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THEMATIC ESSAY

Ecological Critiques of Exclusionary Conservation

Asmita Kabra*

> The conquest of the earth, which mostly means the taking it away from those who have a different complexion or slightly flatter noses than ourselves, is not a pretty thing when you look into it too much. What redeems it is the idea only. An idea at the back of it; not a sentimental pretence but an idea; and an unselfish belief in the idea—something you can set up, and bow down before, and offer a sacrifice to.
> (Joseph Conrad, 1899, *The Heart of Darkness*, Blackwood's Magazine)

1. INTRODUCTION

The International Union for Conservation of Nature (IUCN) defines a protected area as "a clearly defined geographical space, recognized, dedicated and managed through legal or other effective means to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (IUCN n.d.). The IUCN protected area categorization varies based on specific management objectives, and includes strict reserves, wilderness areas, national parks and protected areas with sustainable use of natural resources, among others (IUCN n.d.).[1] The creation of protected areas (PA) involves placing strict restrictions on its use by humans (especially local people) in order to enable non-human species to flourish without human disturbances. In the most extreme cases, the creation of these reserves involves evicting the human populations living in a biodiversity-rich landscape, and creating institutional mechanisms for preventing their access to the area. This strategy is commonly referred to as "fortress conservation" (Brockington 2002), and in recent decades it has

* Professor, School of Human Ecology, Ambedkar University Delhi, Lothian Road, Kashmere Gate, Delhi-110006; asmita@aud.ac.in

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[1] Various national governments use other legal and management categories, which can be mapped with varying degrees of ease against the IUCN categories.

become a widespread driver of displacement of human populations across Africa, Asia and Latin America (Dowie 2009).

The rate at which forest land is being set aside under protection regimes has been accelerating rapidly in the twenty-first century (WWF 2004). In view of global environmental challenges like species extinction and climate change, the drive to create protected areas has gained widespread acceptance among governments and civil society across the world. The consensus around the concept of expanding protected areas among national governments spans ideologies and continents, as can be seen from the diverse categories of nations that are signatories to the Aichi Biodiversity Targets. As a part of these commitments, expansion of the network of protected areas to 17 per cent of terrestrial areas and inland waters and 10 per cent of marine areas by 2020 is an accepted goal for almost all national governments (UNEP-CBD 2010).

Fortress conservation and the resultant population displacement and their loss of access to natural resources has attracted strong criticisms for causing severe impoverishment among millions of poor, indigenous rural people who depend on land-based livelihoods (Adams *et al.* 2004; Brockington and Igoe 2006; Cernea and Schmidt-Soltau 2006; Dowie 2009). At the same time, conservationists stress the fact that the loss of species diversity is accelerating and a large number of protected areas notified by national governments continue to remain "paper parks", whose actual contribution to biodiversity conservation has been significantly below expectations (Gaston, Jackson, Cantú-Salazar, and Cruz-Piñón 2008; Juffe-Bignoli *et al.* 2014; WWF 2004). This evidence is often deployed to argue for bigger and better managed protected areas (Karanth 2018; WWF 2004).

Exclusionary conservation and human displacement from protected areas thus presents a moral dilemma, as in many cases it calls for a choice between two "big ideas" or moral imperatives — conservation and social justice. Since exclusionary conservation is carried out to support the moral imperative of protecting biodiversity, it enjoys support from a diverse range of actors like the state, conservation agencies, corporate entities, NGOs and civil society groups (Hayes and Ostrom 2005). On the other hand, by generating widespread social and economic distress for poor, marginal and indigenous people dependent on forests, fisheries or pastures, it simultaneously elicits trenchant critique from supporters of social justice and human rights.

More often than not, the critiques of this strategy of conservation through creation of "inviolate" protected areas are positioned as contestations between the natural sciences and the social sciences, or between

conservationists and human-rights activists (Agrawal and Redford 2009; Rangarajan and Shahabuddin 2010). In this article, I argue that the "conservation versus human rights" binary tends to obliterate important debates *within* the ecological sciences over the theoretical foundations of exclusionary conservation.[2] I highlight the internal critiques within the ecological sciences of the advisability of creating inviolate protected areas as the best strategy for "doing" conservation, especially in the present context of large-scale species extinction, climate change, urbanization and growth of human population. It must be clarified that while interrogating the ecological justifications for creating "inviolate" protected areas, this paper strongly supports the imperative of protecting biodiversity-rich areas from large-scale destructive activities like mining or establishment of cities or industries. Given the urgency of finding workable conservation solutions in the Anthropocene, an analysis of multiple discourses within the ecological sciences can inform more robust, evidence-backed and effective conservation policies among a wider set of stakeholders.

