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RESEARCH ARTICLE

SOME CRITICAL OBSERVATIONS ON THE NESTING BEHAVIOUR OF THE WHITE-RUMPED MUNIA, *LONGCHURA STRIATA* (PASSERIFORMES: ESTRILDIDAE) IN A RURAL LANDSCAPE OF TAMIL NADU, INDIA.

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Abstract

This paper pertains to the study of habitats, nesting habits, perching and foraging behaviour of *Lonchura striata* in Tindivanam Taluk, in the state of Tamil Nadu. Of the 55 villages identified for the study, only in four villages the study species were observed. A total of 18 birds and six nests were observed during the study period. All the birds and nests were recorded on the male trees of *Borassus flabellifer*. Inter-specific competition appears to exist between individuals of *Lonchura striata* and *P. philippinus* over encroachment of later's nests by *L. striata*. In this study, it was also observed that individuals of *L. striata* had failed in their attempts to renovate the selected incomplete helmet stage nests of *P. philippinus*. It preferred electric power lines for perching followed by nest-supporting plants, shrubs and millet crops. Both the species had jointly frequented millet crops and eat grains.

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Introduction:-

The white-rumped munia, *Lonchura striata* (Linnaeus) (Passeriformes: Estrildidae) is a small gregarious bird, native to tropical continental Asia and adjacent islands and has naturalized in parts of Japan. The geographical ranges of this bird has been extended to South India, Sri Lanka, Andaman and Nicobar islands, Thailand, South China, Malay peninsula to Indonesia, Nepal and Myanmar (<https://avibase.bse-eoc.org>). Arnaize-Villena et al (2009) has observed that Estrildidae may have originated in India and dispersed thereafter towards Africa and Pacific Ocean habitats. *Lonchura striata* populations are adaptable to reside in open agricultural lands, woodlands, grass lands and scrublands. It mainly feeds on grains (www.theguardian.com). Rao (2003) has observed that termites attack on nest material leading to desertion of eggs by birds. In some instances nests were partially attacked by termites during night time but the birds brought fresh nest material and successfully raised their offspring. Breeding season is extended throughout the year with the peak in February to September. The IUCN Red List of Threatened Species (2017) classifies this species under organisms of 'least concern' (www.iucnredlist.org).

This paper sought answers for the questions considering population of *Lonchura striata* and their habitats (1) What is the present status of the population of *Lonchura striata*? (2) Do these birds build their own nests on trees, and (3) what are their perching and foraging behaviours? in selected 5 villages in rural Tindivanam Taluk.

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Materials and Methods:-

Study area:-

The present study was carried out in selected 55 villages in rural Tindivanam Taluk (11°38'N, 12°20'E—78°15'W, 79°42'E), Viluppuram District, Tamil Nadu spread over 80 km², including a human population of c. 5,00,000. Agriculture is the primary occupation of the human residents here. The soil formation is mainly red, sandy loam, and black cotton soil. The major crops of the area are *Oryza sativa*, *Sorghum bicolor*, *Pennisetum glaucum*, *Eleusine coracana*, *Setaria italica*, *Saccharum officinarum* (Poaceae), *Vigna radiata* and *Arachis hypogea* (Fabaceae). The practice of monoculture of *Casuarina equisetifolia* (Casuarinaceae) and cultivation of *Manihot esculenta* (Euphorbiaceae) are also common. Small-scale cultivation of ornamental flowers, vegetables, and fruits also occurs. The maximum and minimum temperatures of the district are 36°C and 20°C, respectively. The average annual rainfall of the district is 1060.30 mm. About 93.82% of the normal rainfall is received during the North East and South West monsoon seasons. (www.viluppuram.nic.in).

To inventorize the number of birds and identify their habitats, the study areas were visited between 0600 and 1100 h and 1500 and 1800 h from May to October 2017 and observed the agricultural lands without causing any the disturbance to the inhabiting birds. Individual birds were observed through binoculars and type of perch, such as on nest-supporting plants, electric power lines, shrubs and crop plants for roosting were recorded. Number of perch on trees, electric power lines and crop plants were observed and counted from sunrise to sun setting. Nest building and foraging behaviours of *L. striata* and *P. philippinus* populations were observed. Birds were identified using a field guide (Ali and Ripley, 1983). Locations of the nest-supporting trees were determined using a handheld GPS. Altitude of the location of nest-supporting plants were determined using available App in a smart phone. Using a Super Zenith 20x50 field binoculars, the nests and birds were observed. Photographs and videographs were made using Sony HDR—CX13.

