

**ANTHROPOGENIC THREATS AND CONSERVATION STRATEGY FOR
VERTEBRATE FAUNA IN MADHESH PROVINCE, NEPAL**



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TRIBHUVAN UNIVERSITY, KIRTIPUR, KATHMANDU, NEPAL
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Research team members

Principal investigator

Hari Prasad Sharma, PhD

Central Department of Zoology, Tribhuvan University, Kathmandu, Nepal

Co-investigators

1. Bishnu Prasad Bhattarai, PhD

Central Department of Zoology, Tribhuvan University, Kathmandu, Nepal

2. Hem Bahadur Katuwal, PhD

Nepal Zoological Society, Kathmandu, Nepal

3. Sabina Koirala, PhD

Nepal Zoological Society, Kathmandu, Nepal

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Collaborating institutions

1. Central Department of Zoology, Tribhuvan University, Kathmandu, Nepal
2. Nepal Zoological Society, Kathmandu, Nepal (Reg. 957, Kathmandu)

Local collaborator for fieldwork facilitation

1. Mithila Wildlife Trust, Janakpur, Nepal

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EXECUTIVE SUMMARY

The conservation trends for biodiversity vary within and outside protected areas due to differences in management practices, species' habitat preferences, survey efforts, anthropogenic impacts, and species vulnerability. Understanding species occurrence and abundance can provide insight into their roles in ecosystem services and their contributions to local livelihoods. However, limited information on vertebrate fauna outside protected areas, such as in Madhesh Province, Nepal, complicates the development of targeted management and conservation action plans. This study aimed to explore the occurrence of vertebrate fauna and the anthropogenic and ecological factors impacting them in Madhesh Province.

Data on vertebrate species, including fish, amphibians, reptiles, birds, and mammals, were collected from designated plots along transects using various techniques: cast nets, gill nets, direct observation, camera traps, mist nets, Sherman traps, and sign observation, along with a review of literature and opportunistic survey. In total, we recorded 163 fish species, 119 herpetofauna species (24 amphibians and 95 reptiles), 578 bird species, and 90 mammal species in Madhesh Province during this study. Vertebrate species richness and abundance (for different taxa) were significantly influenced by multiple factors, including dissolved oxygen, total dissolved solids, proximity to settlements, farmland, grassland area, water body coverage, canopy cover, soil moisture, temperature, habitat types, human presence, and prey species and predator availability. Suitable habitats for some of the species are primarily found within protected areas and in the western regions outside of protected areas, with some in the southern areas.

Human-wildlife conflict (HWC) is high in the region; approximately 68% of respondents reported frequent wildlife visits to their communities. Large and medium-sized mammals, such as wild boar, nilgai or blue bull, and rhesus monkeys, were identified as the main conflict-causing species, particularly due to crop damage, with livestock depredation by various carnivores also reported. About 40% of respondents mentioned proximity to forests and habitats as the primary cause of HWC, followed by habitat shrinkage and degradation (40%). Attraction to nutritious crops was noted by 30% of respondents, while 32% attributed HWC to the increasing number of wild animals. Over 72% of respondents believed that the wildlife population in their area was increasing. Despite these conflicts, a majority (75%) of respondents believed that conflict-related

wildlife should not be killed, largely because of the perception that it is illegal, the belief that wildlife holds life similar to humans, its integral role in nature, and religious beliefs of the people. A total of 29,943 snakebite cases were recorded from 2071 to 2080 BS, most of which involved non-venomous bites. Higher snakebite cases were reported between 2075–2077 BS and gradually declined afterward. Another critical issue is the illegal trapping of farmland birds, where approximately 25 species are likely to be trapped, killed, and sold as "Bagedi". We estimated that between 1,15,200 and 1,29,600 birds are killed for one winter season, with surveyed hoteliers generating an estimated revenue of NPR 74,88,000 to 84,24,000 (USD 65,113–73,252). Over 70% of those interviewed were unaware that trapping, trading, or consuming wild birds is illegal. Additionally, around 50% of the trappers, 92% of the middlemen, 56% of the hoteliers, and 54% of the customers expressed unwillingness to stop this activity.

In summary, Madhesh Province is home to a rich diversity of vertebrate fauna, yet faces numerous conservation challenges. Conservation efforts should prioritize enforcing wildlife protection laws to curb illegal hunting and trapping while promoting comprehensive, long-term species research with adequate funding to support biodiversity studies. Habitat management, including water source restoration and fire control, is crucial to reduce human-wildlife conflicts. Raising awareness in schools and communities will foster stewardship and simplifying wildlife relief programs can improve community relations and responses to wildlife incursions. Providing alternative livelihoods and promoting eco-friendly agriculture will further enhance conservation efforts. Wildlife-friendly infrastructure designs, humane conflict animal management, and anti-poaching technology investments will protect wildlife and reduce conflicts, while establishing protected corridors, especially between Chitwan National Park and Koshi Tappu Wildlife Reserve, will ensure connectivity and protect biodiversity.