



A STUDY ON STRUCTURAL ABNORMALITIES IN NEST OF BAYA WEAVER (*PLOCEUS PHILIPPINUS*) FROM SHEKHAWATI REGION OF RAJASTHAN, INDIA

Mukesh Kumar¹ and Anita Jhahria²

¹Research scholar, Pandit Deendayal Upadhyaya Shekhawati University, Sikar, Rajasthan, India

²Principal, Seth Shree Kedarnath Modi Rajkiya Mahavidyalaya, Gudha, Jhunjhunu, Rajasthan, India

Abstract

The Baya Weaver (*Ploceus philippinus*) is renowned for constructing intricate hanging nests that represent one of the most remarkable examples of avian architecture. It is a highly social and colonial species, building self-woven nests suspended from the branches of trees. The present study was conducted at five selected sites in the Shekhawati region of Rajasthan, India, to investigate structural abnormalities in Baya Weaver nests. Only abandoned nests were collected after the completion of the breeding season to avoid disturbance to active colonies. Detailed examination of these nests revealed several structural variations, including incomplete entrance tubes, distorted brood chambers, irregular weaving patterns, and asymmetrical nest architecture. Such abnormalities may arise from multiple factors, including environmental stress, strong winds, scarcity of suitable nesting materials, and the inexperience of young males. The findings indicate that many of these structural modifications are not merely accidental defects but may represent adaptive responses to environmental challenges and predation pressures. This study provides valuable insights into the nesting behaviour and structural plasticity of the Baya Weaver in the semi-arid ecosystem of the Shekhawati region.

Keywords: *Ploceus philippinus*, Baya Weaver, nest architecture, structural abnormalities, Shekhawati region, adaptive behaviour.

1. Introduction

The Baya Weaver (*Ploceus philippinus*) is renowned for its intricately woven pendulous nests, making it one of the finest avian architects. It is a highly social and colonial bird that constructs hanging nests on trees near wetlands and agricultural fields. Males build the nests entirely on their own through distinct stages—wad, ring, helmet, and final completion—with females selecting mates based on the quality of the nest (Chavan and Chondekar, 2024; Quader, 2005).

Several studies have documented the nesting ecology and structural abnormalities of Baya Weaver nests in different parts of India. Abnormal nests have been reported from Maharashtra (Ali *et al.*, 1957; Ambedkar, 1980), Rajasthan (Sharma, 1985, 1988, 1995), Goa (Borkar and Komarpant, 2003), and Tamil Nadu (Pandian and Ahimas, 2018; Pandian, 2021). Similar structural variations have also been observed in other *Ploceus* species, indicating considerable diversity in nest architecture.

Despite these studies, information on structurally abnormal nests of the Baya Weaver in the semi-arid Shekhawati region of Rajasthan remains scarce. Therefore, the present study was undertaken to document the types and frequency of abnormal nests, identify their possible causes, and examine nest-supporting tree species, thereby contributing to a better understanding of the nesting ecology and adaptive behaviour of the species in this region.

2. Materials and Methods

2.1 Geographical area of the study

The present study was conducted in the Shekhawati region of Rajasthan, India, encompassing parts of the Sikar, Churu, and Jhunjhunu districts. Situated in the semi-arid zone of north-eastern Rajasthan, the region is characterized by sandy plains, sparse thorny vegetation, scattered agricultural fields, and an arid to semi-arid climate with hot summers, a monsoon season, and mild winters. Seasonal ponds, village tanks, irrigation canals, roadside plantations, and agricultural landscapes provide suitable nesting and foraging habitats for the Baya Weaver (*Ploceus philippinus*).

Five representative study sites, selected based on the regular occurrence of Baya Weaver colonies and the availability of suitable nesting habitats, were surveyed during the study period:

1. **Kheri Dhukia, Laxmangarh, Sikar District**
2. **Fatehpur Behar, Sikar District**
3. **Sikar City, Sikar District**
4. **Ratangarh, Churu District**
5. **Nawalgarh, Jhunjhunu District**

Geographical details like geographical location, latitude, longitude, altitude, and habitat of the above selected sites are given in the table 1-

Table 1- Geographical details like geographical location, latitude, longitude, altitude, and habitat of the study sites are given.

