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NIDIFICATION OF PLAIN WREN WARBLER, *PRINIA SUBFLAVA* (GMELIN) IN RURAL SOUTH 24 PARGANAS IN THE VICINITY OF KOLKATA, WEST BENGAL

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INTRODUCTION

Of the 1200 species of birdsin India, nearly 85% of them are either wholly or partially insectivorous (CSIR 1990). On the other hand, 30,000 species of insects have been identified in the subcontinent, the fecundity and voracity of them are phenomenal. Some caterpillars can eat leaves upto twice their own weight each day; and there are certain larvae which can consume food 20 times of their own weight in a single day. Agricultural science has paid attention to the insect pests and their control. Most of those studies were carried out either in natural-ecosystem or in man made systems. Importance of birds as biocontrolling agent of the insect pests has long been established. The present study while stretching upon the nidification of a particular bird species in a selected habitat which is rapidly shifting from rural to urban system, aiming to explore the adaptibilities of the species under the changing context, simultaneously collected the data on its prey species of insects particularly the larvae, which may indicate the array of pests related to variable crops and may help in adopting strategies for protecting our precious crops. This study of the nidification of Plain Wren Warbler, *Prinia subflava* (Gmelin) is based on field work conducted during April to September 1999.

The study area primarily being rural comprising of 4 or 5 villages rapidly changing into urban conglomerate in the vicinity of the metropolic of Kolkata (former Calcutta) under the administrative jurisdiction of South 24 Parganas District, West Bengal. It is some 17 km south from the heart of the city. Geographical bearings are 22°34' N & 88°22' E. The area under extensive studies spread over roughly 3.5 sq.km area consisting agricultural plots, grassland, big and small waterbodies and settlements of hamlets and houses.

The present study emphasising nest building and nesting, food and feeding of the species, specially of its youngs, eggs, incubation, and care of the nestlings.

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Lists of the important flora, crops, plants used in nest building, vertebrate and insect fauna of the area have been appended. Stages of development of the nest and nest building process have been elaborated in this study.

KEY WORDS Nidification : *Prinia subflava*, Vicinity of Kolkata, West Bengal, India.

Table 1. Local flora occuring in and around the Nesting Ground of *Prinia subflava* (Gmelin) at Ramchandrapur village, South 24 Parganas. Plant specimen collection & observation : August to September 1999.

Legends – S = Summer, Ps = Post summer, M = Monsoon.

Scientific name	Family	Season	Local name
LIST OF VEGETABLE CROPS			
Cucumis sativus	Cucurbitaceae	Ps. M.	Shosha
Cucurbita moschata	Cucurbitaceae	S. Ps.	Kumro
Basella alba	Basellaceae	S. Ps.	Sada pui
Basella rubra	Basellaceae	S. Ps.	Lal pui
Lagenaria siceraria	Cucurbitaceae	S. Ps.	Lau
Dolichos lablab	Leguminosae	S. Ps.	Shim
Lycopersicon esculentum	Solanaceae	S.	Tomato
Brassica oleracea	Cruciferae	S.	Badhakopi
Solanum melongena	Solanaceae	S. Ps.	Begoon
Abelmoschus esculentus	Malvaceae	Ps. M.	Dherosh
Momordica charantia	Cucurbitaceae	S. Ps. M.	Korola
Capsicum annuum	Solanaceae	S. Ps. M.	Lanka
Beta vulgaris	Chenopodiaceae	Ps.	Palang shak
Amaranthus spp.	Amaranthaceae	Ps.	Lal notey
Cucumis melo	Cucurbitaceae	S. Ps.	Kakur
LIST OF SEED CROPS			
Oryza sativa		S. M.	Dhan
Phaseolus mungo		S. Ps.	Kalai dal
OTHER COMMON FLORA			
Cyperus rotundus		S. Ps. M.	Mutha
Imperata arundinacea		S. Ps. M.	Ulu
Ficus hispida		S. Ps. M.	Kak dumur
Cocos nucifera		S. Ps. M.	Narikel

Table 1 : *Contd. :*

Scientific name	Family	Season	Local name
Karika papaya		S. Ps. M.	Peypey
Musa esculentum		S. Ps. M.	Kala
Sesbania sp.		Ps. M.	Dhonchey
LIST OF TYPICAL NESTING FLORA			
Eragrostis cynosuroides		S. Ps. M.	Kush
Andropogon squarossus		S. Ps. M.	Bena
Lippia geminata		S. Ps. M.	Bhut-beurey

Table 2. Local flora (wild plants) occuring in and around the Nesting Ground of *Prinia subflava* at Ramchandrapur village, South 24 Parganas.

Plant specimen collection and observation : During Summer-Post summer.

Summer-10.4.1999 to 20.5.'99 to 20.5.'99, Post summer-21.5.'99 to 30.6.'99.

Flora of Nesting Ground.

Scientific name	Family
Blumea lacera	Asteraceae
Hemigraphis hirta	Acanthaceae
Herpestis monnieria	Scrophulariaceae
Cardenthera triflora	Acanthaceae
Achyranthes aspera	Achyranthes aspera
Ludwigia adscendens	Onagraceae
Hygrophila spinosa	Acanthaceae
Chrozophora rottleri	Euphorbiaceae
Ludwigia perrenis	Onagraceae
Euphorbia microphylla	Euphorbiaceae
Commelina obliqua	Commelinaceae
Xanthium strumarium	Asteraceae
Polygonum plabejum	Polygonaceae
Alternanthera philoxeroides	Amaranthaceae
Ottelia alismoides	Hydrocharitaceae
Eichhornia crassipes	

Table 2. *Contd.*

Scientific name	Family
Monochoria hastata	
Eclipta alba	Asteraceae
Clerodendrum viscosum	Verbenaceae
Amaranthus spinosus	Amaranthaceae
Centella asiatica	Umbelliferae
Scoparia dulcis	Scrophulariaceae
Heliotropium supinum	Boraginaceae
Euphorbia hirta	Euphorbiaceae
Ammannia baccifera	Lythraceae
Alternanthera paronychioides	Amaranthaceae
Dentella repens	
Cucumis pigonus	Cucurbitaceae
Typhonium trilobatum	Araceae
Cassia tora	Caesalpiniaceae
Seseli indicum	Umbelliferae
Erythraea roxburghii	Gentianaceae
Jussiaea repens	Onagraceae
Lindernia sp.	Scrophulariaceae
Lippia geminata	Verbenaceae

Table 3. Local reptiles and amphibians recorded in and around the Nesting Ground of *Prinia subflava* at Ramchandrapur village, South 24 Parganas.

