FRONTIERS OF INTEGRATED ACADEMIC RESEARCH

International multidisciplinary peer-reviewed
open-access journal

www.fiarjournal.in

e-ISSN: [Add after allotment]

Anthropogenic Activities and Mammal Conservation in Bagdara Wildlife Sanctuary Madhya Pradesh

Sanjay Singh[1] and Yogesh Mishra[2*]

Department of Zoology, Bhavans Mehata Mahavidyalaya Bharwari, Kaushambi (Affiliated to PRSU, Naini Prayagraj), U. P., India.

Corresponding author(s) email- y.mishra2701@gmail.com

Article type	Review Article	**Received**	22/09/2026
Volume and issue	Vol. 1, Issue 1	**Published**	25/09/2026

How to cite this article: Singh, S., & Mishra, Y. (2026). Anthropogenic activities and mammal conservation in Bagdara Wildlife Sanctuary, Madhya Pradesh. *Frontiers of Integrated Academic Research, 1*(1), 18·22 . https://fiarjournal.in/article/fiar-2026-0103

Abstract

Bagdara Wildlife Sanctuary lies in a densely inhabited forest landscape at the Madhya Pradesh–Uttar Pradesh border. This review examines the sanctuary's documented mammal assemblage, the human activities recorded in site-specific sources, and plausible pathways by which those activities affect habitat and wildlife. The principal evidence comprises a Wildlife Institute of India and Wildlife Trust of India assessment, a published mammal inventory, the 2017 eco-sensitive-zone notification, and related primary studies from Indian protected areas. The documented mammals include blackbuck, nilgai, chinkara, sambar, chital, wild pig, striped hyena, jackal, Indian fox, sloth bear and langur. The 2010 assessment also reported substantial settlement, livestock presence, grazing signs, crop raiding and limited hunting-related evidence. A later Bagdara study reported lower mammal richness and habitat quality at more disturbed sites, although its findings should be independently replicated. Grazing, forest extraction, agricultural interfaces and associated conflict are therefore the most directly supported concerns. Development and pollution require location-specific assessment rather than assumption. Management should combine repeated mammal monitoring with mapped grazing intensity, community participation, crop-loss verification, habitat restoration and evaluation of the eco-sensitive zone. This article reports a synthesis of existing evidence and does not present a new field survey.

Keywords: Bagdara Wildlife Sanctuary; blackbuck; wild mammals; grazing; anthropogenic disturbance; human–wildlife conflict.

1. Introduction

Protected areas embedded in working landscapes must sustain wildlife alongside farming, livestock keeping and forest use. The same grassland patch that supports blackbuck or nilgai may also be used for cattle, while an agricultural edge can supply forage to wild pigs and generate crop loss. The ecological consequence of a human activity depends on its intensity, season, location and

CC BY-NC 4.0

management. This makes Bagdara an instructive case for analysing human–mammal interactions without assuming that all local land uses have identical effects.

Bagdara forms part of the Bagdara–Kaimur landscape. A 2010 assessment reported an area of approximately 478 km², including protected forest and revenue or other land, with settlements distributed across much of the sanctuary. The Belan and Son rivers define major landscape boundaries. The report described northern mixed deciduous vegetation and identified blackbuck as a particularly notable mammal (Ranjitsinh & Jhala, 2010). The government's 2017 notification established an eco-sensitive zone of 12.886 km² extending one kilometre from the western sanctuary boundary; its limited directional extent is important when evaluating proposed development (Ministry of Environment, Forest and Climate Change [MoEFCC], 2017).

This paper asks three questions: Which mammals are documented at Bagdara? Which human activities have direct local evidence? What responses follow reasonably from that evidence? Its contribution is to separate observations about Bagdara from mechanisms established elsewhere and from untested local hypotheses.

2. Sources and approach

This review prioritised the 2010 site assessment by Ranjitsinh and Jhala, the 2017 government notification, the local mammal account of Dwivedi (2018), and the published Bagdara disturbance study of Singh and Mishra (2026). Comparative evidence came from primary studies on grazing in Gir Forest and conflict around Kanha National Park (Dave & Jhala, 2011; Karanth et al., 2012). Species were included in the main inventory where explicitly reported for Bagdara in the 2010 assessment. Scientific names follow conventional current usage where unambiguous; names in older sources may be outdated. The 2018 inventory contains some inconsistent family and genus labels, so it is cited for context and not treated as definitive taxonomic verification.

