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Cover: Rufous-headed Hornbill *Rhabdotorrhinus waldeni* © Philip Godfrey C. Jakosalem.

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COMMUNICATION

Nest colonies of Baya Weaver *Ploceus philippinus* (Linnaeus, 1766) on overhead power transmission cables in the agricultural landscape of Cuddalore and Villupuram districts (Tamil Nadu) and Puducherry, India

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Abstract: Nesting habits of Baya Weaver *Ploceus philippinus* with specific reference to overhead power transmission cables was studied between April and November 2021 in the agrarian landscape of 10 villages covering Cuddalore and Villupuram districts (Tamil Nadu), and Puducherry. A total of 408 nests of various stages (wad stage-35, ring stage-21, helmet stage-227, egg-chamber closed stage-49, complete nests-22, and abnormal nests-54) and 411 birds were enumerated on 25 nest colonies. The number of nests in each colony ranged from 1 to 82. Baya Weavers had selected power cables as nesting sites despite the availability of three nest-supporting trees (n= 2,255), such as *Cocos nucifera*, *Borassus flabellifer*, and *Phoenix sylvestris* within 500 m of nesting cables. Birds used leaves of sugarcane *Saccharum officinarum*, Indian Date Palm *Phoenix sylvestris*, and Narrow-leaf Cattail *Typha angustifolia* as a source of fibres for the construction of nests. Twenty-three out of 25 nest colonies were found on power cables running over sugarcane crops. Abnormal nests constituted 13.23% (n= 54) of the total nests and 92.91% (n= 223) helmet stage nests had clay deposits on the inner walls. A total of 285 fallen nests in various stages of development were scattered on the ground. There were opportunistic sightings of avian predators, such as House Crow *Corvus splendens*, Large-billed Crow *Corvus macrorhynchos*, Rufous Treepie *Dendrocitta vagabunda*, and Shikra *Accipiter badius* found perched on power cables bearing nests and caused damages to eight nests.

Keywords: Abnormal nests, clay deposit, nest development, nest predation, threats.

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INTRODUCTION

Ploceidae is a family of small passerine birds, called weavers or bishops. They are native to the Old World, particularly Africa and tropical Asia. The genus *Ploceus* contains 64 species, of which four—*P. philippinus*, *P. manyar*, *P. benghalensis*, and *P. megarhynchus*—occur in India (Craig 2010; Gill & Donsker 2010). Baya Weaver *Ploceus philippinus* (Linnaeus, 1766) (Aves: Passeriformes: Ploceidae) is a social, polygamous, colonial nester and occurs in the Indian subcontinent (Ali et al. 1956), Java, Malacca, Sumatra (Blyth 1845; Wood 1926), China, Indonesia, Laos, Myanmar, Singapore, Thailand, and Vietnam (BirdLife International 2016). The IUCN Red List of Threatened Species has classified Baya Weaver under organisms of 'Least Concern' (Birdlife International 2016). In India, the breeding season of Baya Weaver is from May to November (Ali & Ripley 1987; Rasmussen & Anderton 2005). Baya Weavers select a variety of trees for nesting but prefer tall, unbranched trunks and long-swaying foliage of palm trees to keep away predators and provide convenient leaf strips for building nests (Davis 1974). Baya Weavers prefer *Cocos nucifera* along the west coast of the Indian peninsula, *Borassus flabellifer* along the east coast, and *Acacia nilotica* in the arid northwestern region (Sharma 1989). Dense canopies of nest-bearing trees possibly provide safety from predators and weather-related problems (Sharma 1991). The breeding biology of this bird was studied by Ali (1931), Ali & Ambedkar (1956), Ambedkar (1964), and Mathew (1977). Several workers have reported construction of abnormal nests (Ali & Ambedkar 1956; Ambedkar 1964; Crook 1964; Sharma 1989; Pandian 2018). Nests of Baya Weavers were found attached to telegraph lines along the Chittoor-Chandragiri routes (Kirkpatrick 1952), Kumaon Terai region of Nainital District (Uttarakhand) (Ambedkar 1969), and between Bangalore and Madras where sugarcane crops predominate (Subramanya 1982). Nests of Baya Weavers were recorded on electric cables in Assam and Tamil Nadu (Davis 1974). A total of 135 nests were observed on four power cables in Villupuram district, Tamil Nadu (Pandian 2018). Apart from these, no other detailed studies are available on the nesting of this bird on power cables in Tamil Nadu and Puducherry. Hence, the present study was carried out to fill this gap.

In this paper, I sought answers to questions relating to the choice of power cables for nest construction by Baya Weaver, with specific reference to Cuddalore and Villupuram districts (Tamil Nadu) and Puducherry. The following objectives were kept in mind in the study: (1) extent and pattern of selection of power cables for nesting, (2) features of nest building including sources of nesting materials, stages of nest developments, plastering of clay on inner walls, and abnormalities, and (3) threats faced by the birds.

MATERIALS AND METHODS

Study Area

The present study was carried out in 10 villages covering Cuddalore and Villupuram northeastern districts of the state of Tamil Nadu and the Union Territory of Puducherry from the first week of April to the second week of November 2021. The study area spreads over 5,897 km^2, with a human population of c. 5,630,000 (2011 Census). Agriculture is the primary occupation of the people. The major crops of the area are paddy *Oryza sativa*, sugarcane *Saccharum officinarum*, followed by jowar Sorghum *bicolor*, pearl millet *Pennisetum glaucum*, finger millet *Eleusine coracana*, foxtail millet *Setaria italica*, groundnut *Arachis hypogaea*, and green gram *Vigna radiata*. Flower and vegetable cultivations also occur. The maximum and minimum temperatures in the districts are 36 °C and 20 °C, respectively. The average annual rainfall is 1,060 mm (Figure 1).