S. No.	Location	District	Latitude (°N)	Longitude (°E)	Altitude (m)	Habitat Type
1	Kheri Dhukia (Laxmangarh)	Sikar	27.62	75.15	424	Agricultural fields, scattered trees, seasonal ponds
2	Fatehpur Behar	Sikar	27.62	75.15	427	Farmland mixed with open scrubland
3	Sikar City	Sikar	27.62	75.15	427	Urban greenery, roadside plantations, water storage tanks
4	Ratangarh	Churu	27.97	74.62	300	Arid sandy plains, sparse thorny vegetation
5	Nawalgarh	Jhunjhunu	27.85	75.27	379	Agricultural surroundings with scattered tree cover

2.2 Methodology

In the present study, the fieldwork consisted of direct observation to observe and record the plant species used by Baya Weaver for food, nest-building material, nest site. The observations will be carried out from 06:00 a.m. to 12:00 a.m. and 15:00 p.m. to 18:00 p.m. when the birds are active. The plants which are used by Baya Weaver will be photographed

and identified with the help of relevant literature. Abnormal nests based on structural, orientation, and abnormalities will be examined along with complete Baya weaver nest which is retort-shaped in construction. The nests of Baya weaver at different nesting sites were collected by random sampling one nest from each site for their morphological measurements. Nikon DSLR cameras were used to capture the birds and nests. The locations of nests and nest-supporting plants will be determined using a standard GPS. The orientations of the nests will be determined using a compass.

4. Results and Discussion

Nest building in the Baya Weaver (*Ploceus philippinus*) is a highly specialized behaviour performed almost entirely by the male. Males construct elaborate hanging nests using strips of grasses and plant fibres, and the quality of these nests plays an important role in female mate selection (Crook, 1963; Quader, 2006). Although females generally do not participate in nest construction, they may occasionally add lining materials after accepting the nest (Oschadleus, 2020; HBW).

The present study documented various types of structurally abnormal nests in the Shekhawati region of Rajasthan. The different abnormal nest types are illustrated in **Plates 1 and 2**, and their frequency is presented in **Table 2**.

Our observations suggest that nest location has a greater influence on nesting success than nest structure alone. Baya Weavers prefer sheltered sites and suspend their nests high above the ground, reducing exposure to strong winds and predators. The structural abnormalities observed are likely caused by environmental conditions, wind damage, shortage of nesting materials, and the inexperience of young males. However, many abnormal nests remained functional, indicating that these variations may represent adaptive responses rather than simple construction defects.

The Baya Weaver (*Ploceus philippinus*) constructs nests on a wide variety of host plants. Davis (1974) reported 25 host plant species across India, while Sharma (1987) recorded nests on 45 plant species belonging to 23 families in eastern Rajasthan. Besides trees, nests have occasionally been found on house eaves, power lines, and irrigation wells (Ambedkar, 1969; Davis, 1971; Subramanya, 1982). The species generally prefers nesting at heights of 7–9 m, which likely reduces the risk of predation (Ali, 2009).

A typical Baya Weaver nest consists of three main parts: the stalk, brood chamber (body), and entrance tube (Sharma, 1992). Incomplete nests are bell-shaped and lack a fully developed brood chamber and entrance tube. During the breeding season, males may also construct structurally abnormal nests, including duplication, enlargement, reduction, or absence of nest parts. The different abnormal nest types observed during the present study are illustrated in Plates 1 and 2, while their classification is presented in Table 2.

Naik (2007) recorded 504 abnormal nests belonging to 17 structural types from 5,502 nests examined in Karnataka. In the present study, incomplete bi-storeyed, bi-storeyed, and fused nests were the most common abnormal forms recorded in the Shekhawati region. Although the exact causes of these abnormalities remain uncertain, they are likely influenced by environmental conditions, developmental factors, and the experience of nest-building males.

Baya Weavers generally prefer thorny trees for nesting because they provide protection against predators. To withstand strong winds, they may construct wide-stalked, multi-stalked, buttressed, or stalkless nests. Rare structural forms such as double-opening nests and pseudobi-storeyed nests are thought to enhance escape opportunities and reduce predation by crows and snakes. These observations suggest that many structural abnormalities may represent adaptive modifications that improve nest stability and breeding success under local environmental conditions.

Plate 1

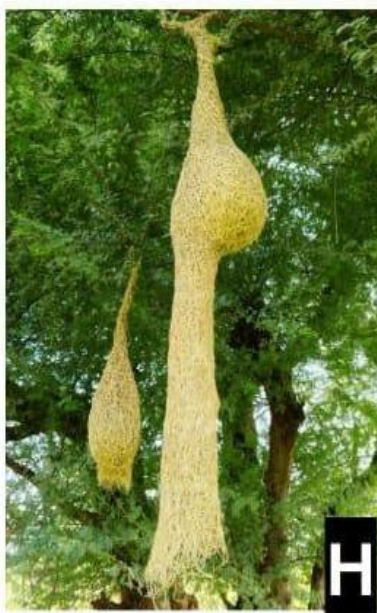


Plate-1 shows the photographs of different structurally abnormal nests of Baya weaver bird

Plate-2



Plate-2 shows the photographs of different structurally abnormal nests of Baya weaver bird

Table-2 shows the different structurally abnormal nests of Baya weaver bird. Nomenclature of abnormal nests is as per Sharma, 1992.

