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Delineating the environmental justice implications of an experimental cheetah introduction project in India

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Project Cheetah in Kuno National Park was initiated to establish a population of African cheetahs in India due to the Asiatic subspecies' extinction in the country since the 1950s. The project has received criticism from international conservationists for lacking conservation and scientific merit. Conservationists, particularly from India and South Africa, have raised concerns regarding the ecological criteria guiding its decision-making and concerns regarding a lack of scientific evidence in addition to potential political motivations. The concerns raised by the international community suggest that the project may not solely focus on conserving the African cheetah, which is classified as "Vulnerable" by the International Union for Conservation of Nature (IUCN), but could be guided by other agendas outside of conservation. Several cheetahs have died in the project's couple of years, raising ethical concerns regarding the cheetahs' welfare and high mortality rates demonstrated thus far, in addition to the perceived unjust social impacts on local stakeholders. In this perspective piece, we use Project Cheetah as a case study to exemplify broader issues applicable to rewilding and restoration projects that necessitate attention by proponents and authorities responsible for issuing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) import and export permits.

KEYWORDS

cheetah relocations, environmental justice, ecological justice, legal wildlife trade, evidence-based decision-making, African cheetah, India

Introduction

Project Cheetah has so far introduced 20 African cheetahs (*Acinonyx jubatus*), eight from Namibia in September 2022 and 12 from South Africa in February 2023, into Kuno National Park (KNP), Madhya Pradesh, India (Chellam, 2023; Qureshi et al., 2024). The project aims to establish a viable population of African cheetahs since the Asiatic subspecies went extinct in India in the 1950s (Rai et al., 2020). Most cheetahs were released into free-

ranging habitats, except for six adults remaining in soft-release bomas (SRBs). However, in July–August 2023, all free-roaming cheetahs were returned to the SRBs for health reasons (Qureshi et al., 2024). To date, 17 cubs have been born in SRBs; however, the project has experienced high mortality rates (40.0% adult mortality and 29.4% cub mortality) (Qureshi et al., 2024). The remaining 12 adult cheetahs and 12 cubs live in captivity, and currently, no cheetahs exist in KNP's extensive wild systems (Chellam, 2024). However, in December 2024 Indian media reported the release of a male coalition of two cheetahs (<https://theprint.in/india/multiple-sightings-of-cheetah-vayu-roaming-the-streets-in-mps-sheopur-days-after-release-from-kuno/2418973/>). It is projected that establishing a viable cheetah population could take 30–40 years, with an average of 12 cheetahs imported from southern Africa every year to support population growth and account for high mortality (Marnewick et al., 2023; Ranjitsinh and Jhala, 2010).

The project has been criticized for lacking conservation and scientific merit specifically regarding the ecological criteria guiding its decision-making (Gopaldaswamy et al., 2022; Singh, 2022; Wachter et al., 2023) and doubts about its scientific evidence and potential political motivations (Gopaldaswamy et al., 2022; Shahabuddin, 2015). Criticisms suggest the project may not solely focus on the conservation of an International Union for Conservation of Nature (IUCN) “Vulnerable” classified species but could involve other agendas (Shahabuddin, 2015), including an alleged request from Namibia that India withdraw its ban on ivory trade (Perinchery, 2022). Furthermore, ethical concerns have been raised regarding the cheetahs' welfare and high mortality rates (Chellam, 2023; Marnewick et al., 2023) and the perceived unjust social impacts on local stakeholders (Kabra, 2003; Mahalwal and Kabra, 2023), including a lack of consultation and transparency (Chellam, 2023). We argue that Project Cheetah exemplifies broader issues applicable to rewilding and restoration projects that necessitate attention by proponents and authorities responsible for issuing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) import and export permits. The high costs of this experimental project are estimated between USD 50 and 60 million, which arguably may be utilized for *in situ* conservation (Marnewick et al., 2023) or social upliftment.