Methods

With help from field assistants/informants (2), I identified villages having definite populations of Baya Weaver and their nests on overhead power transmission cables and nest-supporting palms, such as *C. nucifera, B. flabellifer*, and *Phoenix sylvestris* in the agricultural lands in 10 villages in Cuddalore and Villupuram districts (Tamil Nadu) and Puducherry. The nests attached to all the power cables between two poles including solitary nests and nests observed on tree crown were considered a single nest colony. These nesting colonies were surveyed on daily basis between April and November 2021 without causing any disturbance to the nests and inhabiting birds. The observations were carried out from 0600 h to 1200 h and 1500 h to 1800 h when the birds were found active. The heights of the cables from the ground were ascertained from the details written on power transmission poles while heights between overhanging nests and crops, and the distance between the overhanging nests from bunds/pathways were measured using a dried bamboo stick. The sources of nesting materials and the type of cultivating crops underneath the overhanging power cables were recorded. Every 250 trips of males carrying

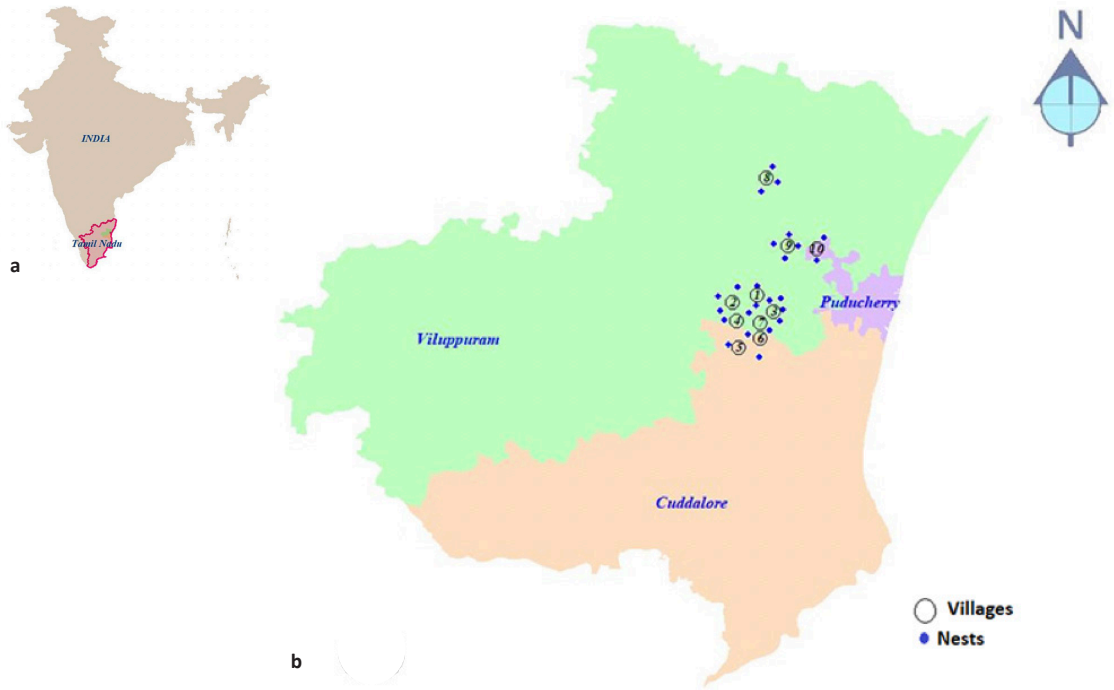

Figure 1. Study area map: a—India map showing Tamil Nadu and study site | b—Villupuram, Cuddalore district, and Puducherry map showing villages and locations of nest colonies. List of villages: (1) Sundaripalayam, (2) V. Agaram, (3) A.K. Kuchipalayam, (4) Kallipattu, (5) Varinjipakkam, (6) Poondi, (7) Kandrakottai, (8) Mozhiyanur, (9) Madurapakkam, and (10) Kunichampet.

fibres to power cables and nest-supporting trees were observed using binoculars and analysed the type nest materials carried by them. The locations of all the cables that bore nests/nest colonies were determined using GPS (Gramin Etrex 20x). The nests, their developmental stages including abnormal nests on power cables and nesting trees were recorded. Deposits of clay on the inner walls of helmet stage nests, damages to nests, and sightings of avian predators near nest colonies were observed by maintaining c. 30 m distance using Super Zenith 20 x 50 field binoculars, without disturbing nests and their residents. Fallen nests under the overhanging nest colonies were counted. Each nest colony was observed uninterruptedly for 60 min and the maximum number of birds observed in that colony was counted. To assess the proportions of three types of palms (*C. nucifera*, *B. flabellifer,* and *P. sylvestris*) used by Baya Weavers as nesting substrata within 500 m radii from nesting cables, all the individuals of three palms bearing nests and without nests were enumerated and preference assessed. The correlation between variables such as the total number of birds and nests observed on power cables was calculated using Pearson's Correlation Coefficient test. Utmost care was taken not to disturb the nests or birds and a minimum distance of c. 30 m was maintained during observations. No live nests, eggs, chicks, or adult birds were disturbed, and only fallen nests were examined during the study period. Nikon P 1000 digital camera was used for photography and videography. Collected data were tabulated, analyzed and shown as graphs.