Sl. No.	Scientific name	English name
	Order : REPTILIA	
1.	*Typhlina bramina*	Common worm snake
2.	*Lycodon aulicus*	Common wolf snake
3.	*Amphiesma stolata*	Striped keelback
4.	*Xenochropis piscator*	Checkered keelback watersnake
5.	*Ptyas mucosus*	Rat snake
6.	*Chrysopelea ornata*	Flying snake
7.	*Naja naja*	Spectacled & Monocled cobra (both found)

Table 3. *Contd. :*

Sl. No.	Scientific name	English name
8.	*Vipera russellii*	Russells viper
9.	*Varanus bengalensis*	Common Indian Monitor
10.	*Varanus salvator*	Water Monitor
11.	*Varanus flavescens*	Yellow Monitor
	Order : AMPHIBIA	
	Family : Microhylidae	
1.	*Bufo melanostictus*	Common Indian Toad
	Family : Ranidae	
2.*	*Rana tigerina*	Indian Bull Frog
3.*	*Rana hexadactyla*	Green Pond Frog
4.*	*Rana limnocharis*	Cricket Frog
5.*	*Rana crassa*	Jerdon's Bull Frog
6.	*Rana erythraea*	Leaping Frog
	Family : Rhacophoridae	
7.	*Polypedates leucomystax*	Bamboo Tree Frog

Change in generic name :

2* Limnonectes tigerinus. 3* Occidozyga hexadactyla

4* Limnonectes limnocharis 5* Limnonectes crassus

Table 4. Local avifauna recorded in and around the nesting ground of *Prinia subflava* at Ramchandrapur village, South 24 Parganas.

Observation spell (= Climatic spell) : Summer-(S), Post summer-(Ps), Monsoon-(M).

Sl. No.	Scientific name	English name	Climatic spell	Population max.	min.
	Order : PICIFORMES				
	Family : Picidae	Lesser Goldenbacked	S	2	2
1.	*Dinopium benghalense*	Woodpecker	Ps	1	–
			M	–	–
	Family : Megalaimidae				
2.	*Megalaima asiatica*	Bluethroated	S	3	1
		Barbet	Ps	3	1
			M	1	–

Table 4. *Contd. :*

Sl. No.	Scientific name	English name	Climatic spell	Population max.	Population min.
	Order : PICIFORMES				
3.	*Megalaima haemacephala*	Crimsonbreasted	S	–	–
		Barbet	Ps	2	1
			M	2	1
	Order : CORACIIFORMES				
	Family : Coraciidae				
4.	*Coracias benghalensis*	Indian Roller	S	–	–
			Ps	–	–
			M	1	–
	Family : Alcedinidae				
5.	*Alcedo atthis*	Common	S	2	–
		Kingfisher	Ps	2	1
			M	3	2
	Family : Dacelonidae				
6.	*Halcyon smyrnensis*	Whitebreasted	S	2	1
		Kingfisher	Ps	2	1
			M	3	2
	Family : Cerylidae				
7.	*Ceryle rudis*	Pied Kingfisher	S	–	–
			Ps	–	–
			M	2	1
	Family : Meropidae				
8.	*Merops orientalis*	Green Bee-eater	S	–	–
			Ps	13	6
			M	–	–
	Order : CUCULIFORMES				
	Family : Cuculidae				
9.	*Cuculus varius*	Hawk Cuckoo	S	2	1
			Ps	1	–
			M	–	–

Table 4. *Contd.* :

Sl. No.	Scientific name	English name	Climatic spell	Population max.	min.
	Order : CUCULIFORMES				
10.	*Eudynamys scolopacea*	Koel	S	3	1
			Ps	3	1
			M	5	1
	Family : Centropodidae				
11.	*Centropus sinensis*	Coucal	S	2	1
			Ps	4	1
			M	1	–
	Order : PSITTACIFORMES				
	Family : Psittacidae				
12.	*Psittacula krameri*	Roseringed	S	4	1
		Parakeet	Ps	9	3
			M	6	3
	Order : APODIFORMES				
	Family : Apodidae				
13.	*Cypsiurus parvus*	Palm Swift	S	13	2
			Ps	7	1
			M	10	1
14.	*Apus affinis*	House Swift	S	5	1
			Ps	1	–
			M	–	–
	Order : STRIGIFORMES				
	Family : Tytonidae				
15.	*Tyto alba*	Barn Owl	S	?	?
			Ps	?	?
			M	?	?
	Order : COLUMBIFORMES				
	Family : Columbidae				
16.	*Streptopelia chinensis*	Spotted Dove	S	4	2
			Ps	2	1
			M	2	1

Table 4. *Contd. :*

Sl. No.	Scientific name	English name	Climatic spell	Population max.	min.
	Order : CICONIIFORMES				
	Family Scolopacidae				
17.	*Gallinago gallinago*	Common Snipe	S	2	1
			Ps	1	–
			M	–	–
	Family : Rostratulidae				
18.	*Rostratula benghalensis*	Painted Snipe	S	1	–
			Ps	–	–
			M	–	–
	Family : Jacanidae				
19.	*Hydrophasianus chirurgus*	Pheasant-	S	–	–
		Tailed Jacana	Ps	2	1
			M	–	–
	Family : Jacanidae				
20.	*Metopidius indicus*	Bronzewinged	S	3	1
		Jacana	Ps	4	1
			M	7	1
	Family : Accipitridae				
21.	*Elanus caeruleus*	Blackwinged	S	–	–
		Kite	Ps	–	–
			M	2	1
22.	*Milvus migrans*	Pariah Kite	S	2	1
			Ps	2	1
			M	2	1
23.	*Gyps bengalensis*	Whitebacked	S	14	3
		Vulture	Ps	8	3
			M	8	3
	Family : Podicipedidae				
24.	*Podiceps ruficolis*	Little Grebe	S	2	1
			Ps	2	1
			M	4	2

Table 4. *Contd. :*

Sl. No.	Scientific name	English name	Climatic spell	Population max.	min.
	Order : CICONIIFORMES				
	Family : Phalacrocoracidae				
25.	*Phalacrocorax niger*	Little Cormorant	S	4	2
			Ps	4	2
			M	6	2
	Family : Ardeidae				
26.	*Ardea purpurea*	Purple Heron	S	1	–
			Ps	–	–
			M	–	–
27.	*Bubulcus ibis*	Cattle Egret	S	4	2
			Ps	8	5
			M	22	9
28.	*Ardeola grayii*	Pond Heron	S	5	2
			Ps	3	2
			M	15	7
29.	*Ixobrychus sinensis*	Yellow Bittern	S	1	–
			Ps	1	–
			M	–	–
30.	*Ixobrychus cinnamomeus*	Chestnut Bittern	S	–	–
			Ps	1	–
			M	–	–
	Family : Ciconidae				
31.	*Anastomus oscitans*	Openbill Stork	S	–	–
			Ps	9	2
			M	1	–
	Order : PASSERIFORMES				
	Family : Laniidae				
32.	*Lanius cristatus*	Brown Shrike	S	–	–
			Ps	1	–
			M	–	–

