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WEAVER BIRDS OF SHEKHAWATI: THE MASTER ARCHITECTS OF INTRICATE NEST BUILDING

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ABSTRACT

Weaver birds, members of the Ploceidae family, are renowned for their exceptional nest-building abilities. Found abundantly across various regions of India, these avian architects construct intricate nests, showcasing remarkable craftsmanship and engineering skills. This paper delves into the fascinating world of weaver birds, with a specific focus on the Shekhawati region of Rajasthan, where *Ploceus philippinus* are found. This study examines their nesting behavior and the ecological implications of their architectural prowess in the arid landscape of Shekhawati.

By analysing the nesting habits of weaver birds in this unique environment, this paper aims to shed light on the importance of these avian architects in maintaining ecological balance and biodiversity in the region. Weaver birds, belonging to the Ploceidae family, are renowned for their exceptional nest-building abilities. Found abundantly across various regions of India, these avian architects construct intricate nests, showcasing remarkable craftsmanship and engineering skills. This paper delves into the fascinating world of weaver birds, exploring their nesting behaviour and the significance of their nests.

KEY WORDS: *Ploceus philippinus,* Weaver Bird, nest, ecological balance and Shekhawati .

I. INTRODUCTION

India is one of the ten countries with the most bird species richness, sheltering over 1,332 species (Praveen *et al.* 2020). The Ploceidae family has 15 genera and 118 species. There are 64 species of weavers in the Afro-Asian region, which includes four species in India. (Oliveros *et al.* 2019). The four species found in India are Baya Weaver *Ploceus philippinus*, Black-throated Weaver *Ploceus benghalensis*, Streaked Weaver *Ploceus manyar*, and Finn's Weaver *Ploceus megarhynchus* .

Ploceus philippinus is listed as a protected taxon in Schedule IV, Wildlife (Protection) Act 1972 of India. However, the IUCN Red List of Threatened Species (2016) classifies this species under organisms of least concern (Birdlife International 2016).The baya weaver (*Ploceus philippinus*) is a weaverbird found across the Indian Subcontinent and Southeast Asia. Flocks of these birds are found in grasslands, cultivated areas, scrub and secondary growth and they are best known for their hanging retort shaped nests woven from leaves. These nest colonies are usually found on thorny trees or palm fronds and the nests are often built near water or hanging over water wherepredators cannot reach easily. They are widespread and common within their range but are prone to local, seasonal movements mainly in response to rain and food availability.

Baya weavers are social and gregarious birds. They forage in flocks for seeds, both onthe plants and on the ground. Flocks fly in close formations, often performing complicated maneuvers. They are known to glean paddy and other grain in harvestedfields, and occasionally damage ripening crops and are therefore sometimes considered as pests.Their nests are not merely shelters but serve as intricate structures intricately woven from grass, leaves, and twigs. This paper aims to provide insights into the nesting behavior of weaver birds in Shekhawati region , shedding light on the techniques employed and the ecological significance of their nests.

II. MATERIALS AND METHODS

Study Area

The semi arid region of north eastern Rajasthan is known as Shekhawati. The territory derives the name from the Shekhawat Rajput clan scion Maha Rao Shekha Ji, Today's Shekhawati includes whole of Jhunjhunu and Sikar districts. The Aravali mountain range has a presence in Shekhawati area. Shekhawati is restricted to the east of the Aravalli Range which cuts through the present district of Sikar and forms an eastern border to Jhunjhunu. Longitude 74.44 degree to 75.25 degree Latitude East 27.21 degree to 28.12 degree North is the geographical location of shekhawati.The climate of Shekhawati, is of a typical desert type. Shekhawati weather experiences hot and dry summers. The average temperature remains in the range of 41.2°C (max) to 29°C (min). The climatic conditions of Shekhawati, Rajasthan in the winter season are cooler, but again dry. The average temperature falls in the range of 30°C (max) to 10.5° C (min). Between the months of July and mid September is the monsoon season.

Methodology

In the present study, the fieldwork consisted of direct observation (direct count method) of birds in the open and hide situations. During field survey, the exact location of nesting activity of *Ploceus philippinus* was detected by following their calls and songs. The nest built on tall plants and in remote places were observed from distance with binoculars. The nest building behaviour of active pair of birds were studied by monitoring the nest from early morning and late evening for five to six consecutive days. Nidification activities such as the number of hours of labour for nest construction, the amount of nesting materials collected during the busy hours of nidification, average time spent in gathering nest materials for nest building, average time taken to carry the nesting materials from its source to the nest, nest inspection and rearrangement activities by nest occupants.The study of nest building was observed in the summer season of 2023 for a period of 03 months from April to June .