RESULTS AND DISCUSSION

Males started to visit power cables carrying plant fibres during the third week of May 2021, and commenced nest construction. In total 408 nests of various developmental stages and 411 adult birds were enumerated on power cables/nest colonies at 25 sites. The number of nests in each colony ranged from 1 to 82, and three nest colonies with solitary nests were also recorded (Table 1). An average of 16.3 nests and 16.4 birds were counted on each nest colony. At 22 sites, the nesting power cables were found passing over sugarcane crops, while one passed over foxtail millet *Setaria italica* crop, guava *Psidium guajava* orchard, and Narrow leaf Cattail *T. angustifolia* reed (Image 1). The study also revealed that grain crops such as paddy, jowar, sorghum, finger millets, and foxtail millets were being cultivated within a 1-km radius of nest colonies. It indicates that the birds had chosen nesting sites on power cables

Image 1. Images showing overhanging nest colonies: a—Nest colony over Sugarcane crop field | b—Nest colony over Foxtail millet crop field | c—Nest colony over Guava orchard | d—Nest over Cattail reed area. © M. Pandian

running adjacent to grain crops, probably for forage for adult birds. Pearson's correlation coefficient test was conducted between the number of nests and the number of birds enumerated on the power cables bearing nests. The test indicated a strong positive correlation (0.939) between the number of nests and the number of birds observed on power cables (Figure 2).

Power cables as nesting substratum

Baya Weaver used power cables as nesting sites and constructed nests attached to these power cables. Electricity poles rose c. 5.6 m above the ground, while the cables were 5.2 m above the ground, with a distance of 60 m between two poles. A total of 408 nests in 25 nest colonies were observed. Within 500 m radii from the power cables bearing nest colonies, there were 2,296 nest-supporting trees, such as *C. nucifera* (*n*= 1,856), *B. flabellifer* (*n*= 409), and *P. sylvestris* (*n*= 31) in 10 villages. The birds had utilized only 1.78% (n= 41) of those nest-supporting trees and the remaining 98.22% nest-supporting trees (n= 2,255) of those three palm species (Arecaceae) were found not utilized by the birds for the construction of nests. A total of 727 nests of various developmental stages were enumerated on those 41 nest-supporting trees. Out of 2,296 available nest supporting trees, the birds had proportionately utilized 1.78 % of *C. nucifera* trees (*n*= 33), 1.47% of *B. flabellifer* trees (*n*= 6), and 6.45% of *P. sylvestris* trees (*n*= 2). It reveals that the birds had proportionately preferred *P. sylvestris*, followed by *C. nucifera*, and *B. flabellifer* trees (Table 2). The utilization of only 41 trees out of 2,296 trees indicate that Baya Weavers selected power cables as nesting sites in the study area despite the availability of abundant nest-supporting trees (n= 2,255) around the power cables bore nests.

Colonization of Baya Weavers on telegraph and power lines has been reported earlier in Kumaon Terai region of Nainital District, Uttarakhand (Ambedkar 1969), Chittoor and Chandragiri regions (Kirkpatrick 1952), Tamil Nadu, and Assam (Davis 1974). Subramanya (1982) observed the presence of nests of Baya Weavers on telegraph wires between Bangalore and Madras (Chennai) regions. The occurrence of nest colonies on the power cables in the present study area corroborates the

Table 1. Details of villages, GPS coordinates of a nest bearing power cables, number of individuals of Baya Weaver and nests in the study area as on fourth week of September 2021.

	District	Name of the Village	GPS coordinates of power cables bearing nests	Crops underneath the power cables	Total no. of birds counted	Total no. of nests	Developmental stages of nests					
							Wad stage	Ring stage	Helmet stage stage	Egg chamber closed stage	Complete nests	Abnormal nests
1	Cuddalore	Sundaripalayam	11.896° N–79.549°E	Sugarcane	6	16	0	0	6	7	1	2
			11.887°N–79.548°E	Sugarcane	10	3	0	0	2	1	0	0
		V. Agaram	11.882° N–79.549°E	Sugarcane	7	5	0	0	3	0	0	2
			11.882° N–79.549°E	Sugarcane	48	29	5	4	12	3	2	3
		AK Kuchipalayam	11.860° N–79.550°E	Sugarcane	64	52	3	3	23	9	7	7
			11.859°N–79.551°E	Foxtail millet	22	20	2	4	9	5	0	0
			11.859°N–79.551°E	Sugarcane	5	5	0	0	4	0	1	0
			11.858° N–79.551°E	Sugarcane	4	3	0	0	2	1	0	0
			11.857°N–79.556°E	Sugarcane	62	54	1	0	30	6	4	13
		Kallipattu	11.855°N–79.553° E	Narrow leaf Catttail	1	3	1	0	2	0	0	0
			11.852°N–79.552°E	Sugarcane	1	1	0	0	0	0	0	1
		Varinjipakkam	11.816°N–79.530°E	Guava	3	10	0	0	6	1	0	3
		Poondi	11.825°N–79.530° E	Sugarcane	6	6	3	0	1	0	0	2
			11.825°N–79.531°E	Sugarcane	1	1	0	0	1	0	0	0
			11.825°N–79.530°E	Sugarcane	2	2	0	0	1	0	0	1
		Kandrakottai	11.834° N–79.557°E	Sugarcane	10	10	0	1	5	0	0	4
2.	Villupuram	Mozhiyanur	12.132°N–79.570°E	Sugarcane	6	2	0	0	2	0	0	0
			12.134° N–79.571°E	Sugarcane	9	8	0	0	8	0	0	0
			12.130° N–79.569° E	Sugarcane	1	1	0	0	1	0	0	0
		Madurapakkam	11.999°N–79.606° E	Sugarcane	38	57	0	0	41	9	4	3
			12.000° N–79.606° E	Sugarcane	12	16	8	4	4	0	0	0
			12.001°N–79.606° E	Sugarcane	17	17	0	0	11	3	0	3
			11.996°N–79.624°E	Sugarcane	68	82	12	5	48	4	3	10
			11.995° N–79.607° E	Sugarcane	4	3	0	0	3	0	0	0
3.	Puducherry	Kunichampet	11.999°N–79.625°E	Sugarcane	4	2	0	0	2	0	0	0
	Total	10 villages	25 sites	25 crop sites	411	408	35	21	227	49	22	54

Table 2. Details of proportions of nest-supporting trees selected from available trees around 500m radii from nest bearing cables.

