the environmental movement*. Cambridge, MA: The MIT Press: 27–56.

Dickman, AJ. 2010. Complexities of conflict: The importance of considering social factors for effectively resolving human–wildlife conflict. *Animal Conservation* **13**(5): 458–466. DOI: http://dx.doi.org/10.1111/j.1469-1795.2010.00368.x.

Dickman, AJ, Macdonald, EA, Macdonald, DW. 2011. A review of financial instruments to pay for predator conservation and encourage human–carnivore coexistence. *PNAS* **108**(34): 13937–13944. DOI: http://dx.doi.org/10.1073/pnas.1012972108.

Dowie, M. 2009. *Conservation refugees: The hundred-year conflict between global conservation and native peoples*. Cambridge, MA: MIT Press.

Downey, L. 2005. The unintended significance of race: Environmental racial inequality in Detroit. *Social Forces* **83**(3): 971–1007. DOI: http://dx.doi.org/10.1353/sof.2005.0026.

Duffy, R. 2014. Waging a war to save biodiversity: The rise of militarized conservation. *International Affairs* **90**(4): 819–834. DOI: http://dx.doi.org/10.1111/1468-2346.12142.

Elliot, R. 1997. *Faking nature: The ethics of environmental restoration*. Hove, UK: Psychology Press.

Elliott, JR, Frickel, S. 2011. Environmental dimensions of urban change: Uncovering relict industrial waste sites and subsequent land use conversions in Portland and New Orleans. *Journal of Urban Affairs* **33**(1): 61–82.

Elliott, JR, Frickel, S. 2013. The historical nature of cities: A study of urbanization and hazardous waste accumulation. *American Sociological Review* **78**(4): 521–543.

Estes, JA, Terborgh, J, Brashares, JS, Power, ME, Berger, J, Bond, WJ, Carpenter, SR, Essington, TE, Holt, RD, Jackson, JBC, Marquis. RJ. 2011. Trophic downgrading of planet earth. *Science* **333**(6040): 301–306. DOI: http://dx.doi.org/10.1126/science.1205106.

Favre, DS. 1978. Wildlife rights: The ever-widening circle. *Environmental Law* **9**(2): 241–282.

Flykt, A, Johansson, M, Karlsson, J, Lindeberg, S, Lipp, OV. 2013. Fear of wolves and bears: Physiological responses and negative associations in a Swedish sample. *Human Dimensions of Wildlife* **18**(6): 416–434. DOI: http://dx.doi.org/10.1080/10871209.2013.810314.

Funston, PJ, Groom, RJ, Lindsey, PA. 2013. Insights into the management of large carnivores for profitable wildlife-based land uses in African savannas. *PLoS One* **8**(3): e59044. DOI: http://dx.doi.org/10.1371/journal.pone.0059044.

Gaard, G. 2017. *Critical ecofeminism*. Lanham, MD: Lexington Books.

Gaynor, KM, Brown, JS, Middleton, AD, Power, ME, Brashares, JS. 2019. Landscapes of fear: Spatial patterns of risk perception and response. *Trends in Ecology & Evolution* **34**(4): 355–368. DOI: http://dx.doi.org/10.1016/j.tree.2019.01.004.

George, KA, Slagle, KM, Wilson, RS, Moeller, SJ, Bruskotter, JT. 2016. Changes in attitudes toward animals in the United States from 1978 to 2014. *Biological Conservation* **201**: 237–242. DOI: http://dx.doi.org/10.1016/j.biocon.2016.07.013.

Gilbert, SL, Sivy, KJ, Pozzanghera, CB, DuBour, A, Overduijn, K, Smith, MM, Zhou, J, Little, JM, Prugh, LR. 2017. Socioeconomic benefits of large carnivore recolonization through reduced wildlife-vehicle collisions. *Conservation Letters* **10**(4): 431–439. DOI: http://dx.doi.org/10.1111/conl.12280.

Groves, C. 2015. The bomb in my backyard, the serpent in my house: environmental justice, risk, and the colonisation of attachment. *Environmental Politics* **24**(6): 853–873. DOI: http://dx.doi.org/10.1080/09644016.2015.1067348.

Hari, J. 2010. The wrong kind of green. *The Nation* **22**(10): 1–6.

Hayward, MW, Somers, MJ. 2009. Reintroduction of top-order predators: Using science to restore one of the drivers of biodiversity, in Hayward, MW, Somers, MJ eds., *Reintroduction of top-order predators*. Oxford, UK: John Wiley & Sons: 1–9.

Hazzah, L, Dolrenry, S, Kaplan, D, Frank, L. 2013. The influence of park access during drought on attitudes toward wildlife and lion killing behaviour in Maasailand, Kenya. *Environmental Conservation* **40**(3): 266–276.