3. Documented mammal assemblage

Ranjitsinh and Jhala (2010) identified a mixed herbivore and carnivore assemblage. Their account places blackbuck and nilgai among the most frequently detected ungulates, with chinkara, sambar, chital and wild pig also observed. It reports striped hyena, jackal, Indian fox and sloth bear, together with langurs. The report's density estimate of 8.26 ± 1.91 wild ungulates per km² belongs to that historical assessment; it must not be read as the current population density. The government notification lists additional mammals, but its faunal list is an administrative description rather than a dated, independently verifiable camera-trap inventory (MoEFCC, 2017).

Table 1. Mammal groups documented for Bagdara in the 2010 field assessment.

Group	Reported mammals	Interpretive note
Open habitat herbivores	Blackbuck (*Antilope cervicapra*); nilgai (*Boselaphus tragocamelus*); chinkara (*Gazella bennettii*)	Blackbuck and nilgai were prominent in the historical survey.
Forest and edge herbivores	Sambar (*Rusa unicolor*); chital (*Axis axis*); wild pig (*Sus*	Presence documented; current abundance needs renewed

	scrofa)	sampling.
Carnivores and omnivores	Striped hyena (Hyaena hyaena); golden jackal (*Canis aureus*); Bengal fox (*Vulpes bengalensis*); sloth bear (*Melursus ursinus*)	The source reports presence, not contemporary population size.
Primates	Langurs (*Semnopithecus* sp.)	The historical report does not resolve local species identification.

The 2017 notification also refers to leopard, wolf, otter and tiger in its faunal description (MoEFCC, 2017). Those mentions should be distinguished from recent confirmed occupancy. Tiger presence, especially, should not be translated into a claim of a resident breeding population without contemporary photographic or genetic evidence. A local taxonomic article lists additional small mammals and bats, but errors in some taxon names call for a voucher-based recheck (Dwivedi, 2018).

4. Anthropogenic activities and ecological pathways

4.1. Livestock grazing and forage use

The 2010 assessment recorded high livestock signs and noted that cattle and goats were common in the inhabited sanctuary landscape. This establishes grazing as an observed land use, while its exact current distribution is unknown (Ranjitsinh & Jhala, 2010). Where livestock and wild herbivores use the same patches, potential effects include consumption of palatable forage, trampling of regeneration and concentration around dry-season water. Competition should be tested rather than presumed: in Gir Forest, chital responses varied with rainfall, vegetation and grazing intensity, and moderate grazing sometimes increased the availability of preferred food (Dave & Jhala, 2011). For Bagdara, paired plots and repeated counts across grazing gradients would show whether blackbuck, chinkara, chital or nilgai respond differently to stocking density.

4.2. Forest products, woody cover and habitat structure

Fuelwood and other resource collection can alter shrub cover, deadwood and the availability of quiet shelter where use is intensive. Effects will vary between open grasslands and wooded ravines. A Bagdara study spanning October 2024 to June 2025 reported 48 sites along a disturbance gradient, reduced canopy cover at more disturbed sites, and lower mammal richness in highly disturbed locations (Singh & Mishra, 2026). These are published study results, not independent measurements by this review. The causal contribution of grazing versus extraction, seasonal vegetation changes and site selection requires further assessment before assigning a single driver.

4.3. Agriculture and crop damage

Farms and wild ungulate habitat overlap closely at Bagdara. The 2010 site assessment reported crop raiding in an area where wild ungulates and settlements coexist (Ranjitsinh & Jhala, 2010). Wild pig and nilgai can become conspicuous at field edges, but the relative contribution of each

species to loss at Bagdara has not been quantified here. Experience near Kanha shows why incident verification, field location, crop type and compensation records matter: self-reported losses and actual compensation differ substantially (Karanth et al., 2012). Retaliatory harm is a possible consequence of unmanaged loss; it should not be asserted as a measured Bagdara trend.