Table 4. *Contd. :*

Sl. No.	Scientific name	English name	Climatic spell	Population max.	min.
	Order : PASSERIFORMES				
33.	*Lanius schach*	Rufousbacked Shrike	S	2	1
			Ps	2	1
			M	1	–
	Family : Corvidae				
34.	*Dendrocitta vagabunda*	Tree Pie	S	1	–
			Ps	1	–
			M	2	1
35.	*Corvus splendens*	House Crow	S	3	1
			Ps	3	1
			M	1	–
36.	*Artamus fuscus*	Ashy Swallow-Shrike	S	–	–
			Ps	5	2
			M	2	1
37.	*Oriolus xanthornus*	Blackheaded Oriole	S	2	1
			Ps	3	1
			M	1	–
38.	*Dicrurus macrocercus*	Black Drongo	S	4	2
			Ps	8	4
			M	3	2
39.	*Aegithina tiphia*	Common Iora	S	3	1
			Ps	–	–
			M	–	–
	Family : Muscicapidae				
40.	*Copsychus saularis*	Magpie Robin	S	2	1
			Ps	2	1
			M	4	2
	Family : Sturnidae				
41.	*Sturnus malabaricus*	Greyheaded Myna	S	6	3
			Ps	–	–
			M	–	–

Table 4. *Contd. :*

Sl. No.	Scientific name	English name	Climatic spell	Population max.	min.
	Order : PASSERIFORMES				
	Family : Sturnidae				
42.	*Sturnus contra*	Pied Myna	S	7	4
			Ps	8	4
			M	15	3
43.	*Acridotheres tristis*	Common Myna	S	4	2
			Ps	9	3
			M	6	3
44.	*Acridotheres fuscus*	Jungle Myna	S	–	–
			Ps	–	–
			M	3	1
	Family : Pycnonotidae				
45.	*Pycnonotus cafer*	Redvented Bulbul	S	3	2
			Ps	4	2
			M	10	4
	Family : Cisticolidae				
46.	*Cisticola juncidis*	Streaked	S	3	2
		Fantail Warbler	Ps	6	2
			M	4	1
47.	*Prinia subflava*	Plain Wren Warbler	S	4	2
			Ps	4	2
			M	7	2
	Family : Sylviidae				
48.	*Orthotomus sutorius*	Tailor Bird	S		
			Ps		
			M		
49.	*Turdoides striatus*	Jungle Babbler	S	4	3
			Ps	3	3
			M	8	3

Table 4. *Contd. :*

Sl. No.	Scientific name	English name	Climatic spell	Population max.	Population min.
	Order : PASSERIFORMES				
	Family : Alaudidae				
50.	*Mirafra erythroptera*	Redwinged	S	–	–
		Bush Lark	Ps	1	–
			M	1	–
51.	*Galerida cristata*	Crested Lark	S	–	–
			Ps	2	1
			M	1	–
	Family : Nectariniidae				
52.	*Nectarinia zeylonica*	Purplerumped	S	2	1
		Sunbird	Ps	2	1
			M	–	–
53.	*Nectarinia asiatica*	Purple Sunbird	S	1	–
			Ps	1	–
			M	–	–
	Family : Passeridae				
54.	*Passer domesticus*	House Sparrow	S	16	5
			Ps	9	6
			M	10	6
55.	*Motacilla flava*	Yellow Wagtail	S	1	–
			Ps	–	–
			M	–	–
56.	*Anthus novaeseelandiae*	Paddyfield	S	4	2
		Pipit	Ps	4	2
			M	2	1
57.	*Ploceus manyar*	Streaked Weaver	S	4	1
		Bird	Ps	7	2
			M	28	16

Table 4. *Contd. :*

Sl. No.	Scientific name	English name	Climatic spell	Population max.	min.
	Order : PASSERIFORMES				
58.	*Estrilda amandava*	Red Munia	S	–	–
			Ps	4	2
			M	2	1
59.	*Lonchura punctulata*	Spotted Munia	S	8	2
			Ps	13	4
			M	–	–
60.	*Lonchura malacca*	Blackheaded	S	–	–
		Munia	Ps	2	1
			M	5	2

Total number of Bird species - Sixty.
Total number of Families - Thirtyone.
Total number of Orders - Nine.
Observed upper and lower limit have been expressed in the column 'Population' as - max. and min. numbers.

Table 5. Local mammals recorded in and around the Nesting Ground of *Prini subflava* at Ramchandrapur village, South 24 Parganas. Observation : April to Sept 1999.

Sl. No.	Scientific name	English name
	Order : CARNIVORA	
	Family : Viverridae	
1.	*Viverra zibetha* (?)	Large Indian Civet
2.	*Viverricula indica*	Small Indian Civet
3.	*Paradoxurus hermaphroditus*	Common Palm Civet
	Family : Felidae	
4.	*Felis chaus*	Jungle Cat
	Family : Canidae	
5.	*Vulpes bengalensis*	Indian Fox
6.	*Canis aureus*	Jackal

Table 5. *Contd. :*

Sl. No.	Scientific name	English name
	Family : Herpestidae	
7.	*Herpestes auropunctuatus*	Small Indian Mongoose
	Order : RODENTIA	
	Family : Sciuridae	
8.	*Funambulus pennanti*	Fivestriped Palm Squirrel
	Family : Muridae	
9.	*Bandicota bengalensis*	Indian Mole Rat
10.	*Bandicota indica*	Bandicoot Rat
11.	*Mus booduga*	Indian Field Mouse
12.	*Mus musculus*	House Mouse
13.	*Golunda ellioti*	Indian Bush Rat

METHODOLOGY

The nidification of Plain Wren Warbler (*Prinia subflava*) was observed in a rural area in the district of South 24 Parganas in the state of West Bengal. The observation continued from April to September of 1999. The study was carried in two phases. In the first phase, one pair of P. subflava was selected. The pair was detected while they were engaged in selecting their nest site. The first date of spotting the pair was April 10th. Immediately, after two days from the morning of April 12th, the pair started nest-building. From 12th April to 14th May the observation continued on the nest building, egg laying, incubation, nestling feeding. The selection of this pair was based on observations made on its behaviour. The nest bush was detected by following the birds and observing as on which bush the pair was investing their maximum time and giving calls while sitting on the bush top. When the nest site was detected, the nest was at its initial stage of construction. One of the birds was found carrying nesting materials to their nest site. The observation was carried out from 0900 hrs to 1500 hrs daily. The observers were positioned at a distance of 50 ± feet from the nest bush.