2. THE ECOLOGICAL RATIONALE FOR EXCLUSIONARY CONSERVATION

The creation of protected areas was originally informed by the idea of nature as "wilderness" or pristine areas, untouched by human influences[3]. Starting with the creation of the first protected areas in the USA, strong ethical arguments were made by influential conservation biologists and ecologists in favour of preserving natural landscapes and biodiversity for their inherent value (Leopold 1970; Naess and Rothenberg 1990; Soule and Wilcox 1980). With the growth of conservation biology as a field-based and practice-oriented discipline, these arguments gained further traction and scientific support. Over the years, the arguments for exclusionary conservation have become more anthropocentric, highlighting the importance of "inviolate" protected areas for human survival and focusing on the cultural, economic, aesthetic and intrinsic values of pristine nature for humans(Brandon, Turner, Schroth, and Bakarr 2008). The Millennium Ecosystem Assessment undertaken in 2005 brought to the forefront the discourse of ecosystem services and the critical role played by wilderness

[2] Interestingly, not all social science critiques of exclusionary conservation and human displacement from protected areas question its ecological necessity (see, for instance, Cernea and Soltau-Schmidt, 2006)

[3] It may be noted that the idea of setting aside land and minimising human disturbances/human use predates the 20th century conservation discourse, and was driven by diverse concerns including hunting (game reserves) and religious/cultural practices (sacred groves), to name a few.

areas in human survival, and raised the issue from the local to the planetary scale (Millennium Ecosystem Assessment 2005). In recent years, there has been a renewed focus on conservation of nature for its intrinsic value, especially in response to the intellectual challenges posed by the "new conservation" movement (Ehrlich 2002; Soule 2013; Terborgh, van Schaik, Davenport, and Rao 2002). This debate is addressed further in the concluding section.

To translate the wilderness ethic into practical action on the ground, the creation and preservation of protected areas emerged as the most commonly accepted global strategy (Hayes and Ostrom 2005). Today, there are more than 100,000 designated protected areas in the world, with more than 10 per cent of the terrestrial area of the planet under some regime of protection (Hayes and Ostrom 2005). A wide body of research in ecological sciences and conservation biology justifies exclusionary conservation by demonstrating that human interference is detrimental to particular species of endangered flora and fauna, or to overall conservation of biodiversity in different ecosystems. It is considered almost axiomatic in the PA-based conservation doctrine that "a principal objective of protected areas is to conserve nature by eliminating, minimizing, or reducing human pressures and threats operating within their boundaries" (Schulze *et al.* 2017). In an influential review paper, Watson *et al.* (2016) support this axiom, but simultaneously argue for more "ecologically sensible" goal-setting to monitor the conservation efficacy of protected areas[4] (Watson *et al.* 2016).

The conservation agenda in the global South is largely driven by State (and to a much lesser extent non-State) efforts to protect charismatic "flagship" mega-fauna species. Not surprisingly, therefore, the dominant orthodoxy in conservation research is focused on minimising human presence and creating "pristine" or "inviolate" areas. In India, for instance, scholarship on wildlife conservation by the topmost conservation research institutions focuses predominantly on charismatic endangered species like the lion, the tiger and the elephant, and has only recently begun to engage intensively with other species. The assumptions and findings of these studies should not be extrapolated uncritically to other species, scales and landscapes, but this point is often missed by the dominant orthodoxy of exclusionary conservation.