Holmes, G. 2014. What is a land grab? Exploring green grabs, conservation, and private protected areas in southern Chile. *The Journal of Peasant Studies* **41**(4): 547–567. DOI: http://dx.doi.org/10.1080/03066150.2014.919266.

Hutchins, M, Wemmer, C. 1987. Wildlife conservation and animal rights: Are they compatible? in Fox, MW, Mickley, LD eds., *Advances in animal welfare science 1986/87*. Dordrecht, the Netherlands: Springer: 111–137. DOI: http://dx.doi.org/10.1007/978-94-009-3331-6_10.

Igoe, J. 2006. Measuring the costs and benefits of conservation to local communities. *Journal of Ecological Anthropology* **10**(1): 72–77.

Igoe, J, Brockington, D. 2007. Neoliberal conservation: A brief introduction. *Conservation and Society* **5**(4): 432–449.

IUCN. 2013. *Guidelines for reintroductions and other conservation translocations*. IUCN. Available at https://www.iucn.org/content/guidelines-reintroductions-and-other-conservation-translocations. Accessed 23 November 2020.

IUCN. 2020. *The IUCN red list of threatened species*. IUCN. Available at https://www.iucnredlist.org/en. Accessed 23 November 2020.

Jackson, RM, Ale, SB. 2009. Snow leopards: Is reintroduction the best option? in *Reintroduction of top-order predators*. John Wiley & Sons, Ltd: 164–186. DOI: http://dx.doi.org/10.1002/9781444312034.ch8.

Jacobs, D, Malone, C, Iles, G. 2012. Race and imprisonments: Vigilante violence, minority threat, and racial politics. *The Sociological Quarterly* **53**(2): 166–187. DOI: http://dx.doi.org/10.1111/j.1533-8525.2012.01230.x.

Jacobsen, KS, Linnell, JDC. 2016. Perceptions of environmental justice and the conflict surrounding large carnivore management in Norway—Implications for conflict management. *Biological Conservation* **203**: 197–206. DOI: http://dx.doi.org/10.1016/j.biocon.2016.08.041.

Johansson, M, Ferreira, IA, Støen, O-G, Frank, J, Flykt, A. 2016. Targeting human fear of large carnivores—Many ideas but few known effects. *Biological Conservation* **201**: 261–269. DOI: http://dx.doi.org/10.1016/j.biocon.2016.07.010.

Johns, D. 2019. History of rewilding: Ideas and practice, in Pettorelli, N, Durant, SM, du Toit, JT eds., *Rewilding*. Cambridge, UK: Cambridge University Press: 12–33.

Jørgensen, D. 2019. *Recovering lost species in the modern age: Histories of longing and belonging*. Cambridge, MA: MIT Press.

Katz, E. 2012. Further adventures in the case against restoration. *Environmental Ethics* **34**(1): 67–97. DOI: http://dx.doi.org/10.5840/enviroethics20123416.

Kellert, SR, Black, M, Rush, CR, Bath, AJ. 1996. Human culture and large carnivore conservation in North America. *Conservation Biology* **10**(4): 977–990. DOI: http://dx.doi.org/10.1046/j.1523-1739.1996.10040977.x.

Kelly, AB, Gupta, AC. 2016. Protected areas: Offering security to whom, when and where? *Environmental Conservation* **43**(2): 172–180. Cambridge University Press. DOI: http://dx.doi.org/10.1017/S0376892915000375.

Kelly, JR, Doherty, TJ, Gabel, T, Disbrow, W. 2019. Large carnivore attacks on humans: The State of knowledge. *HER* **25**(2): 15–33. DOI: http://dx.doi.org/10.22459/HER.25.02.2019.03.

Kim, CJ. 2015. *Dangerous crossings*. Cambridge, UK: Cambridge University Press.

Kissui, BM. 2008. Livestock predation by lions, leopards, spotted hyenas, and their vulnerability to retaliatory killing in the Maasai steppe, Tanzania. *Animal Conservation* **11**(5): 422–432. DOI: http://dx.doi.org/10.1111/j.1469-1795.2008.00199.x.

Kojola, E, Pellow, DN. 2021. New directions in environmental justice studies: Examining the state and violence. *Environmental Politics* **30**(1–2): 100–118. DOI: http://dx.doi.org/10.1080/09644016.2020.1836898.

Laundre, JW, Hernandez, L, Ripple, WJ. 2010. The landscape of fear: Ecological implications of being afraid. *The Open Ecology Journal* **3**(1). Available at https://benthamopen.com/ABSTRACT/TOECOLJ-3-3-1. Accessed 24 August 2021.

Lescureux, N, Linnell, JDC. 2010. Knowledge and perceptions of Macedonian hunters and herders: The influence of species specific ecology of bears, wolves, and lynx. Available at https://pubag.nal.usda.gov/catalog/117059. Accessed 21 November 2020.

