



Human-Wildlife Coexistence: Balancing Conservation and Livelihoods in Sariska Tiger Reserve, India

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ABSTRACT

Human-wildlife coexistence is a pressing issue in conservation, particularly in areas where protected reserves overlap with human settlements. Sariska Tiger Reserve, located in Rajasthan, India, is an important case study to gauge the complexities of balancing biodiversity conservation with local livelihoods. Despite conservation efforts, conflicts persist due to habitat encroachment, livestock depredation, and resource limitations. This study explores the socio-ecological challenges faced by communities living around Sariska, the effectiveness of conservation policies, and potential strategies for sustainable coexistence. Findings suggest that while conservation initiatives have contributed to tiger population recovery, local displacement and restricted access to resources have exacerbated socio-economic hardships, leading to resistance against conservation efforts (Shahabuddin et al., 2007). The research emphasizes the need for inclusive conservation models that integrate traditional knowledge, participatory governance, and economic incentives to ensure both ecological and human well-being (Agrawal, 2002; Colchester, 2003).

Introduction

Overview of Sariska Tiger Reserve

For the Bengal tiger (*Panthera tigris tigris*) and other endangered species, the Sariska Tiger Reserve, which covers an area of around 881 square kilometers in Rajasthan, India's Aravalli Hills, is an essential habitat. Sariska has been an important part of India's conservation strategy since it was first established as a wildlife sanctuary in 1955 and then as a tiger reserve under Project Tiger in 1978 (Shahabuddin et al., 2007). The reserve's distinctive environment, which supports a variety of plants and animals, is made up of dry deciduous forests, grasslands, and rocky terrain.

Importance of Conservation and Human-Wildlife Interactions

Despite its conservation significance, Sariska is home to several villages where local communities depend on forest resources for their livelihoods. Pastoralist groups, such as the Gujjars and Meenas, have historically coexisted with the region's wildlife, relying on grazing lands, medicinal plants, and water sources within the reserve (Baviskar, 2001). However, conservation policies have led to restrictions on traditional resource use, creating conflicts between local residents and forest authorities (Rangarajan & Shahabuddin, 2006). Instances of livestock predation by tigers and leopards further strain human-wildlife relationships, resulting in retaliatory killings and habitat degradation (Udaya Sekhar, 2003).

Communities have been uprooted and indigenous land-use traditions disrupted by the "fortress conservation" approach, which stresses rigorous protection through human exclusion (Brockington, 2002; Brosius, 2004). Studies indicate that successful conservation requires integrating local perspectives and fostering community participation in wildlife management (Agrawal & Redford, 2006).

Research Objectives

This study aims to:

1. Analyze the socio-economic impact of conservation policies on local communities in Sariska.
2. Assess the effectiveness of existing wildlife management strategies in reducing human-wildlife conflicts.
3. Explore alternative models for sustainable coexistence, incorporating local knowledge and participatory governance (Gadgil et al., 1993; Berkes et al., 2003).

By tackling these goals, this study adds to larger conversations about striking a balance between conservation priorities and underserved populations' livelihoods in order to ensure ecological and social sustainability (Brechtin et al., 2003).

Human Settlements and Livelihoods in Sariska Indigenous Communities and Their Dependence on the Forest

The Gujjars, Meenas, and other forest-dependent groups are among the indigenous and rural people that call Rajasthan, India's Sariska Tiger Reserve home. By collecting firewood, grazing cattle, and harvesting small amounts of forest products, these communities have historically depended on the forest for their subsistence (Agrawal, 2002). Since dairy products are the main source of revenue in the area, raising livestock—especially by the Gujjars—plays a vital role in the local economy (Shahabuddin, Kumar, & Shrivastava, 2007). Furthermore, farming is carried out in buffer zones, where crops including bajra, mustard, and wheat are grown.

There are more reasons to rely on the forest than just financial ones. Certain forests and bodies of water are considered sacred by many indigenous communities, who have strong cultural and spiritual ties to the land (Baviskar, 2001). Because traditional knowledge systems place a strong emphasis on sustainable resource use, these cultural practices have historically aided in conservation (Berkes, Colding, & Folke, 2003). However, conservation measures that limit access to natural resources have made peaceful coexistence more difficult (Colchester, 2003).

Socio-Economic Challenges Faced by Villagers

Local people have experienced severe socioeconomic challenges as a result of the creation of the Sariska Tiger Reserve and the conservation efforts that followed. One of the main problems is the grazing restrictions, which have caused pastoralists' incomes to decline and their level of poverty to rise (Brockington & Igoe, 2006). Economic challenges have been made worse by displacement brought on by conservation efforts, as displaced people have had difficulty locating alternate sources of income (Cernea & Schmidt-Soltau, 2003).