Since the Kunming-Montreal Global Biodiversity Framework was established, there has been a global push toward equity and justice in protecting biodiversity. The framework refers to the disproportionate effects of conservation initiatives and biodiversity loss on marginalized communities and indigenous people. Additionally, there is a significant movement to recognize injustices committed against non-human species (Winter and Schlosberg, 2023), including animals in the global wildlife trade (Afana, 2022; Collard, 2013; Wyatt et al., 2021). It is well-established that the illegal trade is detrimental to animals' welfare (Sollund, 2013; Wyatt et al., 2021), but more attention is required to recognizing injustices in the legal trade (Baker et al., 2013) along the full supply chain from source to destination. In the case of Project Cheetah, alarms have been raised that animals exported from Southern Africa to India have experienced unjust treatment, bringing attention to compromised animal welfare, in addition to the unjust social implications for local and indigenous communities surrounding KNP.

We demonstrate that translocations of African cheetahs to India for restoration purposes have not adequately accounted for ethical considerations and face several social and species justice concerns. The lack of research on animal welfare in the legal trade of wild animals needs to be addressed (Wyatt et al., 2021), and we call on conservationists to give comprehensive consideration to the social and animal welfare implications of translocation work. The cheetah translocations to India present further challenges, including differences in climate, prey species, and habitat that African cheetahs need to adapt to (Marnewick et al., 2023; Singh, 2022) and the potential human–wildlife conflict for communities not accustomed to the presence of cheetahs (Gopaldaswamy et al., 2022; Marnewick et al., 2023). We, therefore, assess the social and species justice considerations in not only relocating human communities from KNP to accommodate cheetahs in an experimental relocation attempt but also intercontinental species translocation.

We analyze these considerations through distributive, procedural, and recognition justice lenses (Schlosberg, 2007; Lenzi et al., 2023; Schaafsma et al., 2023), which have been applied to marginalized people but may also be applied to non-human species (Martin et al., 2016; Schlosberg, 2007, 2014), with the inclusion of recognizing dignity, values, and identities (Martin et al., 2016). We reviewed reports prepared for the translocation of Asiatic lions and African cheetahs to KNP. We discuss the implications of relocating local communities and social justice issues in conservation work, both generally and specific to KNP's local communities. We use these inputs to consider ethical and justice implications for translocated animals and relocated peoples in terms of 1) methodological considerations for decision-making and 2) normative considerations regarding the project's justification. We conclude by relating this case to the broader issue of rewilding and restoration work, which have become important conservation strategies globally.

Justice and methodological concerns

KNP is a biodiverse region of 784 km² situated in the Central Indian Vindhyan Hills and was initially selected for the reintroduction of Asiatic lions, a long-term translocation program that was due to commence in 2008 (Johnsingh et al., 2007) and, more recently, as the relocation site for African cheetahs. Between 1999 and 2001, 5,000 people from 24 villages were displaced for planned Asiatic lion reintroductions (Sharma, 2003), which did not occur as the Gujarat state government was reluctant to release lions to another state (Shahabuddin, 2015; Chellam, 2023; Gopaldaswamy et al., 2022). Subsequent discussions among Indian government officials, state forest departments, and researchers led to the decision to introduce African cheetahs instead, pending a report on potential introduction sites, including KNP, requested by the Ministry of Environment and Forests (Ranjitsinh and Jhala, 2010).

Evaluating the 2010 report's methodology, justice shortcomings become evident. Surveys were conducted at prospective sites to assess factors including “economic well-being”, “sources of livelihood”, and “perceptions about wildlife”. No questions were posed to respondents; instead, a well-being index was calculated using visual assessments of interviewees' age, sex, attire condition,

quality/quantity of ornaments/wristwatches, and transportation (Ranjitsinh and Jhala, 2010). These subjective assessments were weighted to calculate an index determining which populations may accept compensation. This disparity led to distributive injustice where socio-economic impacts, distribution of benefits, and burdens of conservation efforts are markedly unequal (Bennett et al., 2017; Mkono, 2019). This could have been mitigated by recognizing diverse values, understanding potential inequitable impacts, and focusing on historically burdened groups.