Levi, T, Kilpatrick, AM, Mangel, M, Wilmers, CC. 2012. Deer, predators, and the emergence of Lyme disease. *PNAS* **109**(27): 10942–10947. DOI: http://dx.doi.org/10.1073/pnas.1204536109.

Li, J, Wang, D, Yin, H, Zhaxi, D, Jiagong Z, Schaller, GB, Mishra, C, Mccarthy, TM, Wang, H, Wu, L, Xiao, L. 2014. Role of Tibetan Buddhist monasteries in snow leopard conservation. *Conservation Biology* **28**(1): 87–94. DOI: http://dx.doi.org/10.1111/cobi.12135.

Li, J, Yin, H, Wang, D, Jiagong, Z, Lu, Z. 2013. Human-snow leopard conflicts in the Sanjiangyuan Region of the Tibetan Plateau. *Biological Conservation* **166**: 118–123. DOI: http://dx.doi.org/10.1016/j.biocon.2013.06.024.

Liberg, O, Chapron, G, Wabakken, P, Pedersen, HC, Hobbs, NT, Sand, H. 2012. Shoot, shovel and shut up: Cryptic poaching slows restoration of a large carnivore in Europe. *Proceedings of the Royal Society B* **279**(1730): 910–915. DOI: http://dx.doi.org/10.1098/rspb.2011.1275.

Linnell, JDC, Alleau, J. 2016. Predators that kill humans: Myth, reality, context and the politics of wolf attacks on people, in Angelici, FM ed., *Problematic wildlife: A cross-disciplinary approach*. Cham: Springer International Publishing: 357–371. DOI: http://dx.doi.org/10.1007/978-3-319-22246-2_17.

Linnell, JDC, Andersen, R, Andersone, Z, Balciauskas, L, Blanco, JC, Boitani, L, Brainerd, S, Breitenmoser, U, Kojola, I, Liberg, O, Loe, J. 2002. The fear of wolves: A review of wolf attacks on humans. *NINA Oppdragsmelding* **731**(1): 1–65.

Linnell, JDC, Breitenmoser, U, Breitenmoser-Würsten, C, Odden, J, von Arx, M. 2009. Recovery of Eurasian Lynx in Europe: What part has reintroduction played? in *Reintroduction of top-order predators*. John Wiley & Sons, Ltd.: 72–91. DOI: http://dx.doi.org/10.1002/9781444312034.ch4.

Lockie, S. 2016. The emotional enterprise of environmental sociology. *Environmental Sociology* **2**(3): 233–

237. DOI: http://dx.doi.org/10.1080/23251042.2016.1237794.

Lorimer, J, Sandom, C, Jepson, P, Doughty, C, Barua, M, Kirby, KJ. 2015. Rewilding: Science, practice, and politics. *Annual Review of Environment and Resources* **40**(1): 39–62. DOI: http://dx.doi.org/10.1146/annurev-environ-102014-021406.

Lusher, A. 2016 Nov 9. Donald Trump supporters tell immigrants "The wolves are coming, you are the hunted." *The Independent*. Available at https://www.independent.co.uk/news/world/americas/us-politics/donald-trump-wins-racist-racism-race-hate-immigrants-nigel-farage-ukip-brexit-post-referendum-illegals-mexicans-build-wall-wolves-are-coming-you-are-hunted-kkk-white-power-latinos-blacks-usa7407951.html. Accessed 23 November 2020.

Lyngdoh, S, Mathur, VB, Sinha, BC. 2017. Tigers, tourists and wildlife: Visitor demographics and experience in three Indian Tiger reserves. *Biodiversity and Conservation* **26**(9): 2187–2204. DOI: http://dx.doi.org/10.1007/s10531-017-1352-6.

Maclennan, SD, Groom, RJ, Macdonald, DW, Frank, LG. 2009. Evaluation of a compensation scheme to bring about pastoralist tolerance of lions. *Biological Conservation* **142**(11): 2419–2427. DOI: http://dx.doi.org/10.1016/j.biocon.2008.12.003.

Madden, F. 2004. Creating coexistence between humans and wildlife: Global perspectives on local efforts to address human–wildlife conflict. *Human Dimensions of Wildlife* **9**(4): 247–257. DOI: http://dx.doi.org/10.1080/10871200490505675.

Madden, F, McQuinn, B. 2014. Conservation's blind spot: The case for conflict transformation in wildlife conservation. *Biological Conservation* **178**: 97–106. DOI: http://dx.doi.org/10.1016/j.biocon.2014.07.015.