Results and Discussions:-

Out of 55 villages studied, populations of *Lonchura striata* were observed only in 4 villages with 18 birds and six nests. All the birds (n=18) and nests (n=6) were observed on the male trees of *Borassus flabellifer*. Ten birds and five nests were found on the nest-supporting male trees of *B. flabellifer* on which *Ploceus philippinus* populations had already inhabited by constructing nests. Another pair of *L. striata* had encroached a solitary abandoned nest of baya weaver bird (*P. philippinus*) on *B. flabellifer*. Six birds were found on one *B. flabellifer* in Elayandipattu village and had neither built their own nests nor occupied nests of *P. philippinus* (Table 1). GPS of all the four male *B. flabellifer* were noted and these trees were found between 32 m and 54 m above mean sea level (AMSL). Out of six nests observed in the study area, two were in helmet stages and the remaining four were completed nests. The birds, which selected helmet stage nests had attempted to renovate and complete the nest by plaiting green leaves and inflorescences of grasses and attempted to plug one of the two openings in the helmet stage so as to convert it into an egg chamber (Fig 1a & 1b). The attempts made by these birds to plug the opening had continued for four days but ended in vain. Ultimately these birds not only left their attempt of renovating partial nest of *P. philippinus* but also fled away from the tree. It might have moved to some other areas in search of suitable nests. The breeding activities of birds (n=8) which had occupied complete nests (n=4) of *P. philippinus* were commenced without any hindrance. It was observed that after occupying the complete nest, *L. striata* individuals picked green leaves and small twigs of grasses, taken to the nests and made egg lining in the egg-chamber, One major difference observed between *P. philippinus* and *L. striata* was that the former had always take only fibres from grasses for building nests and never uses entire leaves of grasses, but the later used entire green leaves, inflorescence and even twigs of grasses to renovate the partial nests and for lining in the egg-chamber. It attributes that *L. striata* populations may be adapted to encroach readily available complete nests of *P. philippinus* for their breeding activities but may not acquired the knowledge of adaption to complete partial stages of nests such as helmet stage nests. The study corroborated the observations of Mishra (2001) that Munias used the abandoned nests of *P. philippinus*.

The study also indicated that *L. striata* populations preferred nests of *P. philippinus* built on the male trees of *B. flabellifer* in the study area (Fig 1c). Though the *P. philippinus* populations built nests on many nest-supporting plants, such as *Phoenix sylvestris*, *Cocos nucifera*, *Morinda tinctoria*, *Phyllanthus reticulatus*, *Prosopis juliflora*, *Ficus benghalensis*, *Securinega leucopyrus*, *Ruella prostrata*, *Azadirachta indica* and *Pithecolobium dulce*, the individuals of *L. striata* had selected nests of *P. philippinus* found only on *B. flabellifer*. All 55 villages studied have continued to be the breeding ground for *Ploceus philippinus* populations. But *L. striata* populations were found to be localised in four villages with mere 18 individuals, of which breeding activities were noticed in four pairs, two pairs

had suspended their attempt to complete helmet stage nests (n=2). It indicates that *L. striata* population was sparsely distributed and so far they have not expanded their habitats beyond four villages. Six birds were observed in Elayandipattu vilage (12°0'55"N, 79°36'14"E), but no nests were identified. No instances of *L. striata* individuals building their own nests on trees were noticed in the study area.

Table 1:- Details of number of individuals of *Lonchura striata* observed, habitat and nests in the study area.

Name of the village	Nest-supporting trees	Location of nest-supporting trees (GPS)	Total no. of nests of weaver birds	Total no. of weaver birds	<i>L. striata</i> individuals observed	No. of nests occupied by <i>L. striata</i>
Nallamur	<i>B. flabellifer</i> (male)	12°8'53"N, 79°37'46"E 41m AMSL	1	0	2	1
Annamputhur	<i>B. flabellifer</i> (male)	12°10'9"N, 79°40'23"E 42m AMSL	41	48	8	4
Kutteripattu	<i>B. flabellifer</i> (male)	12°8'57"N, 79°36'56"E 54m AMSL	31	36	2	1
Elayandipattu	<i>B. flabellifer</i> (male)	12°0'55"N, 79°36'14"E 32m AMSL	0	0	6	0

Inter-specific competitions for habitats:-

It has been observed that whenever *L. striata* individuals visited nest-supporting trees in search of suitable nests constructed by *P. philippinus*, the residents of owned by *P. philippinus* nests fought with the formers and tried to chase them away from the tree crown. Once the *L. striata* individuals selected abandoned nest of *P. philippinus*, then both the species continue to breed on the same crown without any dispute. Study revealed that the inter-specific competitions exist between them till *L. striata* selects abandoned nests of *P. philippinus*.

Perch types and foraging behavior:-

Lonchura striata used a multiplicity of perching sites during roosting, collection of nest materials and foraging (Table 2). Perching behaviours were observed continuously from sunrise to sunset revealed that out of total 961 perches counted, 40.1% (n=424) perches were observed on electric power lines, followed by nest-supporting trees 31.7% (n=305), shrubs 15.3% (n=147) and crop plants 8.8% (n=85) (Fig.5). The present study results indicated that the birds preferred electric power lines that passed through crop fields and used the same as fetching and roosting sites (Fig. 6). Since September-October months in every year coincide with the harvesting periods of millet crops cultivated, such as *Pennisetum glaucum*, *Eleusine coracana* and *Setaria italica* in the study area, the birds frequented such crops for foraging ripen grains. It was also observed that *L. striata* individuals merge with flocks of *P. philippinus*, visit crop fields, and forage on spikes of millet crops (Fig. 1f) which revealed that both the species shared the same habitat for breeding and foraging (Pandian,2017).