The other phase of observation started from April 10th and continued till September 28th 1999. In this phase, the study area was visited every day to locate new nests of the same species and to observe the nidification process. Changes in the nesting flora were also noted. Observations were continued to collect data on the changes taking place in the nesting-habitats with the change of climatic spells. All the nests were visited & observations noted daily from and in between 0700 hrs to 0900 hrs and from 1500 hrs to 1600 hrs. The nests were located mainly by visual observations—the birds carrying the nesting materials and nestling foods and also by following their calls & the

striking behaviours they exhibited on their nesting bushes. Super Zenith binoculars of 8 × 30 and 20 × 50 magnifications were used for observations. The measurements of the nest bushes, nest-heights and different parts of the nest were found out with the help of a 2 mt. measuring tape and a millimeter scale. Nestlings were weighed with Pesola spring balance and the eggs were marked with Indian ink and fledglings were measured with vernier callipers. A maximum and minimum count of birds per sighting was noted during the daily observations. Calculations from these datas have been utilized to achieve the population range (max./min.) of birds per season.

DISCUSSION

Breeding territory : Breeding territory of *P. subflava* in two different seasons (summer & monsoon) at the same spot (distance between the two nests was 82 feet) : In summer there was no Bhindi (=Dherosh) cultivation in the north-east corner of the pond. Hence, in summer the bird of nest type : (A) selected the vegetable orchards of the north-west corner of the pond that occupies 43% of the whole area (Fig : 3). Paddy field occupies 40% of the land, the remaining consists of grass land and waterbody. In monsoon the vegetable orchards of the north-west corner got flooded and Bhindi was cultivated on the north-east corner. Hence, the *Prinia* of nest type : (B) in monsoon selected that Bhindi grown field and nearby wet grassland (46% and 12% respectively of the whole area) whereas only 8% was paddy field—newly cultivated. 2% of land was marshy and remaining area covered by waterbody.

Both the birds of a pair were observed not equally sharing the task of defending their nesting territory. Instead, one of the birds would remain in territory defending while the other would be helper to its mate. *Prinia subflava* exhibited inter-species tolerance in sharing its nesting territory allowing others (birds) to be its cousin nesters. But intra-species intolerance was marked during observation even with the foraging grounds during the period of nest building and nestling feeding, shown in Fig : 2, 14, 15, 16. In the case of nest no : 1 the breeding territory was measured 354 sqm, 2 days before the commencement of nest building (Fig : 2). In 75% cases the nests were observed constructed on the margin of the breeding territory (Fig : 3).

Nest site : Nesting height & Nesting vegetation.

P. subflava was observed to be preferring 3 types of vegetations for nesting. Bena grass (*Andropogon squarossus*) appeared to be the most preferred nesting vegetation, of the total nests 71.5% were in Bena grass. The nest height varied from 46 cm to 84 cm. In summer the pairs selected (*Lippia geminata*) locally called Bhut-beurey and (*A. squarossus*) Bena grass for nesting. The nesting bushes have been found with heights ranging from 90 cm to 128 cm. The nesting heights varied from 46 cm to 60 cm (Table : 8). During the hot summer days (mid April to mid May) the species was observed selecting their nesting heights so as to reach and retain their required nest temperature keeping under attention factors as–suitable nesting coverage and possibilities of

predation (Fig : 2). In the summer phase nest height was corelated with the bush height following Student's T method and found : r = 0.97, Sr = 0.09, t = 10.64 .001 (Table : 8). In the post summer season, *P. subflava* was found to be using only Bena bushes (*A. squarossus*) with the bush heights and nest heights ranging from 100 cm to 140 cm & 60 cm to 77 cm respectively. From post summer period the water level of the waterbodies start rising and consequently the nest heights are raised (increased) by the species, although the bush heights remain nearly same as that of summer. In this phase the nest height was not corelated with nesting bush height : r = 0.11, Sr = 0.70, t = 0.16. (Table : 8). It was observed that in post summer the pairs considered the factor of rising water level in their nesting area. Besides, an important factor was the day by day change of water-level of the wetlands near to which the nesting had been done.

It was presumed that for this reason, the species had rejected 50% of their nests done in the post summer season. During the monsoon months the species was found to be using two types of vegetation for nesting, namely, Bena grass (*A. squarossus*) and Kush grass (*Eragrostis cynosuroides*). The nest height and bush height varied from 70 cm to 84 cm and 130 cm to 170 cm.

Nesting area : The species used both small & long stretches of bushes for nesting but always preferred dense bushes or the highly dense portion of a long bush. The bush stretch varied from 6.3 ft to 100 ft. From observations it has been found that a typical nesting area needs the nesting vegetation very close to a waterbody and there must be agricultural lands near to the nesting spot. In 71.5% cases it was observed that the species selected such areas for successful nesting. Other than this, in areas which were dry or wet grasslands with ample nesting-vegetation but away from the waterbodies nesting was also found to have been done. It was found that 28.5% nestings were done in such grounds. Of this 28.5% nestings, 75.3% nests were either discarded or abandoned as shown in Fig : 1.

Nest building : Nesting pattern : The species was found following two types of nest building patterns. During their nesting in Bena (*A. squarossus*) and Kush (*E. cynosuroides*) grasses, the pairs used ten and more grass blades from the nesting bush as main-beams on which the nest actually stands. The bird then stitches the collected nest materials such as—thin strips of Bena leaves, with the main beams to construct the nest (Plate : 1 stage 1). Day by day the pair introduced one by one the main beams and the construction proceeded. The birds took 5 to 8 days to complete the sac shaped nest. This phase of construction is denoted here as the **Actual nest building phase** (Plate : 1 Stage : 6). After the completion of the sac shaped nest which is by now ready to carry the eggs, the pair started joining the anchors and supporting beams to with the nest (Plate : 1 Stage : 7, 8). This part of work took another 3 to 5 days and is indicated as **Partial nest building phase.** However, construction of anchors and supporting beams were also noted during nestling feeding period and on stormy days of post summer and monsoon in several nests. Table : 6 shows the rate of nest building in Actual and Partial nest building phases in nest no : 1 where nesting was done

in Bena grass (*A. squarossus*). When constructing the nests in *Lippia geminata* bushes the birds used 3 to 4 closely growing shoots to give them support as main beams and more 2 to 3 *Lippia* shoots sometimes with grass blades from adjacent grass bushes to help as supporting beams. While nesting in Lippin bushes, the birds used to stitch the nesting materials through the bark of the stem of Lippia to give a supporting anchorage to the nest. Sometimes, the birds placed the leaves of *Lippia* to cover the outer side wall of the nest. This is shown (Plate : 2). The birds also stitched the nesting materials through the leaves of Lippia to give the nest an anchoring support. Generally, the species at first used to do the nest floor with the help of 3 to 4 rims (Plate : 1 Stage 3). Then continued to the side walls. The nest had larger side walls on the back side and smaller side walls on the front side (Table : 7). This is front side from where the birds took entry to the nest. Always the birds started constructing the larger side wall at first and the same was always facing the direction from where the maximum wind thrust came.