The report neglected social issues like attitudes toward relocation, exotic species introduction, project acceptance, and perceived risks and benefits. Instead, it focused on identifying economically and socially disadvantaged targets for monetary incentives. Statements like, “The people residing in the forested areas outside KNP are poor and backward and a good compensation package ... would be irresistible” (p. 96) suggest that they were deemed susceptible to one-off compensation. This lack of community engagement can lead to disenfranchisement and exacerbate existing power imbalances (Kashwan, 2016; Anderson et al., 2022). Such language raises concerns regarding the ethics and motivations of research potentially tailored to support displacing local communities, leading to unjust outcomes, such as “conservation refugees” (Hoefle, 2020; Snodgrass et al., 2016). These practices highlight procedural injustice, as the representation and inclusion of relevant actors are overlooked during the valuation and execution phases. Addressing this issue involves meticulous assessment of the degree to which affected communities and stakeholders with diverse worldviews, especially marginalized groups, are engaged in the planning, execution, and monitoring of relocation projects (McLean and Stræde, 2003). It is crucial to establish institutionalized mechanisms for community feedback and grievance redressal, fostering equitable and sustainable relocation processes.

Background studies regarding the human costs/benefits could draw upon established tools, such as Living Standards Measurement Study, encompassing the dependence on natural resources (Burdge, 1987; Grosh and Glewwe, 1995) to have a holistic understanding of what was at stake in these decisions. Furthermore, greater emphasis could be placed on non-marketed products and contextual information (Angelsen et al., 2012) and on examining livelihood resilience post-relocations (Quandt, 2018). Contextual information can be determined by understanding cultural, religious, traditional, demographic, socio-political, and governmental aspects of a landscape (Agrawal and Angelsen, 2009; Cundill et al., 2012) that go beyond relying on quantitative surveys alone (Milton, 1985; Cundill et al., 2012).

A recent report used in a case adjudicated by the Indian Supreme Court failed to conduct any social surveys (Centre for Environmental Law vs Union of India & Ors, 1995; Supreme Court allows introduction of African Cheetah in India, 2020; Jhala et al., 2021). The report suggested a “rapid assessment” of potential sites surveyed in 2010 within a few days; the methodology for assessing “Anthropogenic Activities” was unclear; some sites discussed only linear infrastructures and industrial pressures without mentioning local communities, while others ignored industrial impacts (Jhala et al., 2021). The Cheetah Action Plan deemed KNP the most suitable site, noting previous village relocations for Asiatic lion

reintroductions; however, it lacked mention of preparing remaining communities for the arrival of cheetahs (Jhala et al., 2021).

Equally, concerns have been raised regarding ecological considerations prior to the arrival of the cheetahs in KNP (Wachter et al., 2023). Since the project’s inception, eight adults and five cubs have died due to kidney failure, fighting injuries, extreme heat and humidity, and skin infections due to fly strike (PTI, 2024; Naveen, 2023), highlighting the difficulties in adapting to their new environment.

Problematic social justifications

An argument presented by Van Der Merwe (2023) is that the predominantly Hindu culture advocates tolerance toward animals and reduces the risk of human–wildlife conflict. However, there are fundamental flaws in this argument, and conservation researchers should exercise caution when employing culture-specific terminology and generalizations without well-grounded research (Sheil and Wunder, 2002). It is essential to understand the underlying reasons why individuals in certain regions may tolerate negative wildlife encounters. We need to challenge the assumption that only Hindu communities reside around KNP and understand that other communities may experience human–wildlife conflict. Even within Hindu communities, attributing tolerance exclusively to religion would be simplistic.

Local traditions and beliefs may influence people’s willingness to coexist with wildlife. Local communities often have deep connections to indigenous wild animals, viewing them through the lens of their multigenerational cultural belief systems (Henning, 1998; Torri and Herrmann, 2011; Kreye et al., 2017) and traditionally acquired ecological knowledge (Agnihotri et al., 2021), which form the basis of their understanding of avoiding or rationalizing negative encounters.

Human–animal relationships in a diverse country like India are based on complex webs of socio-ecological systems (Barua et al., 2013; Margulies and Karanth, 2018). It is unfounded to assume people would tolerate potential human–wildlife conflict with cheetahs. Hence, researchers must apply more forethought and avoid generalizations regarding this intricate web of relationships.