Manfredo, MJ, Bruskotter, JT, Teel, TL, Fulton, D, Schwartz, SH, Arlinghaus, R, Oishi, S, Uskul, AK, Redford, K, Kitayama, S, Sullivan, L. 2017. Why social values cannot be changed for the sake of conservation. *Conservation Biology* **31**(4): 772–780. DOI: http://dx.doi.org/10.1111/cobi.12855.

Martin, A. 2017. *Just conservation: Biodiversity, wellbeing and sustainability*. London, UK: Taylor & Francis.

Martin, A, Gross-Camp, N, Kebede, B, McGuire, S, Munyarukaza, J. 2014. Whose environmental justice? Exploring local and global perspectives in a payments for ecosystem services scheme in Rwanda. *Geoforum* **54**: 167–177.

Martin, A, McGuire, S, Sullivan, S. 2013. Global environmental justice and biodiversity conservation. *The Geographical Journal* **179**(2): 122–131. DOI: http://dx.doi.org/10.1111/geoj.12018.

Massarella, K, Sallu, SM, Ensor, JE. 2020. Reproducing injustice: Why recognition matters in conservation project evaluation. *Global Environmental Change* **65**: 102181. DOI: http://dx.doi.org/10.1016/j.gloenvcha.2020.102181.

McInturff, A, Miller, JRB, Gaynor, KM, Brashares, JS. 2020. Patterns of coyote predation on sheep in California: A socio-ecological approach to mapping risk of livestock–predator conflict. *Conservation Science and Practice* e175. DOI: http://dx.doi.org/10.1111/csp2.175.

McLellan, BN, Hovey, FW, Mace, RD, Woods, JG, Carney, DW, Gibeau, ML, Wakkinen, WL, Kasworm, WF. 1999. Rates and causes of grizzly bear mortality in the interior mountains of British Columbia, Alberta, Montana, Washington, and Idaho. *The Journal of Wildlife Management* **63**(3): 911–920. DOI: http://dx.doi.org/10.2307/3802805.

McManus, JS, Dickman, AJ, Gaynor, D, Smuts, BH, Macdonald, DW. 2015. Dead or alive? Comparing costs and benefits of lethal and non-lethal human–wildlife conflict mitigation on livestock farms. *Oryx* **49**(4): 687–695. DOI: http://dx.doi.org/10.1017/S0030605313001610.

Mech, LD. 2017. Where can wolves live and how can we live with them? *Biological Conservation* **210**: 310–317. DOI: http://dx.doi.org/10.1016/j.biocon.2017.04.029.

Miller, JRB, Jhala, YV, Schmitz, OJ. 2016. Human perceptions mirror realities of carnivore attack risk for livestock: Implications for mitigating human-carnivore conflict. *PLoS ONE* **11**(9): e0162685. DOI: http://dx.doi.org/10.1371/journal.pone.0162685.

Mishra, C. 1997. Livestock depredation by large carnivores in the Indian trans-Himalaya: Conflict perceptions and conservation prospects. *Environmental Conservation* **24**(4): 338–343.

Monbiot, G. 2014. *Feral: Rewilding the land, the sea, and human life*. Chicago, IL: The University of Chicago Press.

Montag, JM, Patterson, M, Sutton, B. 2003. Political and social viability of predator compensation programs in the West. Montana, MT: University of Montana. Final Project Report.

Morzillo, AT, Mertig, AG, Hollister, JW, Garner, N, Liu, J. 2010. Socioeconomic factors affecting local support for black bear recovery strategies. *Environmental Management* **45**: 1299–1311. DOI: http://dx.doi.org/10.1007/s00267-010-9485-3.

Muhly, TB, Musiani, M. 2009. Livestock depredation by wolves and the ranching economy in the Northwestern U.S. *Ecological Economics* **68**(8–9): 2439–2450. DOI: http://dx.doi.org/10.1016/j.ecolecon.2009.04.008.

Næss, MW, Bårdsen, B-J, Pedersen, E, Tveraa, T. 2011. Pastoral herding strategies and governmental management objectives: Predation compensation as a risk buffering strategy in the Saami reindeer husbandry. *Human Ecology* **39**(4): 489–508. DOI: http://dx.doi.org/10.1007/s10745-011-9398-7.

Nark, J, Rabut, A. 2020 Jul 18. He kept a community's bears in check, but he won't anymore. *The New York Times*. Available at https://www.nytimes.com/

2020/07/18/science/bear-whisperer-steve-searles.html. Accessed 26 September 2021.

Naughton-Treves, L, Grossberg, R, Treves, A. 2003. Paying for tolerance: Rural citizens' attitudes toward wolf depredation and compensation. *Conservation Biology* **17**(6): 1500–1511. DOI: http://dx.doi.org/10.1111/j.1523-1739.2003.00060.x.