Table 8. Corelation between Nest Height and Bush Height of *Prinia subflava*, following Student's 'T' method.

Location–Ramchandrapur village, South 24 Parganas.

Period of Observation : April to August 1999.

Nest number	Summer			
	Bush height Mean ± SD cm		Nest height Mean ± SD cm	
1	128	17	59	1.4
4	95	7.1	46	2.8
5	124	85	60	7.1
6	121	15.6	57	2.8
2	100	14.14	51	8.48
3	90	8.48	46	8.48
7	105	21.2	52	7.07
	r = 0.97	Sr = 0.09	t = 10.64	sig → t < .001

Nest number	Post Summer			
	Bush height Mean ± SD cm		Nest height Mean ± SD cm	
8	140	17	68	5.7
9	100	14.1	60	4.2

Table 8. *Contd. :*

Nest number	Bush height Mean ± SD cm			Nest height Mean ± SD cm	
10	127	12.7		73	4.2
11	102	7.1		77	8.5
	r = 0.11	Sr = 0.70	t = 0.16	Insignificant.	
			Monsoon		
Nest number	Bush height Mean ± SD cm			Nest height Mean ± SD cm	
13	130	14.1		70	5.7
14	150	11.3		80	5.7
12	170	22.6		84	7/07
	r = 0.97	Sr = .24	t = 4.04	Insignificant.	

All measurements are in Centimeter.

Table 6. Reference sheet of Plate 1 (Nest Building) of *P. subflava* in the summer season. Nest under discussion—Nest No : 1.

Date	**Observation Hour**	**No : of visit for nest building**	**Time spell of nest building in minutes**	**Development of nest refer to stage no :**
12.4.99	0931 – 1230	5	52	1 & 2
13.4.99	0945 – 1245	10	37	2 & 3
14.4.99	0930 – 1230	18	57	3 & 4
15.4.99	0930 – 1230	6	16	4
16.4.99	0918 – 1218	7	40	5
17.4.99	0930 – 1230	5	57	6
18.4.99	0930 – 1230	4	16	7
19.4.99	0930 – 1230	3	10	7 & 8
20.4.99	0930 – 1230	5	20	7
21.4.99	0930 – 1230	5	26	8

Pairing and participation of partners :

Before nest building :

One of the partners always used to defend its nest site or the nesting area throughout the breeding season and some of the individuals used to do so throughout the year. But the extension of the span of defending the breeding territory and the nesting site in the non breeding seasons varied according to the wealth of the area. The breeding season starts from March. Before the commencement of the breeding season one the birds would arrive in its preferred nesting area and start surveying and marking its breeding territory.

During this phase, we found that the bird which was then busy in marking its territory, would chase all intruders of its species but would allow some individuals to come closer and perch within the nesting area. This territory marking phase varied from 6 to 39 days. After this period during which pair formation takes place, the pair starts selecting the nest site in the grass patches and *Lippia* bushes available in the breeding territory.

During nest building :

Sharing the nest building work by both sexes varied from pair to pair.

In nest no : 1 it was observed that a single bird constructed the whole nest, while the other partner was found busy in feeding, watching, vocally communicating (with the builder) and engaged with other general activities. Within our observation period of 10 days on nest no : 1 (for 3 hrs daily) it was observed that the species utilised only on an average 11.03 minutes within an hour (60 mins observation) for the nest building during the hottest time of the day (Table : 6).

MATING

During the observation period, only once a pair was seen to copulate in the post summer season. It was a cloudy day without rain and atmospheric temperature was in between 29°C & 31°C within 1000 hrs and 1200 hrs. At 11 : 25 hrs a pair of P. subflava was observed perched on a single grass blade of Bena bush (*A. squarossus*). Both the partners were silent and in no state of activity. Suddenly, the male bird turned very excited and after another silent pause of 2 minutes, mounted on the back of the female followed by constant fluttering of wings. Time counted from mounting to dismounting was about 4 seconds. Soon after dismounting the male bird hopped around the area still in same excitement while the female rested silent inside the bush on which they were. To avoid causing further disturbance to the mating pair I shifted from the spot along with the companion observer.

Eggs & egg laying : Eggs were pale green in colour with dark reddish brown blotches. Density of the blotch marks varied in between individual eggs of a clutch. In nest no : 1, it was observed that blotch marks are greater in the first egg and the markings were very fine whereas the last egg had sparsely spread blotches and the marks were bigger in size. It was observed that the birds never laid egg in between 0900 hrs & 1500 hrs (according to field-observation it was the hottest part of the day). *P. subflava* laid egg every day to complete the full clutch. Out of 3 used nests in summer clutch size remained 5 (in 2 nests) and 4 (in 1 nest). In post summer and monsoon clutch size remained between 4 and 3.

Incubation : Incubation period varied from 11 to 13 days. The Handbook (Ali & Ripley) Vol. VIII states that incubation period ranges between 11 to 12 days. In case of nest no : 1 it was found that after laying the 4th egg (clutch size 5), the bird started attending the eggs for incubation (Figure : 10). During the hottest part of the day in summer the rate of incubation was found almost nil before completion of the clutch. During the post summer season, it was observed that despite sudden occurrence of rainfall the bird would not leave the nest while incubating the eggs. Ignoring the rainfall it continued to attend. Whereas in monsoon, in 90% of the nests studied, the eggs remained totally unattended when it was raining. During incubation (inattentive period) in the summer season, the inside nest temperature ranges from 34°C to 39°C in between 0930 hrs and 1430 hrs (Figure : 10). Both sexes incubate. When one bird attended the eggs the partner would never be in the vicinity. It was observed either feeding or resting on a bush somewhere away. But these activities would always be within the territory of the pair. However, sometimes the unattending birds would go out of its territory to take a look in and around the nest of another pair, but this absence from its territory never crossed 15 to 20 minutes. *P. subflava* have a habit of watching their nest in turns and at intervals till the end of the incubation period. During incubation* both the partners remained less vocal and both of them would apend very little time in the nesting bush. They were observed on nearby bushes watching the nest in the inattentive periods of the day. *(incubation period covering both attentive & inattentive periods). As they start laying eggs one of the partner starts giving a totally different call than noted previously. The call is very much unheard or little heard in the days of nest building. It was also noted that only one bird of the pair was in a habit of producing such call. The call was a continuous trit-trit-trit-trew-trew-trew-trew-trew-trit-trit-trit uttered loudly. In nest no : 1 during the early phase of incubation this call produced by the partner would always bring out the incubating bird from the nest. And it was found uttered whenever domestic cattle or dogs came in the direction of the nest. The call was also produced on arrival of the village folk towards the nest, and the same was noted on the observer's approach towards the nest (whenever the observers were within 30 feet of the nest).

