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Roost Selection by Indian Peafowl (*Pavo cristatus*) in Urban and Rural Habitats of Lakhimpur-Kheri, Uttar Pradesh, India

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Abstract: The present study evaluated roost selection by Indian peafowl (*Pavo cristatus*) in Urban and rural habitats of Lakhimpur-Kheri, Uttar Pradesh, India. The observations on roosting preferences revealed that peafowl tend to roost around 60-70% of the tree height irrespective of rural or urban habitats of district Lakhimpur-Kheri, Uttar Pradesh, India. Banyan trees, despite being absent in the urban sample, were the most favoured roosting tree in rural areas, possibly due to their widespread canopy and structural support and Palm trees are less preferred, likely due to structural limitations. Present observations during monsoon season showed a clear roost preference of peafowl on tall, dense-canopied trees like Banyan, Peepal, and Jamun. The urban peafowl adjusted by using relatively shorter trees but still chose higher relative roosting positions within the tree structure. Jamun trees consistently showed high suitability in both landscapes, making them vital for peafowl roosting in fragmented habitats. Additionally, the number of Indian Peafowl was found to be higher in rural areas than in urban areas, likely due to habitat degradation and reduced green cover in urban environment.

Keywords: Roost preference, Canopy, Habitat destruction, Hunting, Peafowl behavior, *Pavo cristatus*

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Introduction

The Indian peafowl (*Pavo cristatus*) is also referred as blue peafowl or common peafowl. It was proclaimed the national bird of India in 1963 as a consequence of its 'flagship' value based on its majestic position in mythology. It is a member of the family Phasianidae and order Galliformes (Ali,

1993). The peafowl distribution is nearly widespread and very common in India, and can be found in an assortment of habitats from closed forests to cultivated fields and urban areas. Being a terrestrial bird that roosts high up to ensure protection, its roosting sites are essential in its

everyday survival strategy, specifically against predators and the environment (Kaur and Kler, 2017; Kishore *et al.*, 2024). Canopy cover, or roost height habitat plays an essential part in the selection of the roost trees by peafowl. Indian peafowl prefer to roost in high, open trees so that they can keep themselves safe from the tree-climbing of nocturnal predators. It roosts in trees and also takes refuge in tall buildings when trees are not available. Roosting is the most prevalent behaviour of birds, which reduces the loss of body heat and reduces the risk posed by predators (Dookia *et al.*, 2015; Khandu *et al.*, 2020). Indian peafowl roosts provide us with plenty of management options to protect the trees in the concerned habitats. In contrast, birds with high metabolic rates utilized during the active period of the day are supplemented by rest, the rest time is known as roosting. Birds usually select roosting site based on thermoregulation and also for security reasons (McKechnie *et al.*, 2021; Govindharaj *et al.*, 2024). Roost choice in birds is controlled by a number of ecological and environmental variables like tree size, canopy cover, branch morphology, distance from food and water sources, and the intensity of human disturbance (Vasundriya and Acharya, 2019; Lal and Nadim, 2024). During the past few decades, with increasing urbanization and modification of land use patterns, the natural habitat of many wildlife species, including the Indian peafowl, has drastically changed. Consequently, knowing how this species modifies its roosting habits in urban compared to rural environments is critical to understanding its ecological adaptability as well as its conservation requirements. Through comparison of roost site types chosen in both rural and urban ecosystems, this study seeks to discern finer points of differences in habitat preference and adjustability, which will help in understanding larger human-wildlife interactions and the adaptability of the species in shifting landscapes. The present study evaluated roost selection by Indian peafowl (*Pavo cristatus*) in Urban and rural habitats of Lakhimpur-Kheri, Uttar Pradesh, India.