Nelson, F. 2009. Developing payments for ecosystem services approaches to carnivore conservation. *Human Dimensions of Wildlife* **14**(6): 381–392. DOI: http://dx.doi.org/10.1080/10871200903045228.

Nelson, RH. 2003. Environmental colonialism: "Saving" Africa from Africans. *The Independent Review* **8**(1): 65–86.

Nie, M. 2003. Drivers of natural resource-based political conflict. *Policy Sciences* **36**(3): 307–341. DOI: http://dx.doi.org/10.1023/B:OLIC.0000017484.35981.b6.

Norgaard, KM, Reed, R. 2017. Emotional impacts of environmental decline: What can Native cosmologies teach sociology about emotions and environmental justice? *Theory and Society* **46**(6): 463–495.

Nors, D. 2018 May 16. They want a wolf-free Denmark. Will migrants be next? *The Guardian*. Available at http://www.theguardian.com/commentisfree/2018/may/16/killing-wolf-denmark-migrants-eu-polarisation-of-politics-pack-mentality. Accessed 23 November 2020.

Nussbaum, MC. 2006. The moral status of animals. *Chronicle of Higher Education* **52**(22): 1–7.

Nyhus, PJ, Osofsky, SA, Ferraro, P, Madden, F, Fischer, H. 2005. Bearing the costs of human-wildlife conflict: the challenges of compensation schemes, in Woodroffe, R, Thirgood, S, Rabinowitz, A eds., *People and wildlife, conflict or co-existence?* Cambridge, UK: Cambridge University Press: 107–121.

O'Donnell, E, Poelina, A, Pelizzon, A, Clark, C. 2020. Stop burying the Lede: The essential role of indigenous law(s) in creating rights of nature. *Transnational Environmental Law* **9**(3): 403–427. DOI: http://dx.doi.org/10.1017/S2047102520000242.

Ohrens, O, Santiago-Ávila, F, Treves, A. 2019. The twin challenges of preventing real and perceived threats to human interests, in *Human-wildlife interactions: Turning conflict into coexistence*. Cambridge University Press: 242–264. DOI: http://dx.doi.org/10.1017/9781108235730.015.

Pellow, DN. 2014. *Total liberation: The power and promise of animal rights and the radical earth movement*. Minneapolis, MN: University of Minnesota Press.

Pellow, DN. 2016. Toward a critical environmental justice studies: Black Lives Matter as an environmental justice challenge. *Du Bois Review: Social Science Research on Race* **13**(2): 221–236.

Pellow, DN. 2017. *What is critical environmental justice?* Cambridge, UK: Polity Press.

Penteriani, V, Delgado, MdM, Pinchera, F, Naves, J, Fernández-Gil, A, Kojola, I, Härkönen, S, Norberg, H, Frank, J, Fedriani, JM, Sahlén, V. 2016. Human behaviour can trigger large carnivore attacks in developed countries. *Scientific Reports* **6**(1): 20552. DOI: http://dx.doi.org/10.1038/srep20552.

Pettorelli, N, Durant, S, du Toit, J. 2019. *Rewilding*. Cambridge, UK: Cambridge University Press.

Pinkerton, E, Salomon, AK, Dragon, F. 2019 Feb 1. Reconciling social justice and ecosystem-based management in the wake of a successful predator reintroduction. *Canadian Journal of Fisheries and Aquatic Sciences*. DOI: http://dx.doi.org/10.1139/cjfas-2018-0441.

Prugh LR, Stoner, CJ, Epps, CW, Bean, WT, Ripple, WJ, Laliberte, AS, Brashares, JS. 2009. The rise of the Mesopredator. *BioScience* **59**(9): 779–791. DOI: http://dx.doi.org/10.1525/bio.2009.59.9.9.

Rai, ND, Benjaminsen, TA, Krishnan, S, Madegowda, C. 2019. Political ecology of tiger conservation in India: Adverse effects of banning customary practices in a protected area. *Singapore Journal of Tropical Geography* **40**(1): 124–139. DOI: http://dx.doi.org/10.1111/sjtg.12259.

Ramler, JP, Hebblewhite, M, Kellenberg, D, Sime, C. 2014. Crying wolf? A spatial analysis of wolf location and depredations on calf weight. *American Journal of Agricultural Economics* **96**(3): 631–656.

Rangarajan, M, Shahabuddin, G. 2006. Displacement and relocation from protected AREAS: Towards a biological and historical synthesis. *Conservation and Society* **4**(3): 359–378.

Redpath, SM, Bhatia, S, Young, J. 2015. Tilting at wildlife: Reconsidering human–wildlife conflict. *Oryx* **49**(2): 222–225. DOI: http://dx.doi.org/10.1017/S0030605314000799.