Young & their development : Hatchling : Eggs were hatched according to sequence of eggs laid. The egg shells and dead hatchlings were carried away & discarded at a distance of 30 feet to 70 feet from the nest site by the attending bird. In most cases the birds would drop the egg shells and dead hatchlings in the nearby pond. The hatchlings had no down, bare pinkish body, intestine almost visible through the thin abdominal skin. The eyes remain closed and in some cases a colourless fluid was found on the edge of the eyelids on the first day. The gape is yellow, average length of gape of 14 hatchlings was 2 mm. The average weight being 1.5 grams.

NESTLINGS : From the second day the bluish black line appeared along the feather tracts of the bare wings and the maid of the back over the vertebral column. Eyes open on the 3rd day. From this day we noted feather sheath emerging on the wings, hand, back-along the vertebral line and on the sides of the abdomen & throat. The feather sheaths are white in colour on the abdomen and throat parts. Sometimes orangish yellow & buff on the flanks. On the 4th day feathers emerged out of the black feather sheath. The length of the feathers were 3 ± mm. From the 5th day the nestlings started activating their locomotary organ–feet. If removed from nest, they will at once catch hold of the nest bed with their claws. They have been found preferring to put their heads down inside the darkness of our folded palms–when handled. From 5th day the weight of individuals were noted & measurements taken. 5th day observation shows average weight of 4 nestlings–4.3 grams. Average length of gape of these 4 nestlings–5 mm (Table : 9).

From 6th day nestlings start screaching. The beak still then soft but the tarsus had turned hard. Between 7th & 10th day the growth rate was steady and nestlings now remain silent at nest than before. On the 9th day the nestlings were able to understand the presence of their parents. On the 11th day, in nest number : 1 (5 eggs had hatched–later one was missing the other dead, remained 3 hatchlings) the elder one–now 10 days old, was attempting to fly out. Observations on other nests show nestlings attempting to fly out after 13th day. In nest : 1 two nestlings emerged out on the 11th day, the other on 13th day. Other nests show nestling period as 12 to 15 days. (As per our average observation).

Nestling food of *Prinia subflava* : From May 2nd to 13th (1999) a total of 12 days, observation was made on a single nest (no : 1) of *P. subflava* from 0900 hrs to 1600 hrs to find the types of nestling food, the changes taking place in the nature of the food, the frequency of feeding, the participation of the partners in feeding activity–in different stages of the nestling period. Out of 5 nestlings 3 survived in this nest. The parents fed their nestlings with insects varying in size from 5 mm to 40 mm. The colour of the insects were brown, black, green, chocolate, white, yellow and muddy colour. For the first 2–3 days of the nestlings the parents depended on the larvae as big as 5 mm to 8 mm of white and light green colour. From the 4th day the parents began to give slightly bigger insects as Grasshoppers (*Atractomorpha* sp.) and insects of chocolate brown colour.

From the 6th day the parents brought Spiders (*Pardosa* sp.), medium sized Grasshoppers, and larvae measuring from 10 mm to 30 mm. Along with these they also began to introduce Moths (*Ophideres* sp.) in the nestling diet from the 8th day. On the 11th day a species of orthoptera (black-coloured) was found brought to be fed to the nestlings. A fly or a sort of bee was brought to feed on the 12th day along with regular food materials. In case of 2 nestlings the nestling period was 11 days and for 1 it was 13 days. From the above observation it can be said that *P. subflava* used 3 to 4 types of larvae from 1st to 13th day which were mostly white, green, yellow. However, the larvae was only 11.48% of the total diet. The remaining portion being other insects. Grasshopper was introduced from 4th day and continued till 13th day occupying 55.02% of the total diet (Figure : 12). The parent birds exhibited a trend to choose green & brown coloured grasshopper within 10 mm to 40 mm length.

Table : 9. Weight of Nestlings in *Prinia subflava* nest no : 1. The nest was found containing 5 eggs. After 14 days of incubation hatchlings emerged on 1st, 2nd, 3rd, 4th, 5th of May 1999. Nestlings were numbered according to their weights, i.e., Age ∝ Weight. Nestling no : 1 was subsequently lost and no : 5 found dead.

Date 1999	Nestling number	Weight gms	Wing mm	Bill mm	Tarsus mm	Tail mm
05 May	2	5	7.5	4	7.5	nil
	3	4	9	4	9.5	"
	4	4	6	3.5	6	"
	5	1	4.5	3	4.5	"
06	2	5.5	18	5	15	1.5
	3	5	11.5	5	9.5	nil
	4	4.5	8.5	4	8.5	"
	5	2.2	6	3.5	5.5	"
08	2	9	27	6.5	16	5
	3	7	19	5	11	1
	4	5	13	5	10.5	nil
10	2	9	33	8	19	7
	3	7	26	7	15	3
	4	6	21	6	12.5	2
12	2	10	35	9.5	20	13
	3	9	33	8.5	18.5	7.5
	4	8	29	8.5	17.5	5.5
13	2	9	41	9.5	22	16
	3	9	32	8	17.5	7
	4	7.5	35	8	18	10

From May 14, 1999 all the nestlings emerges out of the nest.

Territory of *P. subflava* during nestling feeding period in : summer, post-summer, monsoon.

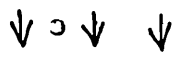
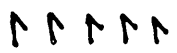
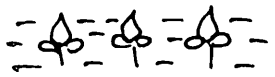
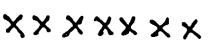
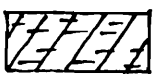
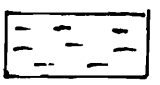
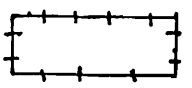
Prinia nest	
Brick kiln	
Village	
Ripe paddy ready to harvest	
Bhindi fields	
Cucumber fields	
Newly sown paddy	
Hyacinth chocked waterbody	
Cabbage cultivation	
Gourd orchard	
Bitter gourd	
Hyacinth bean	
Mud track	
Ridges	
Dry grass field	
Wet grass field	
Waterbody	
Territory of *P. subflava* during nestling feeding	
Breeding territory of summer	
& monsoon season of *P. subflava.*	

Table 10. Conventions used in the Territory Map of *Prinia subflava*.

1. Territory of *P. subflava* in summer : 80% of the area consist of Paddy cultivated fields. 2% occupied with vegetable orchards and 18% by grasslands and waterbody. Nearest discarded nest of the species was 467 ft. away from this nest (= nest 1). Nest of *Cisticola juncidis* was within 337 ft and of *Anthus novaeseelandiae* was within 112 ft. from (▲) marked nest—Figure : 14.

2. Territory of *P. subflava* in post-summer : 60% of the area were covered with waterbody chocked with hyacinth. 25% occupied by wet-grasslands and vegetable orchards occupied 19.5%. Remaining 0.5% was covered with dense ridges of Kush grass (*E. cynosuroides*). Another nest of the same species was found 856 ft. away from the nest under discussion. Inter-species nesting within a radius of 500 ft. approximately was absent (Figure : 15).