Relying on generalizations to justify translocations and delineate protected land demonstrates little appreciation of the human dimension of conservation, often resulting in recognition or epistemic injustice (Bennett et al., 2017; Brittain et al., 2020; Lenzi et al., 2023). This risks overlooking diverse knowledge systems and values, the complex relationships people have with nature, their perceptions of wildlife, and consent to bear the consequences of such initiatives. This oversight could be addressed by identifying and formally recognizing all relevant actors representing different knowledge systems, worldviews, and values and granting them institutional rights and structures to articulate their perspectives in inclusive, sensitive, unbiased, and intersectional dialogues (Pretty et al., 2009; Martin et al., 2016). Engaging in intersectional dialogue has the potential to recognize and acknowledge the ways in which those in power and those without intersect with relational contexts to promote human rights,

plurality, and diversity (Adami, 2013), which we argue is a necessary condition in relocations of local and indigenous communities when implementing conservation projects.

Problematic species injustices

African cheetah populations are under significant pressure with approximately 6,500 mature individuals remaining in the wild. The translocation of a “Vulnerable” species to India raises concerns about ecological and species injustices, particularly regarding welfare, mortality, and risks associated with their intercontinental translocation.

As part of Project Cheetah, all cheetahs were initially released into nine SRBs ranging in size from 0.5 km² to 1.5 km². SRBs are frequently restocked with live prey, mostly captive-bred chital, and are predator-free. Four cheetahs died in an SRB within 6 months of arrival, and two females have never left the SRBs, as they had cubs (National Tiger Conservation Authority et al., 2023). All other pregnant females have been returned to the SRBs, and since July–August 2023, all remaining free-roaming cheetahs were also returned to these bomas (Qureshi et al., 2024). The SRB conditions are far from the KNP free-ranging conditions, where cheetahs roam on average 4.3 km per day, in home ranges up to 5,441 km² (National Tiger Conservation Authority et al., 2023). Cheetahs are generally susceptible to stress, in particular, associated with the capture of free-ranging animals (Braud et al., 2019). The KNP cheetahs have not only been transported intercontinentally, but they are regularly subjected to veterinarian interventions, including more than 90 chemical immobilizations (Qureshi et al., 2024). Hence, one can question the long-term impact on their physical and mental welfare, especially considering their long-term existence in captive conditions. Furthermore, live prey is released in what may be classed as “unnatural confinement and exposed to the danger of immediate attack with no recourse”, as was ruled in a case by the Supreme Court of Appeal of South Africa (National Council of Societies for the Prevention of Cruelty to Animals (NSPCA) v Openshaw, 2008).

The translocation of African cheetahs to KNP has shown several welfare-associated risks, including stress, trauma, and adaptation failures (Qureshi et al., 2024), leading to adult survival rates of 60%, which falls far below the average 85% survival rate for reintroductions in South Africa’s metapopulation (Marnewick et al., 2023). The KNP survival rates are likely to decrease further when all cheetahs are free-ranging and encounter other large indigenous predators. We challenge conservationists to identify an ethically acceptable mortality rate for cheetah reintroductions and refrain from phrases like “successful reintroductions” when 40%–50% of the animals die. Project Cheetah’s shifting “acceptable” mortality rates reveal the lack of ethical considerations and accountability for species management failures (Jhala et al., 2021; Tiwari, 2022; Sehgal, 2023).

Furthermore, anecdotal reports of cheetahs being stoned by local villagers and harassment during sedation reveal the risks faced by cheetahs struggling to adapt or thrive post-release (Navajyoti, 2024; Marnewick et al., 2023; Saxena, 2023), highlighting the interplay of welfare, human–wildlife conflict, and conservation priorities. In December 2024, one of the males released into KPN was sighted multiple times in residential areas of Sheopur city, about 50 km from

his release site, demonstrating the real risks of human–wildlife conflict (<https://theprint.in/india/multiple-sightings-of-cheetah-vayu-roaming-the-streets-in-mps-sheopur-days-after-release-from-kuno/2418973/>).