Materials and Methods

The field observations on the roosting selection of Indian peafowl were carried out at different locations of rural (village Rehriya, Bhadhura, Kamtara) and urban areas (Mahebaganj, Devkali, Lakhimpur) of district Lakhimpur-Kheri, Uttar Pradesh, India from January 2022 to June 2025. The overall distance cover in district for the study of roosting was about 235 km. The latitude of experimental site is 28.0752°N and longitude is 80.4632°E. District Lakhimpur-Kheri is in eastern Uttar Pradesh which has different types of habitats which include agricultural habitats of various crops such as wheat, maize, rice, vegetables with some areas of forest in rural areas.

To study the roosting habits of peafowl, an extensive survey was carried out in selected habitat of grooves. The survey was carried out through transects during morning hours (6:00 to 9:00 AM) and evening hours (4:00 to 7:00 PM). The roost tree was confirmed seeing the birds directly at dawn hours. The peafowl roosting was confirmed by seeing the bird with a Peafowl Binocular (7 X 50 Olympus model, China). The Indian peafowl *Pavo cristatus* roosting site and trees were searched and recorded. The roosting behavior was also observed and monitored continuously. Detailed such as species of roost tree, roost tree height, roost height, number of peafowl, date, time spent on each tree were recorded.

Results

The observations on roosting behaviour of Indian peafowl in rural and urban habitat showed that it is influenced by tree height, tree species, and surrounding habitat structure at district Lakhimpur. They utilize eight common trees for roosting viz., Banyan (*Ficus benghalensis*), Mango (*Mangifera indica*), Peepal (*Ficus religiosa*), Jamun (*Syzygium cumini*), Neem (*Azadirachta indica*), Babool (*Acacia nilotica*), Palm (*Phoenix dactylifera*) and Pear (*Pyrus communis*) in rural as well as urban habitats.

The tree preference and roosting frequency

Table 1: Roosting of Indian Peafowl (*Pavo cristatus*) in rural area of Lakhimpur-Kheri, Uttar Pradesh, India

S. No.	Common Name	Scientific Name	Range of Tree Height (ft)	Average Tree Height (ft)	No. of Peafowl	Roosting Height (ft)	% Height utilized
1	Banyan	<i>Ficus benghalensis</i>	78-81	80.03	11	56.27	70.14
2	Mango	<i>Mangifera indica</i>	60-64	62.00	9	38.10	61.40
3	Peepal	<i>Ficus religiosa</i>	79-82	80.83	7	54.23	66.93
4	Jamun	<i>Syzygium cumini</i>	65-69	66.99	6	47.74	71.15
5	Neem	<i>Azadirachta indica</i>	62-68	64.83	7	42.98	66.20
6	Babool	<i>Acacia nilotica</i>	48-51	49.95	4	28.60	57.21
7	Palm	<i>Phoenix dactylifera</i>	58-60	58.03	3	27.80	47.80
8	Pear	<i>Pyrus communis</i>	33-39	37.03	3	24.27	65.67

Table 2: Roosting of Indian Peafowl (*Pavo cristatus*) in urban area of Lakhimpur-Kheri, Uttar Pradesh, India

S. No.	Common Name	Scientific Name	Range of Tree Height (ft)	Average Tree Height (ft)	No. of Peafowl	Roosting Height (ft)	% Height utilized
1	Mango	<i>Mangifera indica</i>	57-59	57.77	5	35.77	61.78
2	Peepal	<i>Ficus religiosa</i>	73-77	75.30	4	52.10	68.89
3	Jamun	<i>Syzygium cumini</i>	60-64	62.20	5	46.10	73.70
4	Neem	<i>Azadirachta indica</i>	59-64	61.65	4	41.25	66.57
5	Palm	<i>Phoenix dactylifera</i>	53-57	55.17	3	26.50	48.00
6	Pear	<i>Pyrus communis</i>	31-35	33.17	3	22.93	68.81

showed that in rural areas, peafowl preferred taller and denser trees like Banyan, Peepal, Mango, and Jamun. The highest number of birds (11) was recorded on Banyan trees (Table 1). Whereas in urban areas, Jamun and Mango trees were most used (5 individuals each), followed closely by Peepal (4 birds) (Table 2). It was interestingly noticed that urban tree height was generally lower, and tree density might have influenced roosting behaviour.

