




Nesting ecology of Baya Weaver (*Ploceus philippinus*) in Ghatshila, Jharkhand, India

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Received 01 July 2025 | Accepted 27 August 2025 | Published 01 September 2025

Abstract

This study documents a thriving colony of Baya Weavers (*Ploceus philippinus*) nesting in a palm tree (*Borassus flabellifer*) in Village Burudih, Ghatshila, Jharkhand, India. We observed approximately 55 nests, with 35 (63.6%) being active, 15 (27.3%) abandoned, and 15 (27.3%) fallen to the ground. The nests were situated at heights ranging from 5 to 12 meters, with an average height of 8.5 meters. The study highlights the importance of tall trees with high foliage, such as palm trees, in providing protection from predators and harsh weather conditions. Our observations suggest that Baya Weavers are adapted to nesting in such trees, and that safe nesting locations and well-constructed nests are crucial for maximizing fledgling success. This study contributes to our understanding of Baya Weaver nesting ecology and provides insights into the conservation of this species.

key words: Baya Weaver, Nesting Ecology, Breeding Habits, Nest Architecture, Conservation

1. Introduction

The Baya Weaver (*Ploceus philippinus*) is a widely distributed species found throughout the Indian subcontinent and southeastern Asia (Quader, 2006). There are five species in the *Ploceus* clade: *P. philippinus*, *P. manyar*, *P. benghalensis*, *P. hypoxanthus*, and *P. megarhynchus* (Kalita et al., 2024). This bird is renowned for its exceptional nest-building skills, which play a crucial role in its courtship display (Quader, 2005). The male Baya Weaver invests considerable time and effort into constructing intricate hanging nests, often suspended from trees or other structures, to attract potential mates (Pandian, 2022). During courtship, the male showcases its nest to females by flapping its wings, inviting them to inspect and potentially occupy the nest (Quader, 2005). The Baya Weaver exhibits adaptability in its nesting habits, selecting a variety of trees, bushes, and other sites to build its nests (Borges et

al., 2002). Notably, it shows a preference for thorny acacia trees and specific palm species, such as *Areca* palms and *Borassus flabellifer* (Pandian and Ahimaz, 2018). Interestingly, Indian Baya Weavers have been observed establishing colonies on a diverse range of plants and even unconventional structures, including house eaves, telegraph and power lines, and the sides of irrigation wells (Pandian, 2022). As a widely distributed species in the Indian subcontinent and Southeast Asia, the Baya Weaver plays a vital role in ecosystems, contributing to pollination, seed dispersal, and pest control (Dinesh et al., 2022). However, human activities such as deforestation, habitat destruction, pollution, and climate change pose significant threats to bird populations and ecosystems (Okorundu et al., 2022).

Nest site selection is a crucial reproductive decision for birds, influencing their breeding success and survival (Quader, 2006a). Birds choose nesting sites that provide protection from predators, harsh weather, and other environmental stressors (Thiruvengadam et al., 2022). Nests are often strategically constructed to be inaccessible, camouflaged, or situated in colonies to enhance safety (Wood, 1926). The selection of a suitable nest site also depends on various factors, including the availability of nesting materials, surrounding vegetation, temperature, humidity, and light intensity (Asokan et al., 2008). Additionally, birds may be influenced by social and psychological factors, such as the presence of conspecifics or the quality of potential mates (Quader, 2006). By carefully selecting a nest site, birds can optimize their reproductive success and ensure the survival of their offspring (Mahendra et al., 2024). Effective nest site selection is critical for mitigating predation risks, regulating egg and chick development, and ultimately contributing to the species' population dynamics (Quader, 2006a). This study aims to contribute to our understanding of Baya Weaver nesting ecology through a case study from Village Burudih, Ghatshila, Jharkhand, India, highlighting the importance of safe nesting locations, nest architecture, and tree selection in maximizing fledging success.

The Baya Weaver's conservation status is categorized as Least Concern by the International Union for Conservation of Nature (IUCN) Red List. However, its status under the Wildlife Protection Act (WPA) is not readily available (IUCN, 2024). The species' widespread distribution and common occurrence within its range, it is likely that the Baya Weaver does not face significant threats under the WPA. Nonetheless, continued monitoring and conservation efforts are essential to ensure the species' stability and protect its habitats.