A study of 150 potential tiger habitats in India concludes that better management of protected areas and their surrounding landscapes is crucial

[4]In particular, the authors make a strong case for clearly defined outcome-based goals and not just area-based goals like those set out in Target 11 of the CBD's 2020 Strategic Plan for Biodiversity.

for increasing the capacity of these reserves to support an enhanced tiger population. The study identifies three parameters of good management – funding, staff support and enforcement - the last presumably refers to strict restrictions on human use of protected areas (Ranganathan, Chan, Karanth, and Smith 2008). Another landmark study identifies habitat fragmentation as a key threat to survival of tigers in the wild, and attributes fragmentation mainly to agriculture, fodder and other extraction, presumably by the local population in the neighbouring "human-dominated" landscapes. The authors argue that the creation of viable forest "corridors" between fragmented landscapes is key to survival of tigers (Seidensticker, Christie, and Jackson 1999). Similarly, a study on the threats to tiger population in the Rajaji-Corbett Tiger Conservation Unit in the Indian *terai* region identifies habitat fragmentation as the key variable. It views large-scale monoculture plantations, small-scale local livestock holdings and poaching as the main "biotic pressures", and suggests relocation of local villages as one of the key "management" strategies for improving chances of tiger survival in the landscape (Johnsingh and Negi 2003; Karanth 2018). A study on herbivore abundance conducted by the Wildlife Institute of India in 2005 (David *et al.* 2005) is cited to argue that tigers have gone locally extinct in the Kailadevi wildlife sanctuary despite heavy investments in participatory conservation.[5] The author uses the evocative phrase "empty forests" (signifying depleted population of herbivores) to conflate the absence of tigers in Kailadevi wildlife sanctuary with wholesale failure of conservation. He further argues that since participatory conservation strategies failed to reduce livestock numbers in Sariska, Kailadevi and Ranthambore, the way forward for conservation is to relocate the remaining human settlements outside these protected areas (Reddy 2008).[6]

An empirical assessment of the impact of local use on forest degradation and biodiversity across five protected areas in India examined the relationship between forest degradation and (a) human population density; (b) intensity of agriculture; and (c) dependence on wage labour. The results indicate that "extraction pressure on forests was positively associated with the availability of wage labour and negatively with the proportion of

[5] Interestingly, while documenting in passing that the Ranthambore Tiger Reserve (of which Kailadevi is a part) receives as many as 100,000 tourists each year, the author identifies livestock pressures from the human population in and around the PA as the main source of disturbance. It may also be noted that the notion of "participatory" conservation in protected areas like Sariska and Kailadevi needs to be unpacked carefully, as it often hides resource politics and contestations within the local community.

[6] It may be noted, however, that while proposing conservation displacement as the preferred solution, Reddy (ibid.) does make a strong plea for proper compensation and livelihood restoration of the displaced people.

agricultural households". The authors attribute this counter-intuitive result to the inadequacy of official data (*State of the Forests* Reports) to measure forest degradation in protected areas (Davidar *et al.* 2010). Alternative interpretations are simply not considered, and the authors ignore a wide body of literature (for instance, Wunder *et al.* 2014; Angelsen *et al.* 2014) that explores diverse linkages of local livelihoods with forest dependence.

From the above discussion, it emerges clearly that the argument for PA-based fortress conservation has two essential premises. First, biodiversity is believed to thrive in "natural" landscapes, and use of these landscapes by humans is considered detrimental to biodiversity (Hayes and Ostrom 2005). It is assumed that when left "undisturbed", different elements of natural ecosystem tend to move towards a fine equilibrium, and human interference in these systems creates imbalance due to resource competition (Ricklefs 2008). Second, it is believed that protection of large tracts of land will provide habitat connectivity, which is important for conservation (*ibid.*). Use of these landscapes by humans is believed to create fragmentation, which induces species loss (Terborgh 1992). Based on these premises, the dominant orthodoxy of fortress conservation proposes that biodiversity should be conserved by creating large and interconnected protected areas which are either completely "inviolate", or place serious restrictions on human use. The incremental ecological gains from reduction of local human disturbances are believed to be high enough to justify the social and economic costs of exclusionary conservation, so long as these costs are adequately compensated for[7].The ecological critiques that I set out in the next section often question precisely these assumptions that underlie the dominant orthodoxy of exclusionary conservation.

[7] It must be pointed out that social scientists and ecologists working within the framework of fortress conservation recognise the inherent social justice concerns associated with the exclusion of humans from protected areas. They seek to address these concerns by calling for more community participation, increased financial outlays and stronger policy safeguards to offset loss of access to PA resources. They believe that by doing so, fortress conservation can craft a win-win situation that can serve simultaneously the moral imperatives of conservation and social justice (Agrawal and Redford 2009; Cernea 2006; Harihar, Ghosh-Harihar, and MacMillan 2014). The political ecology critiques of these assumptions are beyond the scope of this article.