Nest-supporting trees	Total no. of trees found within 500 m radii from nest bearing cables	Total no. of trees selected for nesting	The proportion of trees selected for nesting (%)
Cocos nucifera	1856	33	1.78
Borassus flabellifer	409	6	1.47
Phoenix sylvestris	31	2	6.45
Total	2296	41	-

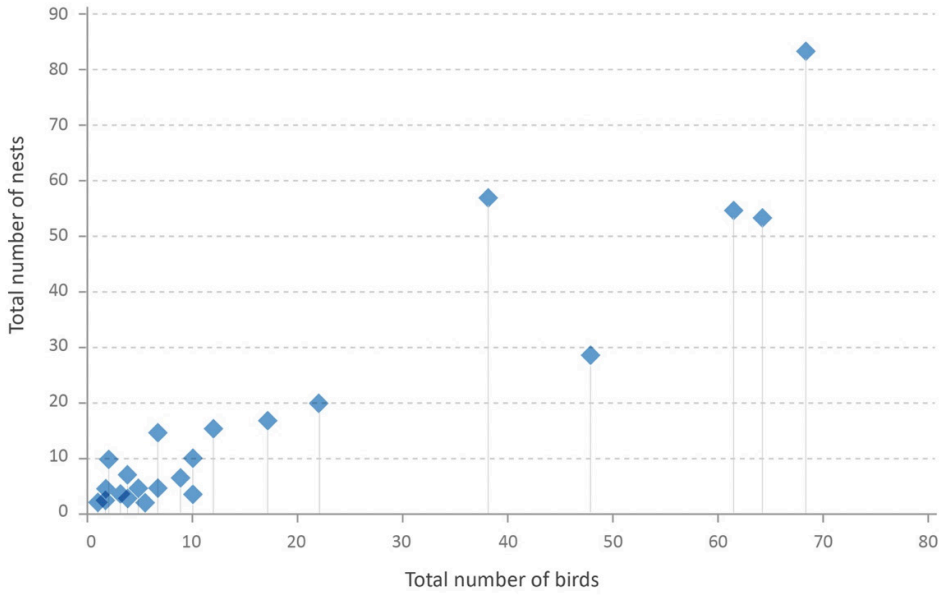

Figure 2. Pearson's correlation coefficient graph shows a relationship between the total number of birds and nests in the study area.

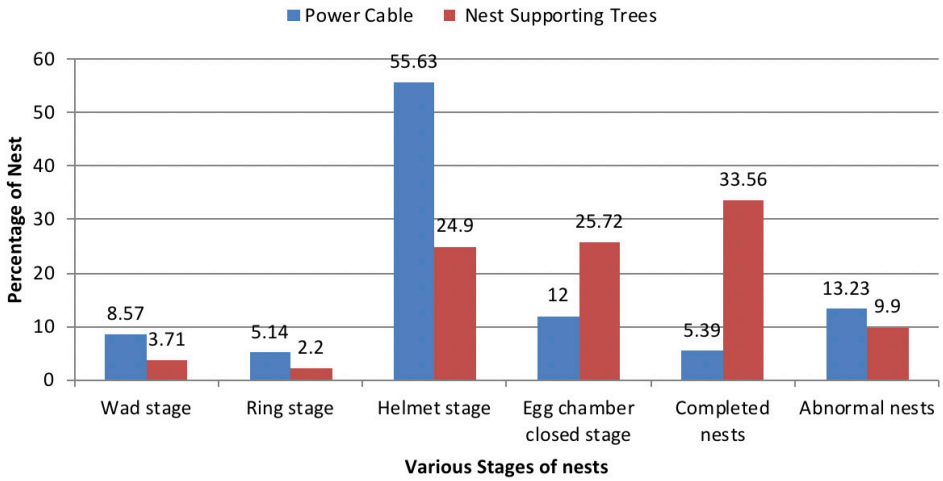

Figure 3. Comparison of various developmental stages of nests of Baya Weaver on power cables and potential nest-supporting trees in the study area.

findings of Ambedkar (1969), Kirkpatrick (1952), Davis (1974), and Subramanya (1982). Baya Weavers showed a preference for telegraph wires in the Bangalore–Madras regions where sugarcane and paddy crops predominate (Subramanya 1982). Similarly in the present study area, Baya Weavers used power cables as substrata for the construction of nests that passed over sugarcane crops (22 out of 25 sites). Birds have been found to have made nests at odd places like electric transmission cables when other suitable nesting sites were scarce (Toland 1990; Chace & Walsh 2006). However, in the present study area, it was found that despite availability of a sufficient number of nest-supporting palm trees (n= 2,255) within a 500 m radius, the birds chose power cables, indicating that in this instance it was not the absence of traditional nesting sites that led birds to choose power cables, as found by Toland (1990) and Chace & Walsh (2006).