Redpath, SM, Linnell, JDC, Festa-Bianchet, M, Boitani, L, Bunnefeld, N, Dickman, A, Gutiérrez, RJ, Irvine, RJ, Johansson, M, Majić, A, McMahon, BJ. 2017. Don't forget to look down – Collaborative approaches to predator conservation. *Biological Reviews* **92**(4): 2157–2163. DOI: http://dx.doi.org/10.1111/brv.12326.

Reynolds, JC, Tapper, SC. 1996. Control of mammalian predators in game management and conservation. *Mammal Review* **26**(2–3): 127–155. DOI: http://dx.doi.org/10.1111/j.1365-2907.1996.tb00150.x.

Riley, S, Sandstrom, C. 2016. Human dimension insights for reintroductions of fish and wildlife species, in Jachowski, DS, Millspaugh, JJ, Angermeier, PL, Slotow, R eds., *Reintroduction of fish and wildlife populations*. University of California Press: 55–77. Available at https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A974842&dswid=3127. Accessed 21 November 2020.

Ripple, WJ, Beschta, RL. 2003. Wolf reintroduction, predation risk, and cottonwood recovery in Yellowstone National Park. *Forest Ecology and Management* **184**(1–3): 299–313. DOI: http://dx.doi.org/10.1016/S0378-1127(03)00154-3.

Ripple, WJ, Beschta, RL. 2012. Trophic cascades in Yellowstone: The first 15years after wolf reintroduction. *Biological Conservation* **145**(1): 205–213. DOI: http://dx.doi.org/10.1016/j.biocon.2011.11.005.

Ripple, WJ, Beschta, RL, Painter, LE. 2015. Trophic cascades from wolves to alders in Yellowstone. *Forest Ecology and Management* **354**: 254–260. DOI: http://dx.doi.org/10.1016/j.foreco.2015.06.007.

Ripple, WJ, Estes, JA, Beschta, RL, Wilmers, CC, Ritchie, EG, Hebblewhite, M, Berger, J, Elmhagen, B, Letnic, M, Nelson, MP, Schmitz, OJ. 2014. Status and ecological effects of the world's largest carnivores. *Science* **343**(6167). DOI: http://dx.doi.org/10.1126/science.1241484.

Rode, J, Flinzberger, L, Karutz, R, Berghöfer, A, Schröter-Schlaack, C. 2021. Why so negative? Exploring the socio-economic impacts of large carnivores from a European perspective. *Biological Conservation* **255**: 108918. DOI: http://dx.doi.org/10.1016/j.biocon.2020.108918.

Root-Bernstein, M, Galetti, M, Ladle, RJ. 2017. Rewilding South America: Ten key questions. *Perspectives in Ecology and Conservation* **15**(4): 271–281. DOI: http://dx.doi.org/10.1016/j.pecon.2017.09.007.

Røskaft, E, Bjerke, T, Kaltenborn, B, Linnell, JDC, Andersen, R. 2003. Patterns of self-reported fear towards large carnivores among the Norwegian public. *Evolution and Human Behavior* **24**(3): 184–198. DOI: http://dx.doi.org/10.1016/S1090-5138(03)00011-4.

Saunders, NJ. 1998. *Icons of power: Feline symbolism in the Americas*. London, UK: Routledge.

Schlosberg, D. 1999. *Environmental justice and the new pluralism: The challenge of difference for environmentalism*. Oxford, UK: Oxford University Press.

Schlosberg, D. 2004. Reconceiving environmental justice: Global movements and political theories. *Environmental Politics* **13**(3): 517–540. DOI: http://dx.doi.org/10.1080/0964401042000229025.

Schlosberg, D. 2007. Distribution and beyond: Conceptions of justice in contemporary theory and practice, in *Defining environmental justice: Theories, movements and nature*. Oxford, UK: Oxford University Press: 11–41. Available at https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780199286294.001.0001/acprof-9780199286294.

Schlosberg, D. 2013. Theorising environmental justice: The expanding sphere of a discourse. *Environmental Politics* **22**(1): 37–55. DOI: http://dx.doi.org/10.1080/09644016.2013.755387.

Schmidt-Soltau, K, Brockington, D. 2007. Protected areas and resettlement: What scope for voluntary relocation? *World Development* **35**(12): 2182–2202. DOI: http://dx.doi.org/10.1016/j.worlddev.2007.02.008.

Secretariat of the Convention on Biological Diversity. 2020. Zero Draft of the Post-2020 Global Biodiversity. Available at https://www.cbd.int/doc/c/3064/749a/0f65ac7f9def86707f4eaefa/post2020-prep-02-01-en.pdf.

Sen, AK. 2009. *The idea of justice*. Cambridge, MA: Harvard University Press.

Sexton, K. 2000. Socioeconomic and racial disparities in environmental health: Is risk assessment part of the problem or part of the solution? *Human and Ecological Risk Assessment: An International Journal* **6**(4): 561–574. DOI: http://dx.doi.org/10.1080/10807030008951330.