3. ECOLOGICAL CRITIQUES OF EXCLUSIONARY PA-BASED CONSERVATION

An important category of ecological critiques of exclusionary conservation is methodological in nature, and cite the absence of robust evidence as a major concern. An important review article shows that till recently very little evidence was available about the ecological effectiveness and social impacts of PA-based conservation. The authors show that in recent years, the importance of evidence-backed conservation is being realized, and the limitations of earlier methods of estimating PA effectiveness are being challenged (Ferraro and Pressey 2015). They make a strong plea for replacing before-and-after-PA or with-or-without-PA study designs by rigorous counterfactual-based study designs. They also plead for deployment of more sophisticated tools and methods and better datasets for proper impact evaluation of protected areas, which is emerging as an important multidisciplinary area of study in its own right.

Given the dominant orthodoxy of exclusionary conservation, the ecological gains accruing from protected areas are often *assumed* rather than *demonstrated*. Robust empirical evidence that human use of protected areas is detrimental to biodiversity, and that significant incremental gains can be made by restricting people's access to protected areas, is both scarce and patchy (Agrawal and Redford 2009; Mcelwee 2013; Persha, Fischer, Chhatre, Agrawal, and Benson 2010). Recent work on impact evaluation of protected areas has begun to address this lacuna. Several studies have shown, using techniques like remote-sensing, GIS and on-ground ecological surveys, that some positive conservation outcomes can be obtained through restriction of human use (Brockington 2002; Hall *et al.* 2014).[8] However, the generalizability of these results across space, time, ecosystems and species is contested by many scholars. An alternative view is that protected areas end up serving other, less relevant policy targets and operational objectives instead of the main goal of avoiding biodiversity loss. (Pressey, Visconti, and Ferraro 2015).Some of the most significant threats to terrestrial ecosystems such as unsustainable hunting and disturbances from recreational activities are not amenable to monitoring by methods like remote-sensing, and require collection of robust in-situ threat data (Schulze *et al.* 2017). In an important contribution to the debates on human

[8] The positive *social* contribution of PAs has been highlighted by several studies, arguing that PAs provide important ecosystem services for humans, and are also important buffers during disasters, droughts and other calamities (Badola and Hussain 2005; Corbera, Kosoy, and Martínez Tuna 2007; Verma *et al.* 2017). However, this article focuses mainly on the ecological outcomes of PAs and the ecological debates about the efficacy of PAs in meeting conservation goals and targets.

disturbance in protected areas, Vaidyanathan *et al.* (2010) highlight the importance of triangulating ground-based and remotely-assessed evaluations of ecologically critical areas. They show that impacts "above" the canopy are influenced by "climatic regimes, anthropogenic disturbances, management practices, and their interactions", while spatial variability "below" the canopy is better explained by human "disturbance".

Other ecological critiques of exclusionary conservation have emerged from research at fine spatial scales over longer periods of time. For instance, while conservation research on tigers usually advocates the creation of inviolate protected areas, recent work on other mega-carnivores like lions, leopards and snow leopards and avifauna like the *sarus* crane indicates that these species may be able to adapt well and survive in moderately or heavily used human-dominated landscapes too (Banerjee, Jhala, Chauhan, and Dave 2013; Bhatnagar 2009; Odden, Athreya, Rattan, and Linnell 2014). A note of caution offered here is that *co-occurrence* of humans and large carnivores on the same landscape should not be conflated with *co-existence*, and the fact of mega-carnivores adapting to human presence is not conclusive proof that human presence is always benign (Harihar *et al.* 2013). At the same time, conservationists need to engage critically with site-specific research and overview studies that demonstrate that certain types of PA resource utilization by local people may in fact be associated with high species diversity (Persha *et al.* 2010). Certain types of localized human interventions like livestock grazing and fire management might actually be critical for maintaining certain types of landscapes (Barthel, Colding, Elmqvist, and Folke 2005; Carter, Shrestha, Karki, Pradhan, and Liu 2012; Jurskis 2018; Middleton 2013; Saberwal 1996).