Subramanya (1982) put forward several reasons for birds preferring power cables overhanging sugarcane crops: (i) safety from terrestrial predators like snakes and lizards, (ii) availability of sugarcane crops throughout the breeding season, (iii) availability of paddy crops, and (iv) sugarcane crops serve as roosting sites during the non-breeding season. From the present we can add: (i)

abundant nesting materials, i.e., sugarcane leaves were available beneath 22 power cables and nearby (330–700 m) to another three power cables throughout the breeding season; (ii) availability of foraging grain crops such as paddy, pearl millet, finger millet, and foxtail millet, found within 500–1,000 m of nest colonies, and (iii) fewer anthropogenic disturbances like frequent climbing of palm trees by humans for fruits, leaves, and toddy, pruning of leaves bearing nests, and nest predation by humans. Hence, the present observations partially match the suggestions of Subramanya (1982). Also, the availability of a clear line of sight in all directions afforded by free-hanging cables may allow birds to detect the approach of predators.

Colony size

The number of nests in each colony varied 1–82 nests per colony were observed on power cables, whereas 1–73 nests were observed on nest-supporting trees; 12% of nest colonies (n= 3) observed on power cables were solitary nests, as were 4.8% (n= 2) of nests observed on trees. Sharma (1989) had recorded 1–250 nests in Rajasthan, 5–24 nests in South Goa (Borkar & Komarpant 2003), 1–30 nests in Nanded (Achegawe et al. 2016), and 1–61 nests in Vellore district, Tamil Nadu (Pandian 2021a) and hence, the present observations of 1–82 nests on power cables and 1–73 nests on potential nest-supporting trees concur with the findings of previous studies (Pandian 2021a). This indicates that there exists no major variation in the number of nests in a colony either on power cables or nest-supporting trees.

Distance with crop bunds

The distances between nest colonies (n= 25) and bunds in the vicinity were: one colony was directly over a bund in Madurapakkam village (11.999°N–79.606°E); nine colonies were 1–2 m away from the bunds; six colonies at 3–4 m distance; five colonies at 5–6 m; four colonies at >6 m. This indicates that the birds preferred power cables away from bunds/pathways for construction of nests, probably to avoid any human disturbances because nests on power cables were found hanging 4–4.5 m above the ground. The distance from bunds seems not to apply to potential nest-supporting trees, because all such trees occurred on crop bunds and nests were attached to palm fronds above 10 m from the ground.

Source of fibres

A study of the source of nest materials revealed that male Baya Weavers plucked fibres from leaves of sugarcane, Indian date palm, and narrow leaf cattail, made incisions on the leaf margins near the bases and tore off fine fibres toward the distal ends and then carried them to the power cables. They selected young leaves found around the terminal buds and avoided dried and partly dried old leaves. The study on 250 trips of males on power cables revealed that males brought fibres from sugarcane leaves in 241 trips, seven trips from Indian date palm, and two trips from narrow leaf cattail. The study on 250 trips of males on nest-supporting trees revealed that the males used fibres from Sugarcane (112 trips) and Indian date palm (138 trips) for the construction of nests. However, no instance of carrying fibre from narrow leaf cattail to nest-supporting trees was observed. This indicates that the birds used more fibres of sugarcane for the construction of nests on power cables, whereas more fibres of Indian date palm *were* used for the construction of nests on nest-supporting tees. Baya Weavers were found to have used leaves of *Phoenix* sp., coarse grass and paddy leave for the construction of nests in Kolaba district, Maharashtra (Ali 1931). In the present study, Baya Weavers used fibres from leaves of sugarcane, Indian date palm, and narrow leaf cattail, rather than fibres of grass, or paddy as observed by Wood (1926) and Ali (1931). The birds' preferential use of more fibres of Sugarcane on power cables and more fibres of Indian date palm on potential nest-supporting trees for the construction of nests require further studies.

Developmental stages of nests

In the present study, out of a total of 408 nests counted on power cables, various stages of nests included: wad stage nests—8.6% (n= 35), Ring stage—5.2% (n= 21), helmet stage nests—55.6% (n= 227), egg-chamber closed stage nests—12% (n= 49), 5.4% complete nests—5.4% (n= 22), and abnormal nests—13.2% (n= 54). An average of 16.3 nests/nest colony was found on power cables. Various stages of nest developments are given in Image 2 and Figure 3.

On 41 potential nest-supporting plants, various stages of nests included: wad stage nests—3.71% (n= 27), Ring stage—2.2% (n= 16), helmet stage nests—24.9% (n= 181), egg-chamber closed stage nests—25.7% (n= 187), complete nests—33.6% (n= 244), and abnormal nests—9.9% (n= 72). An average of 17.7 nests/nest colony was observed on nesting trees (Image 2). Since further development of helmet stage nests depends on pairing, it was presumed that after being paired with a female, active breeding occurs in egg-chamber