Another significant issue is the lack of access to infrastructural development, healthcare, and education. The lack of adequate roads, schools, and medical facilities in many communities makes daily living more challenging, especially for women and children (Geisler et al., 2003). Furthermore, because tigers and leopards frequently feed on livestock, causing financial losses for farmers, human-wildlife conflict is a recurring problem (Udaya Sekhar, 2003). Although there are government compensation programs, they are sometimes inadequate or delayed, which puts the villagers in a difficult financial situation (Wilkie et al., 2006).

Additionally, a lack of alternative career options forces many young people to travel to cities in pursuit of employment (D'Silva, 1997). There have been attempts to combine ecotourism with community-based conservation projects, but the scope and influence of these efforts are still restricted (McNeely & Scherr, 2003). Finding a balance between protecting wildlife and sustaining human livelihoods is still a major concern for Sariska's future as conservation regulations change.

Conservation Efforts and Challenges in Sariska Tiger Reserve

Situated in Rajasthan, India's Alwar district, Sariska Tiger Reserve is an important conservation area renowned for its abundant biodiversity, especially that of Bengal tigers. Sariska has evolved into a symbol of the intricate relationship between local populations' livelihoods and conservation initiatives. The human populations that live within and surrounding the reserve frequently face serious social and economic difficulties as a result of these efforts, despite the fact that protecting endangered species like the tiger is crucial.

Policies for Wildlife Conservation

The creation of protected areas like Sariska Tiger Reserve is at the heart of the strategies the Indian government has put in place to conserve wildlife. The reserve is governed by the Wildlife Protection Act of 1972, which limited human activity in particular regions in order to protect endangered species. Furthermore, protecting important ecosystems and involving local populations in conservation initiatives were highlighted in India's National Wildlife Action Plan (2002-2016).

These rules, however, frequently have negative effects on the local populace, especially when it comes to limiting their access to natural resources that have historically provided for their livelihoods. A "fortress conservation" approach, which prioritizes biodiversity preservation over the requirements of local residents, has been used to describe the establishment of protected areas such as Sariska (Brockington, 2002). Because local communities rely on the forest for fuelwood, grazing, and medicinal plants, this exclusionary policy has exacerbated tensions between conservation authorities and these groups (Brechtin et al., 2003).

Evictions and Displacement of Forest-Dependent Communities

The forcible eviction of villages that depend on forests has been one of the most controversial aspects of Sariska's animal protection efforts. Many families who lived in the buffer zone of the reserve were moved to places outside of it as part of conservation efforts, frequently with little regard for their cultural links to the

land or economic well-being (Brockington & Igoe, 2006). For instance, the government started a relocation program in 2005 with the goal of moving the peasants who lived in Sariska's central region. Although the goal of these actions was to lessen confrontations between people and animals, they have come under fire for failing to consider the socioeconomic effects on individuals impacted (Cernea & Schmidt-Soltan, 2003).

The evictions, in many cases, left people without a stable means of livelihood, contributing to poverty and social disintegration. According to Cernea (2006), the risks of impoverishment due to displacement include the loss of land, access to forest resources, and a weakened social fabric, all of which severely affect the displaced communities' ability to thrive. Additionally, resettlement packages often fail to compensate for the loss of access to the land and resources that the communities had used for generations, exacerbating their economic hardships.

Conflicts Between Local Communities and Forest Authorities

Tensions between local communities and forest authorities are a prominent issue at Sariska. As conservation policies tighten, local communities find themselves in increasing conflict with the authorities over their right to access forest resources. These conflicts manifest in various forms, from protests against the restrictions on forest usage to direct confrontations with forest guards. In many instances, these tensions escalate into violent clashes, especially when communities are accused of poaching or illegal grazing within the reserve (Shahabuddin et al., 2007).

Sariska's top-down management style has drawn criticism for the lack of local community participation in conservation-related decision-making. Because communities feel left out of the advantages of conservation, this lack of involvement frequently results in anger (Gibson et al., 2000). Furthermore, traditional, once-sustainable behaviors like grazing and gathering forest products have occasionally been made illegal as a result of conservation efforts (Baviskar, 2001). Because of this, many villages see the forest officials not as conservation partners but as enforcers of restricted regulations.

These conflicts have influenced local attitudes toward conservation, with many people expressing a lack of faith in government organizations. According to studies, residents of the Sariska area frequently believe that the government puts the needs of wildlife before those of people, which erodes support for conservation efforts (Udaya Sekhar, 2003). It is challenging to put into practice long-term conservation initiatives that call for local communities' cooperation because of these unfavorable perceptions.