Shoreman-Ouimet, E, Kopnina, H. 2015. Reconciling ecological and social justice to promote biodiversity conservation. *Biological Conservation* **184**: 320–326. DOI: http://dx.doi.org/10.1016/j.biocon.2015.01.030.

Skogen, K, Ghosal, S, Skuland, S, Krishnan, S. 2019. Predators in human landscapes, in Frank, B, Glikman, JA, Marchini, S eds., *Human-wildlife interactions: Turning conflict into coexistence*. Cambridge, UK: Cambridge University Press: 129–149.

Skogen, K, Krange, O, Figari, H. 2017. *Wolf conflicts: A sociological study*. 1st ed. New York, NY: Berghahn Books (Vol. 1). DOI: http://dx.doi.org/10.2307/j.ctvw04jgs.5.

Skogen, K, Mauz, I, Krange, O. 2006. Wolves and ecopower. A French-Norwegian analysis of the narratives on the return of large carnivores. *Revue de Géographie Alpine* **94**(4): 78–87. DOI: http://dx.doi.org/10.3406/rga.2006.5593.

Skogen, K, Mauz, I, Krange, O. 2008. Cry wolf! Narratives of wolf recovery in France and Norway. *Rural Sociology* **73**(1): 105–133. DOI: http://dx.doi.org/10.1526/003601108783575916.

Smith, DW, Peterson, RO, Houston, DB. 2003. Yellowstone after wolves. *BioScience* **53**(4): 330. DOI: http://dx.doi.org/10.1641/0006-3568(2003)053[0330: YAW]2.0.CO;2.

Soulé, ME. 1985. What is conservation biology? *BioScience* **35**(11): 727–734. DOI: http://dx.doi.org/10.2307/1310054.

Soulé, ME, Estes, JA, Miller, B, Honnold, DL. 2005. Strongly interacting species: Conservation policy, management, and ethics. *BioScience* **55**(2): 168. DOI: http://dx.doi.org/10.1641/0006-3568(2005)055[0168: SISCPM]2.0.CO;2.

Srinavasan, K, Cochrane A. 2020. Justice, conflict and shared vulnerabilities in a multispecies world. *Contemporary Political Theory* **19**: 488–502. DOI: http://dx.doi.org/10.1057/s41296-020-00386-5.

Starr, C. 1969. Social Benefit versus technological risk. *Science* **165**(3899): 1232–1238.

Steele, JR, Rashford, BS, Foulke, TK, Tanaka, JA, Taylor, DT. 2013. Wolf (*Canis lupus*) predation impacts on livestock production: Direct effects, indirect effects, and implications for compensation ratios. *Rangeland Ecology & Management* **66**(5): 539–544. DOI: http://dx.doi.org/10.2111/REM-D-13-00031.1.

Steffen, W, Crutzen, P, McNeill, J. 2007. The Anthropocene: Are humans now overwhelming the great forces of nature. *Ambio* **36**(8): 614–621.

Suryawanshi, K, Bhatnagar, Y, Redpath, S, Mishra, C. 2013. People, predators and perceptions: Patterns of livestock depredation by snow leopards and wolves.

Journal of Applied Ecology **50**. DOI: http://dx.doi.org/10.1111/1365-2664.12061.

Suutarinen, J, Kojola, I. 2017. Poaching regulates the legally hunted wolf population in Finland. *Biological Conservation* **215**: 11–18. DOI: http://dx.doi.org/10.1016/j.biocon.2017.08.031.

Sze, J, London, JK. 2008. Environmental justice at the crossroads. *Sociology Compass* **2**(4): 1331–1354. DOI: http://dx.doi.org/10.1111/j.1751-9020.2008.00131.x.

Taylor, DE. 2016. *The rise of the American conservation movement: Power, privilege, and environmental protection*. Durham, NC: Duke University Press.

Taylor, PW. 1986. *Respect for nature: A theory of environmental ethics*. Princeton, NJ: Princeton University Press.

Torri, MC. 2011. Conservation, relocation and the social consequences of conservation policies in protected areas: Case study of the Sariska Tiger Reserve, India. *Conservation and Society* **9**(1): 54–64.

Tortato, FR, Izzo, TJ, Hoogesteijn, R, Peres, CA. 2017. The numbers of the beast: Valuation of jaguar (Panthera onca) tourism and cattle depredation in the Brazilian Pantanal. *Global Ecology and Conservation* **11**: 106–114. DOI: http://dx.doi.org/10.1016/j.gecco.2017.05.003.