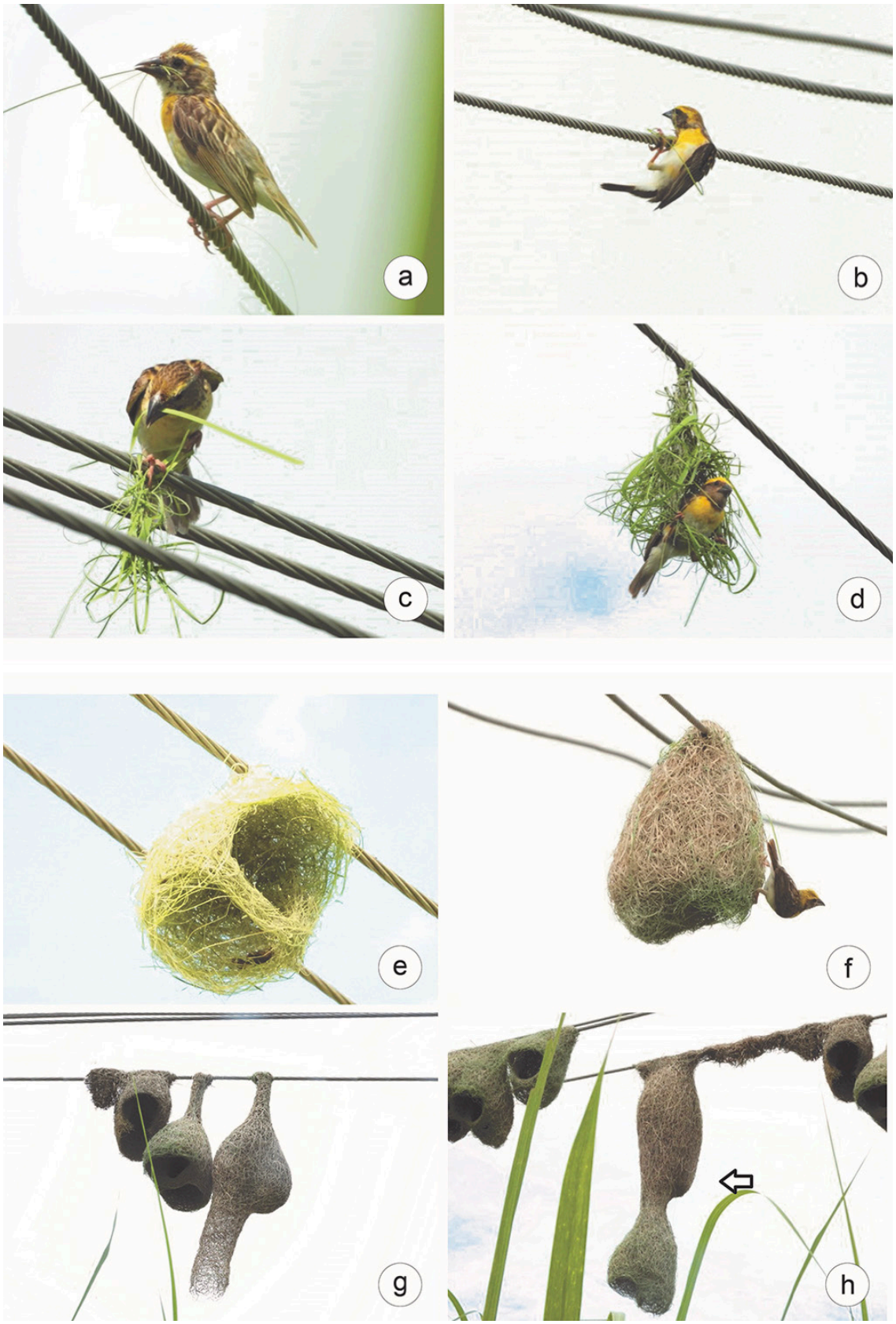

Image 2. Images showing various stages of nest developments: a—Male carries plant fibres | b—Male attempts to plait a knot | c—Male strengthens a knot | d—Ring stage nest | e—Helmet stage nest | f—Egg-chamber closed stage nest | g—Complete nest | h—An abnormal nest. © M. Pandian

closed stage nests and complete nests. Based on that assumption, active breeding would occur in 17.4 % of nests (n= 71) attached to power cables, whereas active breeding would occur in 59.3% of nests (n= 432) on potential nest-supporting trees. It indicates that a proportionately less number of active nests were found on power cables when compared to nest-supporting trees as both occur in the same vicinity, i.e., within 500 radii. Proportionately, reducing the number of active nests (egg-chamber closed & complete nests) attached to power cables than the potential nest-supporting trees in the same area during the same breeding period requires further studies.

Abnormal nests

Abnormal nests constituted 13.2% (n= 54) of the total nests (n= 408) and among them, 94.4% (n= 51) of abnormal nests were found overhanging sugarcane crops and the remaining 5.6% abnormal nests (n= 3) overhanging a Guava orchard, Foxtail millet crop, and narrow leaf cattail (Image 2h). Eight different types of abnormal nests were noticed: 35.2% (n= 19) abnormal nests belonged to 1+1/2 storeyed type, followed by 22.2% (n= 12) 1+1 storeyed type, 16.6% (n= 9) mixed abnormal types, 9.3% (n= 5) ½+½ storeyed, 7.4% (n= 4) fused nests, 5.6% (n= 3) ½+1 storeyed, one multi-stalked, and one chain-storeyed nest.

Some other species of the genus *Ploceus* also construct abnormal nests. Black-breasted Weaver *Ploceus benghalensis* constructs an abnormal entrance tube with more than 1-m length (Mishra 2004). Spectacled Weaver *Ploceus ocularis* constructs an abnormal entrance tube two meters in length in southern Africa (Maclean 1985). African Black-headed Weaver *Ploceus cucullatus* constructs kidney-shaped nests with abnormal supernumerary antechamber or with bottomless nests in Africa (Collias & Collias 1962). Southern Masked Weaver *Ploceus velatus* constructs one of the most abnormal nests among the weaver birds in South Africa, Angola, Zambia, and Mozambique. Streaked Weaver *Ploceus manyar* constructs abnormal nests with short entrance tubes in India and long entrance tubes in Java (Delacour 1947). Sakalava Weaver *Ploceus sakalava* constructs nests with shorter entrance tubes in the arid habitats and long entrance tubes in the other parts of Madagascar. In India, the abnormal nests of Baya Weaver were studied by Ali et al. (1956) and Ambedkar (1958, 1980) in Pune, Maharashtra, and Sharma (1985, 1988, 1995) in Rajasthan. Thirteen distinct types of abnormal nests were recorded in South Goa (Borkar & Komarpant 2003). Two-storeyed and three-storeyed types of nests were studied in Nanded, Maharashtra (Achegawe et al. 2016). Fifteen types of abnormal nests were recorded in Villupuram district, Tamil Nadu (Pandian 2018). But in the present study area, only eight different types of abnormal nests were observed on power cables.