Prioritizing justice-informed and evidence-based decision-making

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) highlights that environmental knowledge is produced through cultural frames of reference, and local and indigenous knowledge systems are fundamental to understanding the diverse ways people relate to the natural environment (Díaz et al., 2018). We argue displacements and relocations disregard the three dimensions of justice, namely, distribution (who bears the costs and benefits), procedure (participation in decision-making), and recognition (respecting cultural differences and identities) (Martin et al., 2016; Schlosberg, 2007), and the importance of indigenous knowledge systems and relationships with nature, prioritizing external knowledge over that of local inhabitants.

The consequences of species relocation projects that lack ecological and social dimensions demonstrate the need for robust, scientifically grounded, and locally accepted conservation strategies. Poorly planned community relocations present several issues, including disruption of societal structures, akin to forced land reform (Kabra, 2003). Attention has grown to understanding enduring mental and emotional challenges and place attachment (Bott et al., 2003; Cundill et al., 2017; Rangarajan and Shahabuddin, 2006; Tuck and McKenzie, 2015). Communities within forests hold sentimental connections to land and non-human inhabitants. Beliefs and traditions intertwine with their experiences in nature. Over time, relocations exert repercussions on the mental health of those who closely identify with their culture and surrounding land and animals (Schmidt-Soltau, 2003; Ratnam, 2017; Mathew, 2019).

Fundamental problems may affect those relocated from places like KNP, including inadequate land quality, lack of irrigation water, and insufficient livestock fodder (Kabra, 2003; Sharma, 2003). Importantly, these problems are differentiated by class, caste, age, and sex (Kabra, 2020). Many people in KNP abandoned larger livestock in the forest due to resource scarcity during the initial Asiatic lion reintroduction attempts (Kabra, 2003). The research underscores the profound bond between rural residents and livestock (Vignesh, 2022), making abandonment traumatic, with no mitigating efforts from project managers.

Community relocation may on occasion be deemed necessary for medical, educational, law enforcement, or conservation reasons (Kabra, 2003; Karanth and Bhargav, 2005), but we argue for a justice-informed execution. Through justice-informed engagement, relocation may not always be necessary, depending on residents’ preferences and needs. Such decisions should not rely on surveys that fail to capture complex human attachments to place. Short- and long-term consequences of relocations demand meticulous consideration, necessitating well-planned community engagement. It is imperative to acknowledge people’s profound connections to land and relationships with the forest and non-human species.

Literature increasingly reflects on injustices extending to non-human species (Kotzé, 2019; Meijer, 2023). The cheetah translocations to KNP present ethical concerns by experimenting with a “Vulnerable” species and knowingly subjecting animals to substantial stress, existential risks, and mortality (Marnewick et al., 2023) by disregarding their spatial ecology (Wachter et al., 2023). The injustice to wild animals involved in the wider legal wildlife trade, including for conservation purposes, necessitates critical reflection and cost–benefit analysis for individual animals, the species and on the ecosystem level. We need to challenge the way in which we measure conservation successes that go beyond measuring ecological processes of birth and death but also gauge impacts on an animal’s physical, physiological, and mental health.

To achieve transformative and effective conservation outcomes, it is necessary to incorporate diverse values of nature (Lenzi et al., 2023). Schaafsma et al. (2023) provided a useful set of recommendations embracing justice in the design of studies that assess people’s values of nature. Furthermore, the IPBES Values Assessment provides practitioners and decision-makers with a comprehensive understanding of the pluralistic ways in which people conceptualize and value nature to inform sustainable and just means of protecting biodiversity. Conservation practices that prioritize respect, inclusivity, and justice are more likely to have positive outcomes for people and nature (Pascual et al., 2022). Such practices also prevent conflict among stakeholders and loss of scientific credibility (Lenzi et al., 2023).

Data availability statement

The original contributions presented in the study are included in the article/supplementary material. Further inquiries can be directed to the corresponding author.

Author contributions

YJ: Conceptualization, Data curation, Investigation, Project administration, Resources, Writing – original draft, Writing – review & editing. SK: Conceptualization, Data curation, Investigation, Project administration, Writing – original draft, Writing – review & editing. LdW: Data curation, Investigation, Writing - original draft, Writing - review & editing.

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Conflict of interest

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