Tosi, G, Chirichella, R, Zibordi, F, Mustoni, A, Giovannini, R, Groff, C, Zanin, M, Apollonio, M. 2015. Brown bear reintroduction in the Southern Alps: To what extent are expectations being met? *Journal for Nature Conservation* **26**: 9–19. DOI: http://dx.doi.org/10.1016/j.jnc.2015.03.007.

Treves, A, Artelle, KA, Darimont, CT, Parsons, DR. 2017. Mismeasured mortality: Correcting estimates of wolf poaching in the United States. *Journal of Mammalogy* **98**(5): 1256–1264. DOI: http://dx.doi.org/10.1093/jmammal/gyx052.

Treves, A, Santiago-Ávila, FJ, Lynn, WS. 2019. Just preservation. *Biological Conservation* **229**: 134–141. DOI: http://dx.doi.org/10.1016/j.biocon.2018.11.018.

Tuan, Y-F. 1979. *Landscapes of fear*. Minneapolis, MN: University of Minnesota Press.

Tuck, E, Yang, KW. 2012. Decolonization is not a metaphor. *Decolonization: Indigeneity, Education & Society* **1**(1). Available at https://jps.library.utoronto.ca/index.php/des/article/view/18630. Accessed 24 November 2020.

U.S. Department of the Interior. 2020 Jul 7. Secretary Bernhardt listens to local concerns and scraps plans to reintroduce Grizzly bears into the North Cascades ecosystem. Available at https://www.doi.gov/pressreleases/secretary-bernhardt-listens-local-concerns-and-scraps-plans-reintroduce-grizzly-bears. Accessed 26 September 2021.

van Eeden, LM, Bogezi, C, Leng, D, Marzluff, JM, Wirsing, AJ, Rabotyagov, S. 2021. Public willingness to pay for gray wolf conservation that could support a rancher-led wolf-livestock coexistence program. *Biological Conservation* **260**: 109226. DOI: http://dx.doi.org/10.1016/j.biocon.2021.109226.

von Essen, E, Hansen, HP, Nordström Källström, H, Peterson, MN, Peterson, TR. 2014. Deconstructing the poaching phenomenon: A review of typologies for understanding Illegal hunting. *CRIMIN* **54**(4): 632–651. DOI: http://dx.doi.org/10.1093/bjc/azu022.

von Hardenberg, WG. 2015. The bears are back! The LIFE Ursus translocation project in Trentino. *Arcadia*. Available at https://www.environmentandsociety.org/arcadia/bears-are-back-life-ursus-translocation-project-trentino.

Vucetich, JA, Burnham, D, Macdonald, EA, Bruskotter, JT, Marchini, S, Zimmermann, A, Macdonald, DW. 2018. Just conservation: What is it and should we pursue it? *Biological Conservation* **221**: 23–33. DOI: http://dx.doi.org/10.1016/j.biocon.2018.02.022.

Walker, G. 2012. *Environmental justice: Concepts, evidence and politics*. London, UK: Routledge.

Wallach, AD, Ripple, WJ, Carroll, SP. 2015. Novel trophic cascades: Apex predators enable coexistence. *Trends in Ecology & Evolution* **30**(3): 146–153. DOI: http://dx.doi.org/10.1016/j.tree.2015.01.003.

Ward, K. 2019. For wilderness or wildness? Decolonising rewilding, in Pettorelli, N, Durant, SM, du Toit, JT eds., *Rewilding*. Cambridge, UK: Cambridge University Press: 34–54.

Whyte, K. 2018. Settler colonialism, ecology, and environmental injustice. *Environment and Society* **9**: 125–144.

Widman, M, Elofsson, K. 2018. Costs of livestock depredation by large carnivores in Sweden 2001 to 2013. *Ecological Economics* **143**: 188–198. DOI: http://dx.doi.org/10.1016/j.ecolecon.2017.07.008.

Willette, M, Norgaard, K, Reed, R. 2016. You got to have fish: Families, environmental decline and cultural reproduction. *Families, Relationships and Societies* **5**(3): 375–392. DOI: http://dx.doi.org/10.1332/204674316X14758424912055.

Wilson, EO. 2016. *Half-earth: Our planet's fight for life*. New York, NY: Liveright/W. W. Norton & Company.

Wolf, C, Ripple, WJ. 2017. Range contractions of the world's large carnivores. *Royal Society Open Science* **4**(7): 170052. DOI: http://dx.doi.org/10.1098/rsos.170052.

Wolf, C, Ripple, WJ. 2018. Rewilding the world's large carnivores. *Royal Society Open Science* **5**(3): 172235. DOI: http://dx.doi.org/10.1098/rsos.172235.

Woodroffe, R. 2000. Predators and people: Using human densities to interpret declines of large carnivores. *Animal Conservation* **3**(2): 165–173. DOI: http://dx.doi.org/10.1111/j.1469-1795.2000.tb00241.x.

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