3. Territory of *P. subflava* in monsoon : Area consists of vegetable orchards, wet-grasslands and waterbody with dense ridges of Bena grass (*A. squarossus*) of 45%, 35% and 20% respectively. Nest of *C. juncidis* was 64.5 ft away and of *L. malacca* was 117 ft away from the *P. subflava* nest under consideration. No other Prinia nest was found within 700 ft. from this nest (Figure : 16).

Nest sanitation : The parent bird after delivering the food, always waited to collect the faecal sacs and carried them away to drop on the fields while flying for food collection. Sometimes, the parent would swallow the faecal droppings. Such behaviour was noted when the hatchlings were a day or two old.

Fledglings : Fledglings left the nest one by one following the sequence of first hatched first left. In one nest of post-summer season 2 nestlings emerged from the nest one after another in a single day. Observation show maximum nestlings under normal condition tend to emerge from nest in the early morning. However, it was also found that a nestling prepared to leave the nest the nest day, when disturbed, left the nest a day earlier. In the summer season it was observed (in nest : 1) that fledglings remained within the nesting bush or in the nearby bush—within a distance of 30 feet for at least the consecutive 3 days from the day of emergence from nest. But in monsoon the observation showed that fledglings remained in the nesting bush or the nearby bushes for at least the next 6 days from the date of emergence. Both the parents fed the fledglings during this time. The water level from ground had a rise of 2.5 ft. during this time. A loss of weight was also noted in every bird at the start of fledgling period (Table : 9).

Fledgling & Interaction with Parents :

Observation : 1.

In summer and monsoon it was observed that the feeder parent would feed both the nestlings and the fledglings simultaneously and sometimes with the assistance of the partner. But in post-summer the feeder bird would ignore the fledgling (observed in one nest) begging to be fed. Sometimes the fledgling would chase the feeder carrying food, but the food carrying parent would

rush to the nest only to feed the nestlings. Ultimately the helper parent would take charge of feeding the fledgling that had already left the nest.

Observation : 2.

While observing nest : 1 it was found that fledgling period began with the end of harvesting of paddy. The parent birds in need to feed the youngs had to travel long distances of 400 to 450 feet to reach other unharvested fields still teeming with insects. The 3 nestlings (of nest 1) emerged from nest on 12th, 13th and 16th of May 1999 successively. They were hatched on the 2nd, 3rd and 4th of May respectively. On the 16th of May when the youngest one flew out of nest the feeding parent was observed following an unique art of giving first lessons to the new chicks. Since the food collection site was at a great distance from the nest-site the feeder bird instead of bringing food to the elder fledgling began to give calls with food in its beak from the site of collection. The fledgling which was 14 days old on hearing the call covered a distance of 27 feet by flight to reach the food holding parent. But the feeder parent flew away to the 12 days old fledgling and the former one chased the parent to get the food hopping from one bush to another. Similarly, the 13 day's old one also started following the parent to reach the food. It covered a distance of 42 ft. in its first flight. However, the youngest one was still waiting in the nesting bush. The feeder parent went to it. The next day only 2 fledglings were found in the small paddy field still green and unharvested. The feeder parent was there, travelling 70 to 100 ft. to collect food for its youngs. Sometimes food was available close at hand. The fledglings awaited in the food-collection site. The 3rd fledgling was however missing.

***P. subflava* & Competitors :** As foraging competitors of *P. subflava* the other two species of birds that appeared are the : Streaked Fantail Warbler (*Cisticola juncidis*) and Paddyfield Pipit (*Anthus novaeseelandiae*). The presence of the nests of these competitors are indicated in Figure : 14, 15 and 16.

Breeding success :

1. Observation period was 4 months and 11 days, or 131 days.
2. The span was from April 10th to August 18th of 1999.
3. 14 nests were observed within the observation period.
4. Of the total nests 20.25% nests were discarded by the birds. 22.60% nests were destroyed by local population.
5. 57.15% of nests remained, in which the species laid 31 eggs.
6. The hatching success was 100%.
7. 70.96% of hatchlings survived.

8. Observation period consists of : summer, post-summer, monsoon, in which 70.96% survived and 29.04% died or destroyed.
9. In summer the survival of hatchling was 57.14%, in post-summer 100%, in monsoon it was 70%.
10. Out of 70.96% of hatchlings 50% of nestlings survived all through the observation period.
11. In summer 37.5% nestlings survived, in post-summer 57.14%, and in monsoon 57.14% nestlings survived.
12. Total fledgling success of the observation period was 72.72%.
13. In summer 66.66% of fledgling survived, in post-summer 50% and in monsoon 100% of fledgling survived.

SUMMARY

The nidification of Plain Wren Warbler (*Prinia subflava*) was studied in rural South 24 Parganas in the vicinity of Kolkata, West Bengal. The study was conducted from April to September of 1999. 14 nests of Plain Wren Warbler were available for study. The preferred nesting vegetations were found as follows : Bhut-beurey (*Lippia geminata*), Bena grass (*Andropogon squarossus*), Kush grass (*Eragrestis cynosuroides*). The species constructed 2 types of nests according to availability of nesting materials, which differed due to change of vegetation. Abandoning of nest was observed in case of some pairs after completion of nest building or in the mid-phase of construction. Nest building period varied from 5 to 11 days. 2 clutches were occassionally laid despite nesting ground grossly inundated with rain water. Both sexes incubate. Nestling period varied from 10 to 15 days. Every partner do not share all the duties equally on the domestic part. The breeding success was found to be 25.80%. Larvae—a basic food item continued to be used throughout the nesting period. Grasshopper (*Atractomorpha* sp.) although not basic occupied 55.02% of the total nestling diet.