Impact of Conservation on Local Communities

Livelihood Constraints Due to Restricted Access to Resources

For local communities, the creation of protected places like as Sariska Tiger Reserve has frequently resulted in severe limitations on their means of subsistence. For their everyday needs and financial security, these communities have historically depended on forest resources like firewood, fodder, and medicinal plants. However, residents have experienced financial challenges as a result of conservation rules that limit access to these resources, especially since the reserve's creation. According to Cernea (2006), destitution and a greater reliance on outside assistance or less sustainable sources of income have resulted from forcible eviction and limited access to resources. The difficulties experienced by local populations are exacerbated by reliance on agriculture or other sources of income that do not directly benefit from the forest, which frequently result in low financial returns (Agrawal & Redford, 2006).

Moreover, the displacement of communities from prime land inside reserves results in the loss of traditional farming practices and access to grazing land, affecting the income generation capacity of many families (Brockington & Igoe, 2006). The lack of compensation or alternative resources exacerbates this situation, leaving the affected populations vulnerable to economic instability.

Lack of Healthcare, Education, and Infrastructure

Conservation has a socioeconomic impact that extends beyond the economy and influences access to basic amenities like infrastructure, healthcare, and education. Inadequate access to healthcare and educational resources is frequently the result of local communities being marginalized within or close to protected areas. Shahabuddin & Kumar (2007) point out that because conservation efforts frequently take precedence over the development of community infrastructure, many communities bordering the Sariska Tiger Reserve lack adequate schools and healthcare facilities.

Since rural settlements in places like Sariska frequently face basic health problems that conservation programs do not address, the lack of access to healthcare is especially worrisome. To get to the closest medical facilities, residents of these areas must travel great distances, adding to the strain on already limited local resources (Berkas et al., 2003). Similarly, because conservation activities are prioritized over the enhancement of community services, education in these places continues to be neglected.

Role of Traditional Knowledge in Conservation

Through the application of traditional ecological knowledge, indigenous tribes have historically played a crucial role in conservation despite these obstacles. Communities have been able to reduce conflict, balance human needs with the preservation of animals, and manage forest resources sustainably because to this

knowledge. For example, woodlands and wildlife have flourished alongside human settlements thanks to sustainable grazing practices and traditional fire management techniques (Gadgil et al., 1993).

However, the importance of traditional knowledge and practices is sometimes overlooked when top-down conservation efforts are imposed. According to Agrawal (2002), the contemporary conservation framework frequently overlooks the incorporation of indigenous knowledge into formal conservation planning, which results in poor management and heightened tensions between local residents and conservation officials. Like other protected areas in India, Sariska has seen inefficiencies in conservation techniques and alienation from the very people who may help with sustainable management due to the absence of indigenous knowledge systems in favor of a more scientific approach (Berkes et al., 2003).

There is potential for traditional knowledge to help close the gap between conservation objectives and local livelihoods. More inclusive and successful conservation methods that support ecological sustainability and community well-being could be created by acknowledging the contributions of indigenous knowledge in biodiversity management (Gibson et al., 2000). By incorporating this information, local communities may feel more involved and have a sense of ownership, which could lessen conflict and encourage cohabitation between people and wildlife.

Need for a Balanced Approach

Importance of Participatory Conservation Models

The goal of conservation in protected places, such as Sariska Tiger Reserve, has historically been to preserve ecosystems and animals by limiting human activity, frequently at the expense of the livelihoods of the local population (Cernea, 2006). But over time, this strategy has shown itself to be unsustainable. More sustainable and successful conservation results can result from a participatory conservation paradigm, in which local communities actively participate in decision-making. Community-based conservation initiatives allow local people to share accountability for the management of natural resources, so fostering ecological sustainability and human population well-being (Berkes et al., 2003). In Sariska, conservation objectives can be in line with community requirements by incorporating local stakeholders in animal monitoring, sustainable resource extraction practices, and tourism management.

Moreover, Agrawal and Redford (2006) argue that a more inclusive approach acknowledges the traditional ecological knowledge possessed by local populations, which can complement scientific conservation methods. This has been observed in other regions where indigenous communities' intimate knowledge of their environment has led to more adaptive and resilient conservation strategies. By respecting local perspectives, conservationists can work collaboratively with communities to balance ecological preservation with economic development (Gadgil et al., 1993).