Sr. No.	Structural abnormality in nest	Host Plant on which nest is constructed	Photograph	Study site
1	Bell – Jar shaped Nest	<i>Acacia nilotica</i> (Babool)	Plate 1A	Sinwali
2	Pseudobistoreyed Nest with no entrance tube	<i>Prosopis cineraria</i> (Khejri)	Plate 1B	Hamirpura
3	1+1/2 Storeyed	<i>Prosopis cineraria</i> (Khejri)	Plate 1C	Hamirpura
4	Enlarged bodied	<i>Prosopis cineraria</i> (Khejri)	Plate 1D	Hamirpura
5	Chain-storeyed nests with triple opening	<i>Prosopis cineraria</i> (Khejri)	Plate 1E	Hamirpura
6	Bistoreyed Nest with no entrance tube	<i>Prosopis cineraria</i> (Khejri)	Plate 1F	Kantewa
7	Very large tubed nest	<i>Saccharum bengalense</i> (Sarkanda)	Plate 1G	Kantewa
8	Enlarged and wide tubed	<i>Acacia nilotica</i> (Babool)	Plate 1H	Kantewa
9	Long stalked long tubed	<i>Prosopis cineraria</i> (Khejri)	Plate 1I	Hamirpura
10	Two opening tubeless	<i>Prosopis cineraria</i> (Khejri)	Plate 2A	Kantewa
11	Wide stalked Nest	<i>Prosopis cineraria</i> (Khejri)	Plate 2B	kantewa
12	Bistoreyed two opening tubeless	<i>Prosopis cineraria</i> (Khejri)	Plate 2C	Kantewa
13	Buttressed nest	<i>Prosopis cineraria</i> (Khejri)	Plate 2D	Hamirpura
14	Bistoreyed tubeless	<i>Prosopis cineraria</i> (Khejri)	Plate 2E	Hamirpura
15	Chain-storeyed nests with single opening	<i>Prosopis cineraria</i> (Khejri)	Plate 2F	Hamirpura
16	1+1/2 Storeyed with two opening	<i>Prosopis cineraria</i> (Khejri)	Plate 2G	Hamirpura
17	Long stalked long tubed	<i>Prosopis cineraria</i> (Khejri)	Plate 2H	Hamirpura
18	Nest with wide long tube	<i>Prosopis cineraria</i> (Khejri)	Plate 2I	Hamirpura

4. Conclusion

The present study suggests that structurally abnormal nests of the Baya Weaver (*Ploceus philippinus*) in the Shekhawati region of Rajasthan are not merely accidental but may represent adaptive responses to environmental stress, predation, and the inexperience of young males. These structural variations likely enhance nest stability, improve protection, and demonstrate the species' behavioural flexibility and adaptability to semi-arid environments.

Further studies across different habitats are required to understand the behavioural and ecological mechanisms underlying abnormal nest construction and to evaluate their adaptive and evolutionary significance.