2. Materials and methods

Study Area and Methods:

The study was conducted in Village Burudih, Ghatshila, Jharkhand, India, situated at Latitude: 22.6424° N and Longitude: 86.4945° E (Figure 1). The survey was carried out from May 2025 to June 2025, during which we observed a thriving colony of Baya Weavers (*Ploceus philippinus*) in a palm tree (*Borassus flabellifer*). Direct observations and surveys were carried out to collect data on nest characteristics, including nest height, distance from the trunk, and nest architecture. The observations were made using binoculars, and photographs were taken to document the nesting behavior and habitat. The study area comprises a diverse landscape of grasslands, cultivated fields, and scattered trees. The palm tree hosting the Baya Weaver colony was located in an open area surrounded by agricultural fields and grasslands, providing a conducive environment for the birds with ample food sources, nesting sites, and breeding grounds. The Ghatshila range of Jamshedpur Forest Division, where the study area is located, is a region of significant ecological and conservation importance. The division is characterized by a diverse habitat with a mix of deciduous forests and open areas, and is home to various wild animals, including elephants, sloth bears, and other species. The region's unique geography and climate support a wide range of plant life,

including dry and moist deciduous forests dominated by tree species such as Sal (*Shorea robusta*), Mahua (*Madhuca longifolia*), and Acacia.

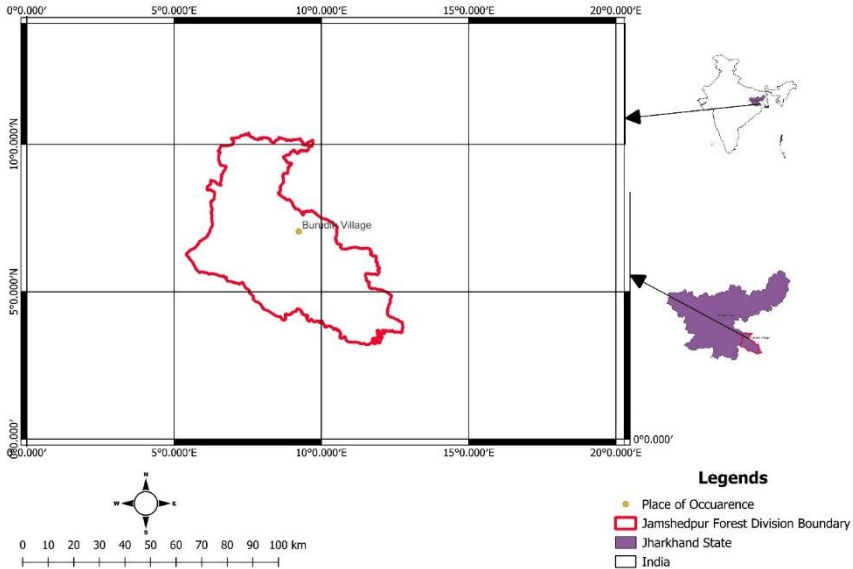


Figure 1. Map of Burudih, Ghatshila, Jharkhand, India, showing the location of the palm tree with the Baya Weaver colony.

3. Results

Observations:

During our survey and data collection in Village Burudih, Ghatshila, Jharkhand, India, we observed a thriving colony of Baya Weavers (*Ploceus philippinus*) nesting in a palm tree (*Borassus flabellifer*) (Figure 2). The tree, standing tall above the surrounding vegetation, supported approximately 35-40 intricately woven nests suspended from its branches. The survey of the Baya Weaver colony revealed a total of 55 nests in the palm tree. Out of these, 35 nests (63.6%) were active, indicating recent breeding activity. Fifteen nests (27.3%) were abandoned, likely due to predation, harsh weather, or other environmental factors. Additionally, 15 nests (27.3%) had fallen to the ground, possibly due to strong winds or branch breakage (Table 1). The nests were observed to be situated at varying heights and distances from the trunk of the palm tree. The nest height ranged from 5 to 12 meters, with an average height of 8.5 meters. The distance of the nests from the trunk ranged from 2 to 6 meters, with an average distance of 4 meters (Table 2). Some nests had fallen to the ground, possibly due to branch breakage, strong gusts of wind, or other environmental factors (Figure 3). The nests were characteristic of Baya Weavers, with a closed basket-like structure and a vertical entrance tube of variable length. The male Baya Weavers were observed constructing multiple nests, displaying their engineering skills and complex breeding behavior (Figure 4). The palm tree's height and location provided a safe haven for the Baya Weavers to nest and breed, with minimal disturbance from human activities or predators. The surrounding area consisted of grasslands and cultivated fields, providing a suitable habitat for the birds. Our observations suggest that the Baya Weavers in this colony are adapted to nesting in tall trees with high

foliage, such as the palm tree, which provides protection from predators and harsh weather conditions. The study highlights the importance of preserving such trees and habitats to support the breeding and nesting activities of Baya Weavers.