III. RESULTS AND DISCUSSION

Weaver bird nests are a testament to avian ingenuity and craftsmanship. Typically, these nests are woven using grass, strips of leaves, and other fibrous materials.(Fig 1). Arigela *et al* 2021 reported that *Acacia nilotica* and *Prosopis juliflora* are the most preferred thorny trees for Baya Weaver. Apart from thorny plants, they also choose high foliage trees such as *Aegle marmelos, Albizia amara, Albizia lebbeck, Bauhinia racemosa, Butea monosperma* and species of Ficus to build the nest .

Fig 1 Newly built Nest of weaver bird built on an arid tree

The male weaver bird meticulously constructs these nests, often exhibiting complex weaving patterns and designs. The nests are suspended from branches, reeds, or other suitable structures, providing safety from predators and adverse weather conditions.The nesting behavior of weaver birds involves a series of intricate steps. Baya weaver (*Ploceus philippinus*) is one of the common weaver bird from South-Central states of India. Male construct and display the nests, weave the nest by using locally available grass (Palm Fronds) leaf blade threads (Rajesh *et al* 2016)

Weaver bird nests play a crucial role in the ecology of their habitats. Apart from providing shelter for breeding, these nests serve as important indicators of environmental health. Weaver birds are sensitive to changes in their surroundings, and alterations in nesting patterns can reflect disturbances in ecosystems. Furthermore, weaver bird nests also contribute to nutrient cycling and provide nesting sites for other bird species.

Position of the nest on the trees also plays an imperative role to keep the nest stable from the wind and avoid the threats from the predators. Generally, the Baya Weaver selects the branches which are on the opposite side of the wind flow . Male will keep the wet mud pellets and dung pellets in the helmet shaped nest to maintain the balance of the nest from wind and later, these pellets are used by females for making the plastered chamber inside the nest . They select the tree branches which are spreading over the water to avoid the predators and in this case also most preferable plants are are *Acacia nilotica, and Prosopis juliflora*.

Male weavers initiate the nest-building process during the breeding season, using their beaks and feet to weave together strands of grass and leaves (Fig 2).

Fig 2 Male Baya constructing nest from natural raw material

The female inspects the nest upon completion, and if satisfied, will accept it as a suitable nesting site. Weaver birds exhibit remarkable site fidelity, often returning to the same nesting locations year after year.(Fig 3)

Fig 3 Inspection of Nest done by female Baya

Nests are built in groups, and different nest colony sizes have been observed (Pandian and Natarajan, 2018).A colony of different sized nests have also been seen in the present study too.(Fig 4)

Fig 4 Colony of weaver bird nest on an arid tree

Being a sociable bird, Baya Weavers typically favour locations close to agricultural regions with extensive populated areas. For instance, Ali (2009) discovered that Weaver populations utilised their current locations as desirable areas for an assortment of food and nesting supplies. According to a 2018 analysis in the Villupuram district had 93% of nest-supporting plants around electricity cables, 64% nest-supporting plants close to roadways, and 86% nest-supportingplants close to human habitations (Pandian & Ahimas 2018).

The Baya Weaver *P. philippinus* frequently plasters the inner walls of helmet stage nests with mud or clay. According to Pandian 2020, Baya Weavers adhered carefullyto mixed sharing resting and hunting. A number of anthropogenic causes, including monsoon rains, pounding winds, competing male birds, and nest predation by avian predators, as well as nest collapse due to these conditions were also recorded (Pandian 2021a,b).

In each colony, the number of nests has been reported to range from 1 to 93 (Pandian 2018), and 1to 61 (Pandian 2021a) in the districts of Villupuram and Vellore, respectively, in Tamil Nadu. In South Goa, 13 different species of aberrant nests were listed by Borkar & Komarpant (2003). In Tamil Nadu, there have been reports of 15 different varieties of aberrant nests in the Tindivanam Taluk and 8 different types in the Arakkonam Taluk (Pandian 2018, 2021a). Currently, 17 different types of aberrant nests have been identified in the research region, which is consistent with the findings of the aforementioned authors.

IV. CONCLUSION:

Weaver birds in Shekhawati region exemplify nature's architectural brilliance, with their intricately woven nests serving as marvels of avian engineering. Understanding the nesting behavior and ecological significance of these birds is essential for conservation efforts aimed at preserving their habitats and safeguarding biodiversity. By appreciating the remarkable abilities of weaver birds, we can foster a deeper appreciation for the intricate interactions that shape our natural world. It is a novel approach to be studied for the first time to elaborate on the research's importance and results which will help conserve the baya.

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