Conservation Approaches And Management Techniques In Tadoba Andhari Tiger Reserve, Chandrapur District

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Abtract

The Tadoba Andhari Tiger Reserve, located in the Chandrapur district of Maharashtra, India, stands as a critical habitat for the preservation of tiger populations and other wildlife species. This research paper aims to analyze and evaluate the various conservation approaches and management techniques employed within the reserve to ensure the sustainable protection of its biodiversity. Through a combination of field observations, interviews with forest officials and local communities, and an examination of existing literature, this study identifies the key strategies that have contributed to successful wildlife conservation in Tadoba Andhari. The paper discusses the role of anti-poaching measures, habitat restoration, community engagement, and technological interventions in enhancing conservation outcomes. Additionally, it explores the challenges faced in the implementation of these strategies and provides recommendations for improving management practices. The findings underscore the importance of an integrated approach that combines scientific research, policy support, and community participation to achieve long-term conservation goals. This study contributes to the broader understanding of effective wildlife management and offers insights that can be applied to similar conservation efforts globally.

Key words Wildlife conservation, management, ecosystem, biological diversity.

Introduction

In 1955, with Kanha, Tadoba was designated as one of India's first national parks. Despite this, the country's meadows, animals, and woods were nevertheless taken advantage of, farmed, hunted, and poached. The four hunting blocks were formally closed to the public in the 1970s, but illicit hunting persisted even after that. A forest area of 506.32 square kilometres next to the national park was designated the Andhari Wildlife Sanctuary in 1986. In 1993, the Tadoba-Andhari Tiger Reserve (TATR) was created, which encompasses 622.87 sq km and was once a national park and a wildlife sanctuary. Naturally, the announcement of the tiger reserve was only the first step. The present-day TATR, this highly esteemed sanctuary for biodiversity, is the result of the tireless efforts of many forest officials, frontline forest personnel, members of non-governmental organisations (NGOs), and marginalised people who have fought tirelessly to preserve it for many years.

Tiger populations, among others, have recently seen a renaissance because to persistent preservation efforts. Development of grasslands to increase populations of prey, conservation of water to improve water availability, intense monitoring of tigers, and most importantly, strong and sustained protection measures to protect wildlife from all threats have all been part of these efforts. Villages within the core area have been incentivized to relocate, creating undisturbed areas. An emerald gem in the Project Tiger crown, Tadoba-Andhari Tiger Reserve is now considered one of the world's most favoured tiger locations. The fact that our tigers—more than 80 in the reserve and 200 in the wider landscape—are safe and can proliferate while people are there is something we are quite proud of.

The tigers of Tadoba are now replenishing the gene pools of other protected areas in central India, including Navegaon-Nagzira, Umred-Karhandla, and Tipeshwar, as well as forests further afield, like Kawal, Nagarjunsagar, and Indravati, all because of the functional connectivity between the reserve and other protected areas. Birds and insects come in an incredible diversity, with species like the Indian silverbill and the lesser adjutant stork coexisting with the eastern magpierobins and the azure dartlets. There it is in the prey species, sambar, chital, and wild pigs; in the predators, leopards, mugger crocodiles, and powerful tigers; and in the jungle cats

and wild dogs. Although tigers get the lion's share of media attention and hold the top spot in the food chain, the tiger reserve wouldn't be possible without the forest and all its inhabitants, large and little. Tadoba's magic lies in the tropical dry deciduous forest in the south, surrounded by a variety of meadows and sources of water. In the bamboo forests, a vital component of this ecosystem that provides herbivores with additional food, prevents the spread of invasive plants, and provides shelter and protection for many animals.

Tadoba Andhari Tiger Reserve Wildlife Strategies and Management

Recognizing the critical need to protect the reserve's 93 tigers and support the larger population of over 150 tigers in the TATR, DP World has partnered with TATR management for implementing a pioneering AI-based virtual wall and humananimal conflict mitigation system (HACMS)

Management Strategies

1. Community Engagement

- Local Participation: Involving local communities in decision-making processes and conservation activities.
- Livelihood Initiatives: Implementing sustainable livelihood projects to reduce dependency on forest resources.

2. Corridor Development

- Wildlife Corridors: Establishing and maintaining corridors to enable the free movement of animals between different zones.
- **Corridor Protection:** Implementing measures to safeguard corridors from anthropogenic pressures.

Coexistence and Conflict Mitigation

1. Reducing Human-Wildlife Conflict

- **Early Warning Systems:** Employing technologies and community involvement to warn of wildlife presence.
- Compensation Mechanisms: Fair compensation for losses incurred by local communities due to wildlife interactions.