5. References

1. Ahamed, N., Dayananda, G.Y. & Naik, K.L. 2021. Studies on abnormal nests of baya weaver bird *Ploceus philippinus* in different zones of Shivamogga district, Karnataka. International Journal of Zoology Studies. 6(2): 28-30.
2. Ali, A.M.S. 2009. Studies on Nest-Site Selection and Prey Delivery Patterns to Nestlings by the Baya Weaver *Ploceus philippinus* (Aves: Passeriformes) in Tamil Nadu, South India. World Journal of Zoology 4(4): 308-312.
3. Ali, S. Ambedkar, V.C. & Vijayakumar, C. 1957. Further notes on the Baya weaver bird *Ploceus philippinus* Linn. Journal of the Bombay Natural History Society 53: 491-502.
4. Ali, S. 1931. The nesting habits of the baya (*Ploceus philippinus*). A new interpretation of their domestic relations. Journal Bombay Natural History Society 34: 947-964.
5. Ambedkar, V.C. 1980. Abnormal nests of the Baya Weaver bird *P. philippinus* (Linn.). Journal of the Bombay Natural History Society 75: 1205-1211.
6. Ambedkar, V.C., 1969. Nests of the Baya, *Ploceus philippinus* (Linnaeus) on telegraph wires. Journal of the Bombay Natural History Society 66: 624.
7. Asokan, S. Samsoor Ali. A.M. & Nagarajan, R. 2008. Studies on nest construction and nest microclimate of the baya weaver *Ploceus philippinus* (Linn). Journal of Environmental Biology. 29(3):393-396.
8. Borkar, M.R. & Komarpant, N. 2003. Observations on the nesting ecology of Baya Weaver bird (*Ploceus philippinus* Linn.) in South Goa, with notes on aberrant nest designs. Ecology, Environment and Conservation 9(2): 217– 227.
9. Chavan, A. & Chondekar, R. 2024. Nesting Behaviour of Baya Weaver (*Ploceus philippinus*) in Dr. Babasaheb Ambedkar Marathwada University Campus, Chhatrapati Sambhajanagar, Maharashtra, India. International Journal of Zoological Investigations 10(2):247-255.
10. Collias, N.E. & Collias E.C. (1962). An experimental study of the mechanisms of nest building in a weaverbird. The Auk 79: 568–595.
11. Crook, J.H. 1963. A Comparative Analysis of Nest Structure in the Weaver Birds (Ploceinae). Ibis 105: 238–262.
12. Davis, T.A. 1971. Baya weaver-bird nesting on human habitations. J. Bombay Nat. Hist. Soc., 68: 246-248.
13. Davis, T.A. 1974. Selection of nesting trees and the frequency of nest visits by Baya Weaverbird. Journal of the Bombay Natural History Society 71(3):356-366.
14. Maclean, G.L. (1985). Roberts' Birds of Southern Africa, Cape Town: John Voelter Bird Book Fund.
15. Mishra, N. 2004. Abnormal nest of the Black-breasted Weaver *Ploceus benghalensis*. Newsletter for Ornithologists 1 (3): 45.
16. Naik, K.L. 2007. Studies on Ecology of Weaver Bird in some parts of Western Ghats of Karnataka. Ph.D. Thesis, Kuvempu University, Jnana Sahyadri, Shankaraghatta,
17. Oschadleus, D. 2020. Baya Weaver *Ploceus philippinus*. Weaver Watch: Monitoring the Weavers of the World (online Available here: <http://weavers.adu.org.za/sp.php?spp=4186>).
18. Pandian, M. & P. Ahimas 2018. Nesting behavior of the Baya Weaver Bird, *Ploceus philippinus* (Linnaeus) (Passeriformes: Ploceidae) in rural TamilNadu, India. International Journal of Ecology and Environmental Sciences 44(1): 33–42.
19. Pandian, M. 2021. Nesting habits of Baya Weaver *Ploceus philippinus* (Linnaeus, 1776) in rural Arakkonam Taluk, Vellore district, Tamil Nadu, India. Journal of the Bombay Natural History Society 118: 03–17.
20. Praveen, J., Jayapal, R. & Pite, A. 2020. Taxonomic updates to the checklists of birds of India, and the South Asian region-2020. Indian BIRDS 16(1):12–19.
21. Quader, S. 2006. What makes a good nest? Benefits of nest choice to female Baya Weavers (*Ploceus philippinus*). The Auk, 123(2):475.
22. Quader, S. 2005. Elaborate Nests in a Weaverbird: A Role for Female Choice? Ethology 111 (12):1073-1088
23. Sharma, S.K. 1985. A study on qualitative aspect of abnormal nesting in Baya Weaver Bird *Ploceus philippinus* Linn. Journal of Southern forest Rangers College, Coimbatore 60: 5054.
24. Sharma, S.K. 1988. Buttressed nest of Baya Weaver Bird *Ploceus philippinus* (Linn.). Journal of the Bombay Natural History Society 85(2):432.

25. Sharma, S.K. 1992. A study of abnormal nests of baya weaver bird *Ploceus philippinus* (linn.) in rajasthan1 (Linn.). Journal of the Bombay Natural History Society 2:67-76.
26. Sharma, S.K. 1995. A study of abnormal nests of Baya Weaver bird *Ploceus philippinus* (L.) in Rajasthan. Journal of the Bombay Natural History Society 92: 1205-1211.
27. Sharma, S.K., 1987. Host plants used by Baya Weaver bird (*Ploceus philippinus* Linn.) for nesting in Eastern Rajasthan. Journal of the Bombay Natural History Society 84:218-220.
28. Subramanya, S., 1982. Baya nests on telegraph wires. Newslet. Bird Watchers, 22(3-4):6.