4.4. Hunting and direct disturbance

The historical Bagdara assessment recorded information on trapping knowledge, weapons and some bush-meat use, but these indicators alone do not estimate poaching incidence or identify the people responsible (Ranjitsinh & Jhala, 2010). Enforcement records, independently verified signs and confidential interviews would be needed to measure contemporary hunting pressure. The conservation response should protect wild prey while avoiding unsupported generalisations about particular communities.

4.5. Roads, construction, fire and pollution

The 2017 notification regulates new commercial construction, road works, tree felling, waste and tourism within its specified eco-sensitive zone (MoEFCC, 2017). These rules show recognised environmental risks but do not prove that each pressure currently affects mammal populations within the sanctuary. A useful next step is to map traffic routes, fire scars, extraction sites, settlements and water quality, then compare mammal detections on matched sites. Claims about mining impacts, roadkill rates or plastic exposure at Bagdara should await measured local evidence.

5. Discussion and management priorities

The strongest site-specific evidence concerns a shared-use landscape: settlements, livestock, crops and wild mammals occur together. This setting calls for spatial management rather than a single sanctuary-wide prescription. First, repeat camera trapping and line transects across dry and wet seasons, preserving effort and detection data so occupancy or density can be estimated appropriately. Establish separately whether leopard, wolf, otter or tiger still use the area. Second, map grazing and woody extraction with village participation, distinguishing intensely used patches from blackbuck grassland, seasonal water and carnivore refuge.

Third, maintain a standard crop-loss register with date, coordinates, crop stage, independently checked species evidence, prevention measures and outcome. Prioritise practical field protection where incidents cluster and assess whether claims are resolved promptly. Fourth, review any road, tourism or construction proposal against the notified zone and its governing plan; avoid assuming the one-kilometre western zone encircles the entire sanctuary. Finally, publish an annual monitoring summary with habitat condition, ungulate detections, carnivore records, grazing intensity, conflict reports and actions taken. This review neither estimates current mammal abundance nor asserts that any named pressure has caused a particular local population decline.

6. Conclusion

Bagdara’s documented mammals include blackbuck, nilgai, chinkara, sambar, chital, wild pig, striped hyena, golden jackal, Bengal fox, sloth bear and langurs. Historical field evidence establishes substantial coexistence with settlements and livestock and reports crop damage and

hunting-related indicators. The likely ecological effects of grazing, forest use and crop conflict deserve renewed field measurement; road, mining and pollution effects need location-specific verification. A workable conservation strategy links repeated mammal surveys to locally negotiated grazing, evidence-based crop protection and accountable review of land-use change.

Declarations

This is a literature-based review. No human participants or animals were recruited or handled for this manuscript.

References

Dave, C., & Jhala, Y. (2011). Is competition with livestock detrimental for native wild ungulates? A case study of chital (Axis axis) in Gir Forest, India. Journal of Tropical Ecology, 27(3), 239–247. https://doi.org/10.1017/S0266467410000738

Dwivedi, A. (2018). Taxonomic study on mammalian resources of Bagdara sanctuary, Sidhi (M.P.). International Journal of Zoology Studies, 3(1), 39–43. https://www.zoologyjournals.com/assets/archives/2018/vol3issue1/2-6-90-331.pdf

Karanth, K. K., Gopalaswamy, A. M., DeFries, R., & Ballal, N. (2012). Assessing patterns of human-wildlife conflicts and compensation around a Central Indian protected area. PLOS ONE, 7(12), e50433. https://doi.org/10.1371/journal.pone.0050433

Ministry of Environment, Forest and Climate Change. (2017). Notification S.O. 3028(E): Eco-sensitive zone around Bagdara Wildlife Sanctuary, Madhya Pradesh. Gazette of India. https://www.moef.gov.in/esz-notifications

Ranjitsinh, M. K., & Jhala, Y. V. (2010). Assessing the potential for reintroducing the cheetah in India (TR2010/001). Wildlife Trust of India & Wildlife Institute of India. https://digitalrepository.wii.gov.in/server/api/core/bitstreams/f55fd91d-521c-4528-a865-92dc0ad18aa7/content

Singh, S., & Mishra, Y. (2026). Influence of livestock grazing and forest resource extraction on habitat quality of wild mammals in Bagdara Wildlife Sanctuary. International Journal for Research in Applied Science and Engineering Technology, 14(7), 2318–2326. https://doi.org/10.22214/ijraset.2026.84448