Deposition of clay in the nests

The males have the habit of plastering wet clay on the inner walls of helmet stage nests, and such plastering of clay takes place immediately after the construction of helmet stage nests and before the arrival of females to select such nests. Observation on 240 helmet stage nests attached to power cables using binoculars revealed that clay deposits were found on 92.9% (n= 223) nests and the remaining 7.1% (n= 17) nests were free of clay deposits. It was not possible to view and ascertain clay deposits in the remaining 168 nests. Dissection of two fallen nests (helmet stage-1 and egg-chamber closed-1) revealed that patches of clay were observed on either side of the nests. No females were seen carrying wet clay to the nests.

Plastering of inner walls of the nest with wet clay is done when the nest construction reaches the helmet stage before pairing with females (Dewar 1909; Ali 1931; Ambedkar 1969; Borkar & Komarpant 2003). Wood (1926) had suggested that plastering of clay helps to stabilize the nest in strong winds. The mud on either side of the nest may stabilize the swinging nest in high winds (Crook 1963). He added that female was never found bringing mud. In the present study also, 7.1% (n= 17) helmet stage nests do not have clay deposits, and hence this matches with the findings of Davis (1974). The habits of smudging of clay in the nests were common in three species of Asian weavers (*P. manyar, P. benghalensis,* and *P. philippinus*) and not found in African Weaver (Crook 1963; Davis 1974). Hence, the observance of clay deposits in the present study corroborates the findings of the above authors. Davis (1973) had recorded that about 18.3% of nests did not show the presence of mud blobs on the inner walls of nests in South Goa. In the present study also 7.1% of nests did not show traces of clay and hence it matches with the observations of Davis (1974) (Image 3ab).

Fallen nests

A total of 285 nests in various developmental stages (wad stage-63, ring stage-48, helmet stage-86, egg-chamber closed stage-30, and complete nests-58) had fallen from the nest colonies, and were found scattered on the ground in sugarcane and other crop fields. Among the fallen nests, six complete nests contained 11