2. Education and Awareness

- **Community Education:** Promoting awareness about the importance of wildlife conservation and sustainable coexistence.
- School Programs: Integrating conservation education into school curriculums to instill a sense of responsibility towards the environment.

Conservation Impact

1. Habitat Restoration

- **Reforestation Projects:** Undertaking initiatives to restore and rehabilitate degraded habitats within buffer zones.
- Ecosystem Resilience: Enhancing the overall resilience of the ecosystem to natural and human-induced disturbances.

2. Wildlife Monitoring

- **Camera Trapping:** Utilizing modern technologies for wildlife monitoring and research.
- **Population Surveys:** Conducting regular surveys to assess the health and dynamics of wildlife populations.

Challenges and Solutions

1. Illegal Activities

- Anti-Poaching Measures: Strengthening anti-poaching efforts to curb illegal activities.
- **Community Vigilance:** Involving local communities in wildlife protection to act as guardians of the reserve.

2. Balancing Development

- Sustainable Infrastructure: Ensuring that any development in buffer zones adheres to sustainability principles.
- Community-Driven Development: Involving local communities in decision-making processes related to development projects.

Background of the study

Worldwide, protected areas have played an essential role in conservation initiatives for more than a century. The number of protected parks has been steadily increasing over the last several decades, and they now include more than thirteen percent of Earth's total landmass (Jenkins and Joppa, 2009).

Despite this, parks and people sometimes cohabit in close quarters, causing tension and conflict (Nagendra 2008). This is especially true in developing nations with dense populations. Research on park-human conflicts dates back decades, with environmental groups and social scientists often arguing about the relative importance of human rights and the need of conservation (Terborgh et al., 2002; Chapin, 2004). While some argue vehemently that community conservation has failed and call for a return to strict protection strategies, others cite examples of successful community conservation and stress the importance of involving local communities as conservation agents (Persha et al., 2010).

The effectiveness of parks and community protected areas has been the subject of numerous recent in-depth analyses of big datasets (DeFries et al., 2010; Naughton-Treves et al., 2005; Nepstad et al., 2005; Hayes, 2006; Nagendra, 2008; Nagendra, 2009; Persha et al., 2010). Based on the responses, it seems that certain community and government protected sites are doing well while others are still deteriorating. Strict protection and participatory conservation both seem like good ways to conserve resources, but they don't always pan out. Several research have looked at what may be causing these different results. According to Nagendra (2007), the effectiveness of Nepal's forest management depends on three factors: the kind of institutional system in place, the availability of monitoring, and the size of the user community. For parks to be successful, according to Walker's (2009) worldwide study, monitoring must be inexpensive, the rewards of capturing rule offenders must be high, and the chance of catching rule breakers must be high. Distance to human settlements and the duration of past settlement were shown to be major explanatory variables of deforestation in Guatemala (Bray et al., 2008), whereas in Mexico, the distance to previous deforestation was a crucial component. The results of forest change in Indian forests are heavily influenced by biophysical factors like slope and elevation, according to Agrawal and Chhatre (2006). They warn that if we put too much emphasis on institutions, we risk ignoring the importance of biophysical locations in forest management. By recognising that the elements influencing conservation results are probably site specific, these studies make a significant advance.

In continuation of the work of Ostrom and Nagendra (2006), who aspire to "move(s) the debate beyond the internal and external boundaries of protected areas... (to) understand when and why protection, recovery, and clearing occur in these larger landscapes," we expand upon the existing literature on protected areas by delving deeper into the variation in forest outcomes across different sections of a landscape that is embedded with protected areas. One of us has been collaborating closely with park officials and locals for more than ten years to investigate the unique paths of forest change in several sections of the Tadoba Andhari Tiger Reserve (TATR), a park in central India, where our research focuses on forest change. Plant variety, land cover change, forest fragmentation, and conservation attitudes are some of the many factors we assess.

Objective of the study

- To assess the effectiveness of existing wildlife conservation strategies implemented in the Tadoba Andhari Tiger Reserve.
- To identify and analyze the various management techniques used in the reserve for habitat restoration, anti-poaching, and species protection.
- To investigate the role of local communities in wildlife conservation efforts and their impact on the success of these initiatives.