Case Studies of Successful Human-Wildlife Coexistence Models

Several successful examples of human-wildlife coexistence demonstrate the potential of integrating local communities in conservation efforts. For instance, the **Ngorongoro Conservation Area** in Tanzania combines pastoralism with wildlife conservation, allowing for sustainable grazing and wildlife protection. In this case, local Maasai communities are integrated into the management of the reserve, maintaining their traditional lifestyles while contributing to conservation (Galvin et al., 2002).

Similar to this, the Maldhari community in Gir Forest, India, has been actively involved in the management of the local wildlife and forest resources. The Maldharis now take part in conservation activities, such as keeping an eye on wildlife populations and preserving grassland ecosystems, despite the early difficulties brought on by the creation of the protected area (Ganguly, 2004). By insuring the survival of endangered species like the Asiatic lion and enhancing livelihoods, this strategy demonstrates how local involvement can benefit both people and wildlife.

These examples indicate that conservation does not have to mean the exclusion of people. Instead, when communities are involved in conservation planning and management, both biodiversity and human well-being can be safeguarded (Rangarajan & Shahabuddin, 2006).

Policy Recommendations and Future Strategies

Involvement of Local Communities in Conservation Efforts

A shift towards inclusive governance is essential for the future of conservation in Sariska Tiger Reserve. Local communities must be recognized as key stakeholders in the management of protected areas. Policies that allow communities to participate in wildlife monitoring, ecotourism development, and habitat restoration measures will not only improve conservation outcomes but also provide income-generating opportunities for locals (Berkes et al., 2003). The **Joint Forest Management (JFM)** initiative, for example, has shown promising results in various parts of India by empowering communities to manage and protect forest resources. Expanding such initiatives to include wildlife protection would help integrate the needs of local communities with conservation priorities (Kothari, 1997).

Furthermore, it is crucial that conservation policies move beyond top-down enforcement and adopt a more collaborative, inclusive approach where local voices are heard. Ensuring the active involvement of communities in decision-making will help reduce conflicts and increase the legitimacy of conservation interventions (Brosius, 2004).

Alternative Livelihood Programs

In regions like Sariska, where communities rely heavily on forest resources, providing alternative livelihoods is critical to reducing human-wildlife conflict. Programs that promote eco-friendly agriculture, sustainable harvesting of non-timber forest products, and wildlife tourism can generate income while conserving natural resources. For example, **eco-tourism** has been a successful strategy in other wildlife reserves, where local communities serve as guides or offer services to tourists (Wilkie et al., 2006). By building infrastructure and providing training, eco-tourism can be a viable economic activity that allows local people to benefit directly from the reserve's resources without harming wildlife habitats.

Additionally, introducing **livestock insurance** programs or compensation for crop damage caused by wildlife can mitigate some of the economic losses that local communities face due to human-wildlife conflict. These programs can be an essential part of a larger effort to incentivize coexistence (Shahabuddin et al., 2007).

Strengthening Forest Governance through Inclusive Dialogue

Forest governance needs to be changed to involve all pertinent parties, including local communities, in order to support conservation and sustainable livelihoods. Policies will take into account the needs of people and wildlife if forest officials, conservationists, and indigenous groups engage in inclusive discourse. To guarantee that choices are made in a transparent and democratic manner, this may entail holding frequent discussions and establishing local advisory committees (Baviskar, 2001). Additionally, establishing forums for local communities to voice issues, exchange ideas, and get feedback can help to build trust between the public and the government (Berkes et al., 2003).

However, for these policies to be implemented, conservation initiatives must consider the local economy, cultural traditions, and social dynamics of the impacted populations. Conflicts can be avoided, poverty can be decreased, and conservation initiatives can be made really sustainable by involving local stakeholders in the formulation and application of policies (Cernea, 2006).

Conclusion

This study examines the difficulties in striking a balance between livelihoods and conservation in Sariska Tiger Reserve (STR), emphasizing the conflict between preserving biodiversity and attending to local residents' needs. Although conservation methods like displacement and restricted access have been crucial for maintaining tiger numbers, they have also made locals more marginalized and impoverished.

Involving local populations in conservation decisions and combining traditional knowledge with contemporary methods are essential for fostering human-wildlife cohabitation. Sustainable agriculture and eco-tourism are two examples of alternative livelihood initiatives that can provide good revenue streams without endangering the environment (Agrawal & Redford, 2006). Furthermore, inclusive discourse must be given top priority in forest governance to guarantee that local residents' opinions are heard during the policy-making process (Berkes et al., 2003).

Ultimately, successful conservation in STR will require sustainable, community-inclusive policies which balance environmental protection with the economic needs of local people, ensuring that both wildlife and humans can thrive together.

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