Table 2:- Utilization of various perch sites by *Lonchura striata* in different months

Year (Months)	2017	Electric power lines (N)	%	Nest- supporting trees (N)	%	Shrubs (N)	%	Millet crops (N)	%
July	111	26.1	33	10.8	32	21.7	0	0	
August	103	24.2	83	27.2	48	32.6	0	0	
September	114	26.8	107	35	41	27.8	40	47	
October	96	22.	82	26.	26	17.	45	52.	

		6		8		6		9
Total	424	100	305	100	147	100	85	100
SD ± SE	7.036±3.5		26.90±13.4		8.047±4.02		21.33±10.6	
Note: N= number of observations								

Fig 1:- Photographs of habitat, roosting, perching and foraging behaviours of *Lonchura striata*.



Fig 1a. Collection of nesting material by *L. striata*.



Fig 1b. Attempts of *L. striata* to plug the helmet stage nest of *P. philippinus*.



Fig 1c. Searching suitable nest of *P. philippinus*.



Fig 1d. Perching on nest-supporting tree.

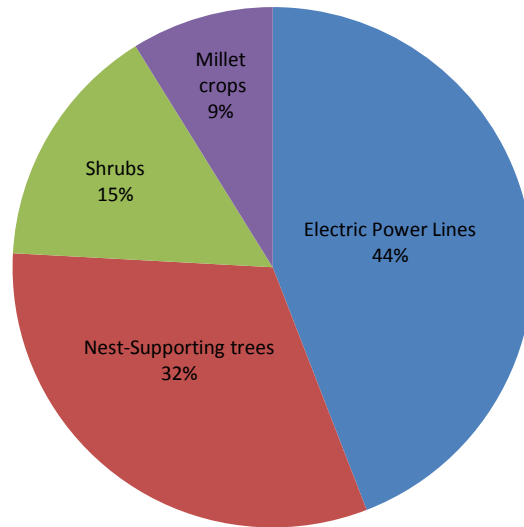


Fig 1e. Perching on electric power lines.



Fig 1f. *Lonchura striata* perching on matured spike of *P. glaucum* in crop field.

Fig 5:- Utilization of various perch types (n=961) by *Lonchura striata* in the study area.



Conclusion:-

Populations, nests, perching and foraging behaviours of *L. striata* in 55 villages in rural Tindivanam Taluk in Viluppuram District were studied, and a total of 18 individuals and six nests were identified, of which breeding activities of four pairs (n=8) were commenced in four complete nests and the remaining birds (n=4) had suspended their attempts to renovate two incomplete helmet stage of nests. The birds occupied incomplete nests of *P. philippinus* were unable to renovate and utilize it. It selected only male trees of *B. flabellifer*. It preferred electric power lines as a major perching sites and used to merge with flocks of *P. philippinus* for foraging in the crop fields. The rural areas of Tindivanam Taluk remains a breeding ground for *L. striata* populations and their habitats need protection.

References:-

1. Ali, S. and Ripley, S. D. 1983. Handbook of the Birds of India and Pakistan, Oxford University Press, London.
2. Avibase, 2003. Avibase: The world bird data. White-rumped Munia, *Lonchura striata* (Linnaeus). www.avibase.bsc.eco.org/species.jsp (accessed on 14 October 2017).
3. IUCN, 2017. The IUCN Red List of Threatened Species. www.iucnredlist.org/details/22719806/0. Accessed on 14 October 2017.
4. Mishra, V.V. 2001. Munias accept abandoned nests of Bayas. Newsletter for birdwatcher 41: 13.
5. Payne, R. et al. 2017. White-rumped Munia (*Lonchura striata*) In: del Hoya, J., Elliott, A., Sargatal, J., Christie, DA & de Juana, E. (eds).
6. Pandian.M.2017. Nesting and foraging behaviours of *Lonchura striata*, white-rumped Munia in rural Tindivanam Taluk, Viluppuram District, Tamil Nadu, India. <http://white-rumpedmunia.blogspot.in/?view=mosaic> and <http://white-rumpedmunia.blogspot.in/?view=magazine>.
7. Rao, Shyama Prasad, R. 2003. Termite removal from nest material and repair of damaged nest by White-rumped munia *Lonchura striata*. Journal of the Bombay Natural History Society 100 (1): 151-151.
8. Theguardian, 2011. Mystery bird: White-rumped munia, *Lonchura striata*. www.theguardian.com/science/punctuated_equilibrium/2011/sep/30/5 (accessed on 14 October 2017).
9. Viluppuram, 2017. The official website of Government of Tamil Nadu, Viluppuram District. viluppuram.tn.nic.in (accessed on 22 October 2017).