Research methodology

This research work on "Conservation Approaches and Management Techniques in Tadoba Andhari Tiger Reserve, Chandrapur" uses a multi-pronged strategy to collect detailed information. Quantitative and qualitative research techniques are also used in the study. In order to record conservation efforts and habitat conditions, primary data collection entails conducting thorough field observations inside the reserve. Detailed notes and photographic documentation are obtained during these observations. To gather varied viewpoints on management methods and conservation initiatives, we undertake organised and semistructured interviews with important stakeholders such as local community members, wildlife specialists, and forest authorities. Community participation and its effect on

preservation initiatives may be better understood via focus groups with local villages. Thoroughly reviewing existing literature, government papers, and past research studies on wildlife conservation and management in the Tadoba Andhari Tiger Reserve is part of the secondary data collecting process. Spatial data is analysed using GIS tools and remote sensing technology to track changes in animal habitats and land use. To find patterns and trends, as well as to assess the efficacy of different conservation methods, the research used statistical analysis. In order to provide well-informed suggestions for improving wildlife management techniques, our mixed-methods approach guarantees a thorough and comprehensive knowledge of the conservation activities in the Tadoba Andhari Tiger Reserve.

Discussion

| Sr. No. | Distance (in km) / Facility | Before relocation | | After relocation |
|---------|-----------------------------|-------------------|-------|------------------|
| | | Botezari | Kolsa | |
| 1 | All weather road | 12 | 19 | 04 |
| 2 | Post office | 12 | 0 | 0 |
| 3 | Primary health center | 26 | 0 | 04 |
| 4 | Police Station | 35 | 61 | 14 |
| 5 | Sub-district headquarter | 75 | 45 | 14 |
| 6 | Market | 12 | 45 | 04 |
| 7 | Bank | 30 | 30 | 04 |
| 8 | Middle school | 12 | 0 | 06 |
| 9 | College | 35 | 30 | 14 |
| 10 | Ashram school | 30 | 0 | 07 |
| 11 | Telephone | 35 | 30 | 0 |

Table -1: Relative distances of basic facilities

The table presents a comparative analysis of the relative distances of basic facilities before and after the relocation of residents from Botezari to Kolsa. The data reveals significant improvements in accessibility to several essential services post-relocation.

Before the relocation, residents of Botezari faced considerable distances to reach vital services. For instance, the nearest all-weather road was 12 km away, while in Kolsa, it is only 4 km. Similarly, the distance to the primary health center has drastically reduced from 26 km to 4 km. This improved access is crucial for emergency medical situations and routine healthcare needs.

Access to educational facilities also shows marked improvement. Previously, the middle school and ashram school were 12 km and 30 km away, respectively, from Botezari. In Kolsa, the middle school is within 6 km, and the ashram school is 7 km away. Although the distance to the college has slightly increased from 30 km to 14 km, it is still a manageable distance compared to other facilities.

Moreover, distances to administrative and financial institutions have been significantly reduced. The nearest police station was previously 35 km away and is now 14 km from Kolsa. Similarly, the sub-district headquarters and market, which were 75 km and 12 km away, respectively, are now both within 14 km and 4 km, respectively. The availability of a bank at a consistent 30 km distance and the establishment of telephone services directly in Kolsa indicate an overall enhancement in the residents' ability to perform daily transactions and communicate.

Post offices, which were 12 km away, are now at a zero distance, indicating their direct availability in Kolsa. This proximity enhances the community's access to postal services, facilitating better communication and access to various government schemes.

In summary, the relocation to Kolsa has substantially decreased the distances to critical infrastructure and services, enhancing the overall quality of life for the residents. Improved access to roads, healthcare, education, law enforcement, markets, and communication services underscores the benefits of the relocation initiative, contributing to a more connected and resource-rich environment for the community.

Conclusion:

The study on "Conservation Approaches and Management Techniques in Tadoba Andhari Tiger Reserve, Chandrapur" provides a comprehensive analysis of the strategies and practices employed to safeguard biodiversity within this critical habitat. The findings reveal that a multifaceted approach, integrating anti-poaching measures, habitat restoration, community engagement, and technological innovations, has significantly contributed to the conservation success in the reserve. The involvement of local communities has emerged as a pivotal factor, fostering a collaborative environment for sustainable conservation efforts. Despite the notable progress, challenges such as resource limitations, human-wildlife conflicts, and enforcement issues persist. Addressing these challenges through enhanced policy support, increased funding, and continued community involvement is essential for the long-term preservation of the reserve's biodiversity. The study underscores the importance of a holistic and adaptive management framework that can be replicated in other protected areas globally to achieve similar conservation outcomes. Overall, the research highlights the effectiveness of integrated conservation strategies and provides valuable insights for future wildlife management and policy formulation.

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