The observations on roosting height and tree height relation revealed that roosting height was consistently higher in rural areas due to taller average tree heights, for example, Banyan tree in rural area showed average height of 80.03 ft with roosting at 56.27 ft coincided with 70.14% (Table 1). It was followed by Peepal and Jamun in urban

area with average height of 75.30 and 62.20 ft, roosting at 52.10 and 46.10 ft with of 68.89% and 73.70% respectively (Table 2).

Moreover, the urban roosting generally occurred lower in absolute height, but percentage-wise it was comparable or higher, indicating preference for higher relative canopy positions. The roosting at per cent height in both habitats, Jamun trees recorded the highest relative roosting height 71.15 and 73.70% in rural and urban habitats, respectively (Tables 1, 2). However, lowest relative roosting occurred on Palm trees in both regions such as 47.80 and 48.00% in rural and urban habitats, respectively (Tables 1, 2). The possible reason behind this assertion is low visibility of food and high risk of predation as well as poaching in urban areas as compared to rural

habitat.

The observations on habitat influence showed that rural areas offered more diversity in tree types and taller trees, providing safer and elevated roosts, whereas, urban trees were shorter on average but still supported peafowl roosting, particularly where canopy coverage or safety from human disturbance was sufficient.

Discussion

Peafowl were found in greater numbers in rural areas than in urban habitats due to their adaptability and preference for natural environments. They thrived in open forests and warm climates, often inhabiting farmlands. Rural regions offer them a preserved and undisturbed habitat, allowing them to live in their natural surroundings, which enhances their chances of survival (Jain and Rana 2023; Bhawna *et al.*, 2024). Additionally, they faced fewer threats from hunting or human disturbance in villages, enabling them to move freely and confidently across fields and rural landscapes (Das *et al.*, 2024).

Interestingly, their population was larger in rural areas, while the frequency of peafowl roosting was higher in urban areas. It was observed that peafowl have gradually adapted to urban areas and were commonly seen in parks and gardens. However, their loud calls can often be considered a disturbance in urban settings. The observations on various aspects of bird survival in urban areas reported by Paranjpe and Dange (2020), Chandramouli (2022), and Nasar *et al.* (2024) support and strengthen the present findings.

In urban regions, trees tend to be shorter than those in rural areas, yet peafowl are observed to roost at higher levels in trees. This roost preference of tall trees with dense canopy by peafowl was observed as a defense mechanism to protect themselves from predators. Higher roosts also offer better access to food sources, including insects, small reptiles etc, which helps to regulate pest populations and supports ecological balance (Subramanian and John, 2000; Choudhary and

Chishty, 2021; Kumara and Yogendra, 2023; Samson *et al.*, 2025).

The comparative observations on roosting of peafowl across rural and urban habitats highlight their remarkable adaptability and ecological significance. Rural areas remain their preferred habitat due to natural landscapes and minimal human interference. Indian peafowl also showed a notable capacity to adjust in urban environments for roosting. Their elevated roosting behaviour was observed shorter on trees in urban area, which not only reflects an innate survival strategy but also contributes to urban ecological balance through natural pest control.

Conclusion

The current study concluded that there were two important factors such as height and canopy of tree that influenced the roost preference by Indian peafowl (*Pavo cristatus*) in rural and urban areas. The Indian peafowl preferred to roost tall trees having dense canopy. This roost of peafowl is a defense mechanism to protect them from surrounding predators. Present findings revealed the conservation of tall trees having dense canopy such as *Ficus sp.* and *Syzygium cumini* in both rural and urban areas to ensure the continued successful roosting and survival of peafowl population. Destruction of large and taller roost trees adversely affected the population of peafowl.

Ethical Statement

No animal or microbes have been used or sacrificed for this study, hence Ethical Approval not required.

Author Contributions

Each author has contributed equally to the study's planning, analysis, writing, and editing. All authors have read and agreed to the published version of the manuscript.

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Conflict of Interest

The authors declare no conflicts of interest.

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