Figure 2. Adult male and female Baya Weavers, highlighting differences in breeding plumage and coloration.

Table 1. Nest Characteristics of Baya Weavers in study area

Nest Characteristics	Number of Nests
Total Nests	55
Active Nests	35
Abandoned Nests	15
Fallen Nests	15

Table 2. Nest Height and Distance from Trunk of Baya Weavers in study area

Nest Height and Distance from Trunk	Range	Average
Nest Height (m)	5 to 12	8.5
Distance from Trunk (m)	2 to 6	4



Figure 3. Fallen Baya Weaver nests collected from the study site, showcasing nest architecture and structure.



Figure 4. Baya Weaver (*Ploceus philippinus*) colony on a palm tree (*Borassus flabellifer*), showcasing intricate nests and breeding habitat.

4. Discussion

The Baya Weaver colony in Village Burudih, Ghatshila, Jharkhand, India, exhibited a strong preference for a tal palm tree (*Borassus flabellifer*) as a nesting site, which provided a safe haven with minimal disturbance from human activities or predators. The surrounding grasslands and cultivated fields offered a suitable habitat with ample food sources and breeding grounds. The study's findings on nest architecture, including the closed basket-like structure and vertical entrance tube, are consistent with previous research on Baya Weaver nesting behavior. The male Baya Weavers' complex breeding behavior, including the construction of multiple nests, highlights their engineering skills and adaptability to their environment. However, the Baya Weaver population in the study area faces potential threats from habitat destruction, fragmentation, and degradation due to human activities such as deforestation, agricultural expansion, and urbanization (Grimmett et al., 1998). Human-induced environmental changes, including climate change, pollution, and habitat alteration, can have far-reaching consequences for Baya Weaver populations (Thiruvengadam et al., 2022). Changes in temperature and precipitation patterns may affect the availability of food resources, nesting materials, and suitable breeding grounds (Skagen and Adams, 2012). Therefore, conservation efforts should focus on preserving tal trees, such as palm trees, and habitats that support Baya Weaver breeding and nesting activities, while also addressing human-induced environmental changes.

Breeding and Nesting Behavior of Baya Weavers:

The Baya Weaver's breeding season typically occurs during the monsoon, from June to September (Pandian, 2022). During this time, males engage in polygynous breeding, constructing multiple nests to attract females (Quader, 2006). The male builds an intricate nest, starting with a "helmet" structure suspended from a tree branch, and displays it to a

female. If she accepts it, he completes the nest by weaving it intricately (Pathan and Goswami, 2023).

The nest's architecture is crucial for safety and success. The entrance tube reduces predation by hindering snake entry, while deep egg chambers prevent eggs and nestlings from falling out (Crook, 1963). Nests constructed with fine fibers and a tight weave provide better insulation and higher fledgling success (Pandian, 2023). Females choose their mates based on the quality of the nest, prioritizing both architectural and locational attributes (Quader, 2006).

In terms of location, Baya Weavers select thorny trees like *Acacia nilotica* and *Prosopis juliflora* for security, as well as tall trees with high foliage (Jadhav et al., 2018). They also prefer nests to be at a height of above 3m from the ground to enhance safety from terrestrial predators (Pandian, 2022). The distance between the nest and the trunk is also important, with nests placed on outermost branches being safer from predators (Quader, 2006).

Females lay 2-4 eggs, which hatch after 14-17 days of incubation. Both parents care for the young, but females take on most of the responsibilities. The nestlings leave the nest after 2-3 weeks (Quader, 2006). Overall, the Baya Weaver's breeding and nesting behaviors showcase their remarkable adaptability and social dynamics.

5. Conclusion

This study sheds light on the unique nesting habits of Baya Weavers (*Ploceus philippinus*) in Village Burudih, Ghatshila, Jharkhand, India, emphasizing the crucial role of tall trees like palm trees in supporting their breeding and nesting activities. The findings of this research have important implications for conservation efforts, highlighting the need to prioritize habitat preservation and restoration, particularly in areas where human activities pose a significant threat to bird populations.

Acknowledgements

We extend our sincere gratitude to the Janshedpur Forest Department, Government of Jharkhand, India, for their invaluable support and cooperation throughout our study. We also acknowledge the Department of Zoology, Dr. Shyama Prasad Mukherjee University, Ranchi, Jharkhand, India, for providing essential resources and expertise that contributed significantly to the success of our research. Additionally, we thank Bhaskar Mallick from the Department of Ecological Studies, Kalyani University, Nadia, West Bengal, India, for generously sharing a photograph that enhanced our study.

Conflict of interests

The authors declare that they have no competing interests.

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