A recent book on anthropogenic grasslands dominated by *Imperata cylindrica* in Southeast Asia highlights the critical agency of humans in the maintenance of such grasslands, and cautions against the "forest fundamentalism" of orthodox ecological scholarship (Dove and Kammen 2015). Combining modern scientific ecological knowledge with indigenous and local knowledge systems about sustainable extraction, grazing, and fire-management might result in improved management of protected areas (Sundaram, Krishnan, Hiremath, and Joseph 2012). In the context of rivers and associated freshwater habitats, local resource decline often emanates not just from local over-harvesting but from extra-local factors like modification of river flow due to dams, boat traffic and urbanization-induced pollution. Therefore, exclusionary riverine PA-based conservation strategies may not be successful. Robust evidence-backed alternatives strategies may need to be based on co-existence of carefully managed human use of riverine ecosystems with conservation of charismatic species

like crocodiles, otters and river dolphins (Kelkar, Krishnaswamy, Choudhary, and Sutaria 2010). Ecological research has begun to accept the "historical structuring role of people in natural landscapes" (Persha *et al.* 2010). The nature and scale of human activities as well as their impact on particular species needs to be disaggregated and could fall into several categories like "joint wins, losses and trade-offs" (Persha, Agrawal, and Chhatre 2011). An important study in India show the limits of flagship species based conservation planning through a field study in the biodiversity rich Western Ghats. The authors demonstrate that "reliance on flagship species for conservation planning can both underestimate and overestimate the ability of other species to persist in multiple-use landscapes; protecting flagship species would only protect species with similar habitat preferences"(Gangadharan, Vaidyanathan, and St. Clair 2016).

Fortress conservation strategies that involve displacement of human populations outside protected areas often entail further deforestation to resettle the people outside park boundaries, creating a cascade effect. Site-specific research on conservation displacement shows that (a) preparation of resettlement sites can involve further ecological loss, and (b) resettlement may not necessarily extinguish local people's access to forest resources. To capture these effects, research design of impact evaluation studies needs to expand beyond park boundaries to include landscape-level variables, and also go deeper into inter-household power dynamics that allow elite capture (Milgroom, Giller, and Leeuwis 2014; Nagendra, Pareeth, and Ghate 2006). The literature on exclusionary conservation often carries the implicit assumption that reduced human "disturbance" will result in the protected landscape returning to an "original" state of wilderness. Research in restoration ecology challenges this simplistic notion and demonstrates that reduced human disturbance does not lead to automatic recovery of the landscape to support conservation of flagship species or vulnerable ecosystems. Long-term ecological management and sustained funding are required to control invasive species and to ensure that other human users do not take over the "vacated" landscape (Babu, Love, and Babu 2009; Sahu and Singh 2008). For such "conservation-reliant species", the continued management efforts and costs of restoring and maintaining landscapes are understated in conservation planning (Scott, Goble, Haines, Wiens, and Neel 2010). These long-term costs need to be recognized explicitly and weighed against alternative conservation strategies. An important critique of "inviolate" wilderness areas emerges from ecological studies of "maintenance-dependent species", or threatened species "whose survival depends on humans actively managing land, such as to control invasive exotic vegetation or reintroduce periodic, low-intensity burning

(such as) formerly practiced by Native Americans"(Novick 2013). For such species, the most important survival risk emanates not from human-induced "disturbances" to the ecosystem, but from land-use policies that restrict active management by human (Novick 2013; Wilcove and Chen 2008).

The rate and pattern of resource extraction of diverse groups of people living within PA boundaries and on its periphery are variable, and local use has become increasingly linked to extra-local resource flows and global commodity chains (Madhusudan 2005; Thompson and Homewood 2002). For instance, conservation research on species that are extracted by local people for personal consumption or sale as non-timber forest products (NTFP) provides important insights into the complex linkages between biodiversity, poverty and local livelihoods. It has been argued that "the ecological effects of harvesting NTFP can be varied, and the impacts can range from the level of genes to individuals and populations, communities and ecosystems, all of which have important consequences" (Hiremath 2004). Robust research on the ecological impacts of harvesting of NTFP is alarmingly scant, but a review of available work indicates that excessive harvesting of NTFP, combined with associated activities like fire and grazing, may not be compatible with conservation outcomes. Several studies indicate the importance of identifying thresholds and tipping points beyond which conservation and livelihood outcomes tend to become incompatible (Ticktin 2004). The detrimental ecological impacts of large-scale, irreversible land use change for activities like mining or reservoirs are well-known and extensively documented. However, in the highly globalised world today, it may be difficult to demarcate the boundaries between artisanal, localised and sustainable resource use, and invasive and large-scale commercial extraction. Oversimplifications about the inherent sustainability of multiple-use areas and co-existence with human use are understandably treated with misgivings by conservationists.