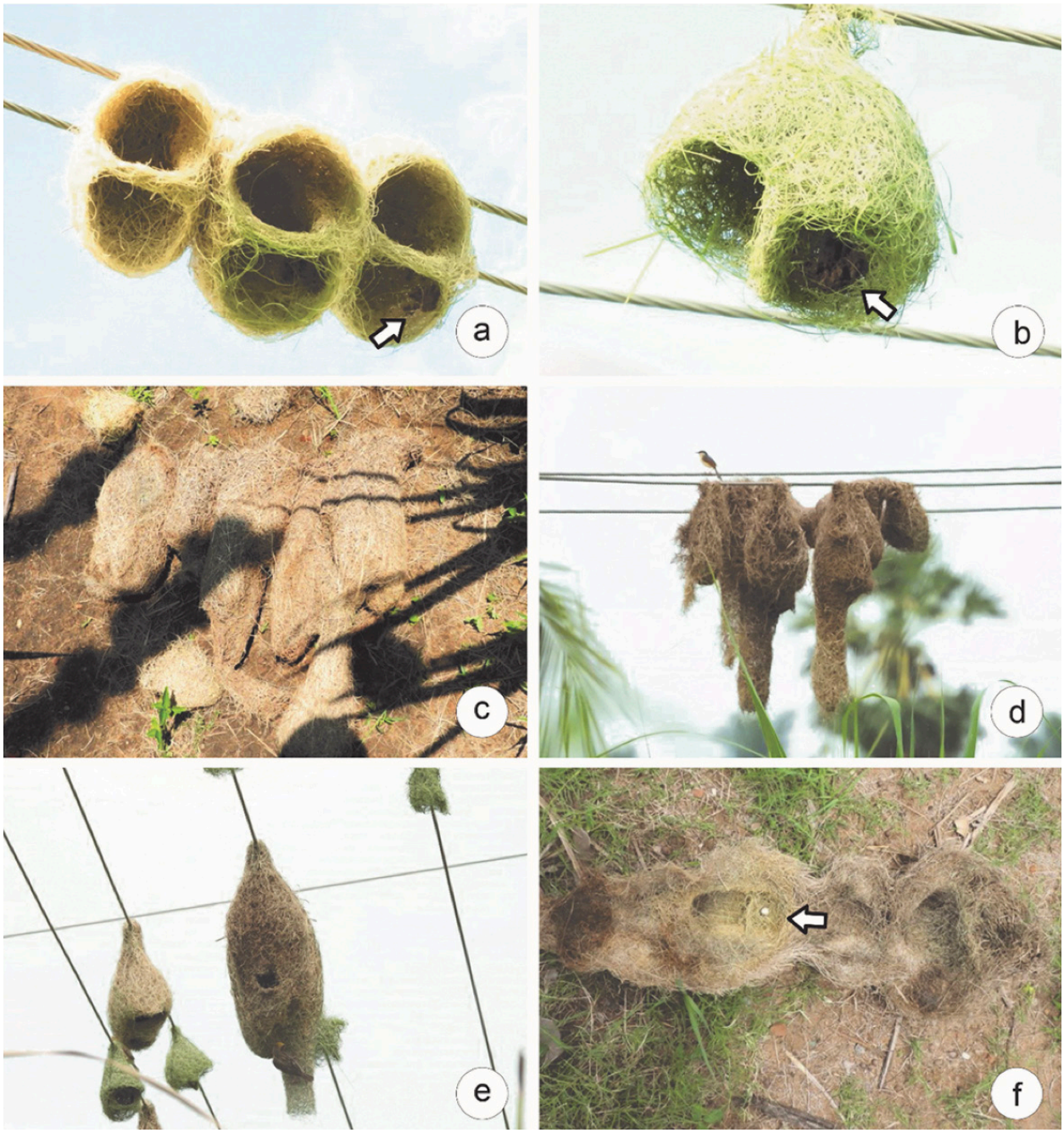

Image 3. Pictures showing clay deposits in helmet stage nests, fallen nests, and nest damage: a & b—Deposits of clay on the inner wall of helmet stage nests | c & d—Fallen nests | e—Damaged nests | f—Dissected fallen nests containing damaged egg. © M. Pandian

Table 3. Details of avian predators were observed in the vicinity of nesting colony in the study area.

	Name of the predator	No. of sightings noted	Damages caused to nests
1	House Crow	45	2
2	Large-billed Crow	21	5
3	Shikra	5	0
4	Rufous Treepie	6	1
	Total	77	8

damaged eggs (Image 3cf). Rivalry exists among males during the earlier stages of nest construction and some males had cut down the nests of other males in Poona City, Maharashtra (Ali et al. 1956). They also stated that many completed nests were blown down due to recurring spells of bad weather during June–August in the Bombay area causing mortality to nest colonies. Pandian (2021a) had recorded 458 fallen nests of various developmental stages under the nest-supporting plants in 26 villages

in Arakkonam taluk, Tamil Nadu due to various biotic and abiotic factors. A male Baya Weaver had cut down its nest by lacerating the stalk in Villupuram district (Pandian 2021b). Hence, the observations of 285 fallen nests in the study area might be due to various biotic/abiotic factors like slippery nature of aluminium cables, plaiting of weak knots, south-west monsoon, or cutting down of nests by rival male Baya Weavers as stated by Ali et al. (1956) and Pandian (2021a,b).

Predation threats

Opportunistic sightings of predatory birds, such as House Crow *Corvus splendens*, Large-billed Crow *Corvus macrorhynchos*, Rufous Treepie *Dendrocitta vagabunda*, and Shikra *Accipiter badius* were made in the vicinity of nest colonies attached to power cables during the study period. But no incident of predation of adult birds was observed. Whenever predators landed on nest-bearing power cables, all the birds deserted the nesting sites to roost on adjacent sugarcane crops or *Prosopis juliflora* trees. Eight incidents of nest damages by three avian predators, viz., House Crow, Large-billed Crow, and Rufous Treepie were observed during the study period. Rufous Treepie made puncture by creating a circular hole near the brood chamber of one complete nest and it was not possible to ascertain whether Rufous Treepie predated eggs/chicks or not (Image 3de). Among 408 nests, 32 nests (egg-chamber closed stage-9, complete nests-16, and abnormal nests-7) in the colonies were found damaged. Ali (1931) had stated that agitated behaviours of birds were observed when Crow Pheasants *Centropus sinensis* appeared in close proximity of nesting bearing trees in Kolaba district, Maharashtra, and also observed Shikra making an unsuccessful stoop on nest colony. In the present study also individuals of Baya Weaver had exhibited agitated behaviour when House Crows, Large-Billed Crow, Shikra, and Rufous Treepie visited nesting sites as stated by Ali (1931). Nest predation by the treepie was reported in Arakkonam Taluk, Tamil Nadu (Pandian 2021a). Hence, the present observation of agitated behaviour of birds when sighting avian predators and 32 damaged nests including a hole on the egg-chamber matches with the observations of Ali (1931) and Pandian (2021a) (Table 3).

CONCLUSION

This is the first systematic study on the preference of Baya Weaver towards power transmission cables as nesting substrata, stages of nests, abnormal nests, and probable threats to the nests on such cables in the study area. The survey revealed that Baya Weavers preferred electric cables and avoided readily available species of palms, such as *B. flabellifer*, *C. nucifera*, and *P. sylvestris* for nesting. Among the three palm species, the birds proportionately preferred *P. sylvestris* over the other two palms. However, this species seems to be in low availability in the study area. Hence it is suggested that planting more *P. sylvestris* and preventing felling the same can create more habitats for Baya Weavers. These three palms are an integral part of rural areas and they are also associated with rural cottage industries. Increasing urbanization by conversion of cultivated lands into residential areas, industrialization, widening of roads along with indiscriminate felling of these principal nest-supporting plants that are vital for Baya Weaver is a conservation issue in this landscape. The increasing practice of monoculture of *Casuarina*, sugarcane, vegetables, and flower crops, declining areas of cultivation of cereals and millets cause a shortage of food grains to adult birds. Destruction of viable nests due to various anthropogenic factors and abiotic factors (monsoon winds and rains) also causes severe stress on the breeding of Baya Weaver. They preferred power cables away from bunds/pathways in the croplands for the construction of nests probably to avoid any human disturbances. Abnormal nests constituted 13.2% of total nests and 92.9% of helmet stage nests contained clay depots on inner walls. House Crow, Large-billed Crow, and Rufous Treepie had damaged nests of Baya Weaver. The breeding period of this bird was found varied on power cables and potential nest-supporting trees. The survey is limited to 10 villages, but this is part of a larger geographical area that has a potential for a high nesting population of Baya Weaver which, however, faces threats from the changing rural landscape. Local communities, particularly landholders, agricultural workers, and school students should be sensitized to understand the need to preserve the populations of this species.

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