Since the late 1990s, an important new debate on exclusionary versus mixed-use landscapes has emerged from ecologists studying the links between agricultural expansion and biodiversity conservation, especially in the context of growing global demand for food (Adams 2012; McLaughlin 2011). This is referred to as the "share-versus spare" debate. Proponents of land-sparing argue in favour of segregating landscapes for exclusionary conservation in protected areas and intensive crop production on farms. They make the case that global food security and conservation of biodiversity can be achieved simultaneously by expansion of the network of protected areas, along with promotion of scientific agriculture to enhance crop-yield on already cultivated land (Fischer *et al.* 2008; Foley *et al.* 2011;

Green, Cornell, Scharlemann, and Balmford 2005). They provide evidence that protected lands are associated with higher biodiversity values than cultivated lands, and that the number of species negatively affected by cultivation is higher than the number of species that benefit from it. On the other hand, those in favour of land-sharing argue for promoting hybrid landscapes that allow for biodiversity-friendly agriculture. They provide evidence that several species tend to do better on cultivated landscapes than in strictly protected areas, and that agro-ecosystems generate significant ecosystem services which are ignored in the land-sparing literature (Perfecto and Vandermeer 2010; Tscharntke *et al.* 2012). They critique the land-sparing strategy on the ground that it fails to take into account issues of scale and the complexity of smallholder agriculture in the global South.

4. THE WAY FORWARD

Protagonists of the "new conservation" movement within the ecological sciences argue that human-dominated landscapes, harbour significant amounts of biodiversity and can meet the combined needs of conservation and human well-being more effectively than PAs in the Anthropocene (Lalasz, Kareiva and Marvier 2011). Although some ecologists have responded to the "new conservation" critiques by calling for a return to ecocentrism, or promoting conservation for its intrinsic value (Piccolo, Washington, Kopnina and Taylor 2017), others have argued for taking into account local complexity, site-specificity, tenure regimes, institutions for governance, and the need of diverse landscapes to reconcile local livelihoods with conservation imperatives (Adams 2012; Dove and Kammen 2015; Sandbrook 2015).

Thus a wide body of scholars working within ecology and conservation biology frameworks, as well as many conservation practitioners, are now engaged in developing multiple approaches to conservation (Sandbrook, Scales, Vira, and Adams 2011). As an example, share-versus-spare debate has encouraged meaningful debate between opponents (Phalan, Balmford, and Green 2012; Phalan, Onial, Balmford, and Green 2011). Similarly, an interesting revisionist strand in the exclusionary conservation literature attempts to integrate limited human activity into conservation planning by arguing for expanding the concept of buffer zones in a landscape based approach to conservation such as Zones of Interaction (ZOI) between strictly protected and human-dominated areas (DeFries *et al.* 2010). Such contributions carry forward the intellectual tradition of the "sustainable landscapes" approach (Robinson 1993) by taking into account landscape

level flow of nutrients, resources, energy and water, into PA-level conservation planning.

The ecological debates outlined here reinforce the importance of evidence-backed, site-specific and interdisciplinary conservation planning, as opposed to an unquestioned belief in the magic bullet of exclusionary or fortress conservation. The nature and scale of human activities in biodiversity-rich landscapes is critical for making conclusions regarding conflict, co-habitation and co-existence of humans with other species. Ignoring these crucial ecological concerns and simplistically equating all human use with "disturbance" is contested by many ecologists, and not just by social scientists. These ecological critiques make the case for evidence-backed conservation strategies, with clearly defined and measurable management objectives for protected areas. Thus there is a strong case for developing protocols for monitoring and impact evaluation of protected area effectiveness, and for avoiding "evidence complacency" (Sutherland and Wordley 2017).

Conservation through government-managed protected areas has received far more attention than other institutional mechanisms, despite the fact that over 370 million hectares of forests globally are under different types of community-based management regimes (Hayes and Ostrom 2005; Måren, Bhattarai, and Chaudhary 2013). Conservation outcomes, biodiversity values, and relative costs in such regimes need to be understood through rigorous research and compared with state-managed protected areas.

Merely an "unselfish belief" in the idea of either exclusionary or inclusive conservation is clearly not enough to address the stark conservation challenges facing us in the twenty-first century.

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