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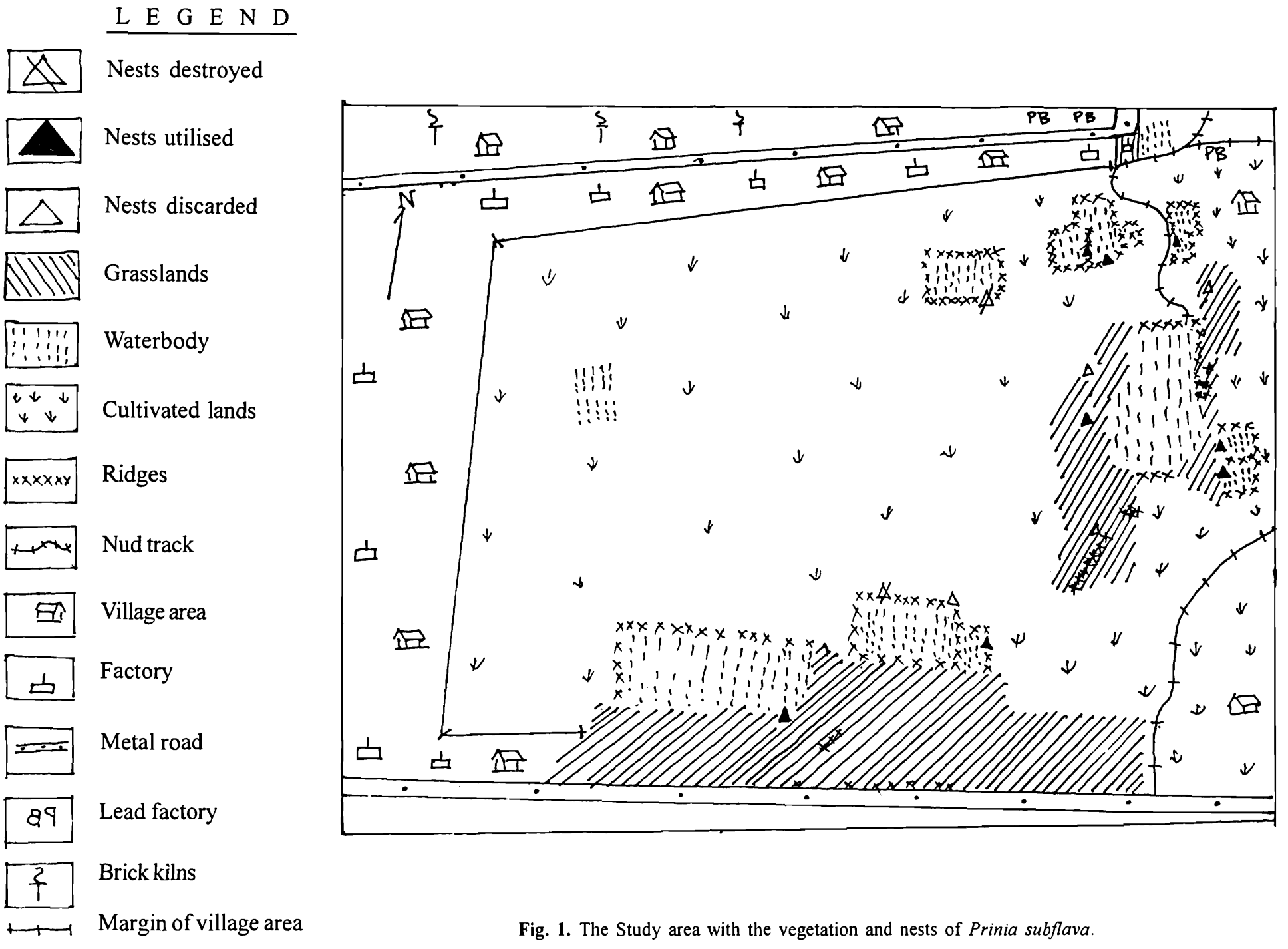


Fig. 1. The Study area with the vegetation and nests of *Prinia subflava*.

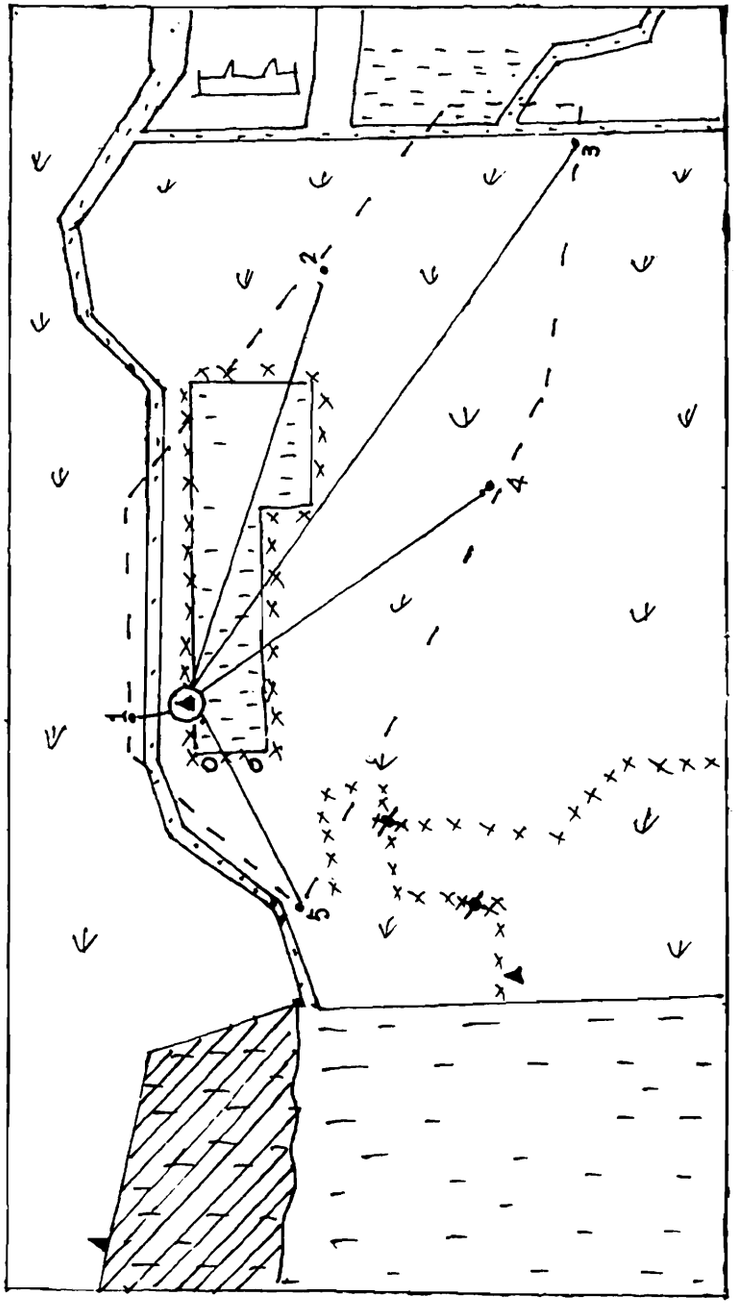


Fig. 2. Territory of *Prinia subflava* before nest building.

LEGEND

Nest number 1

Neighbouring Prinia nests

Nest of Authus novaesee landiae

Nest of Cisticola juncidis

Paddy Fields

Waterbodies

Mud track

Wet grassland

Factory

Ridges

Boundary of Territory

The straight lines 1 to 5 drawn from the nest spot to the boundary of the territory showing various distances :

Straight line	1 –	nest	to boundary	– 55 feet.
	2	"	"	– 600 "
	3	"	"	– 850 "
	4	"	"	– 665 "
	5	"	"	– 304 "

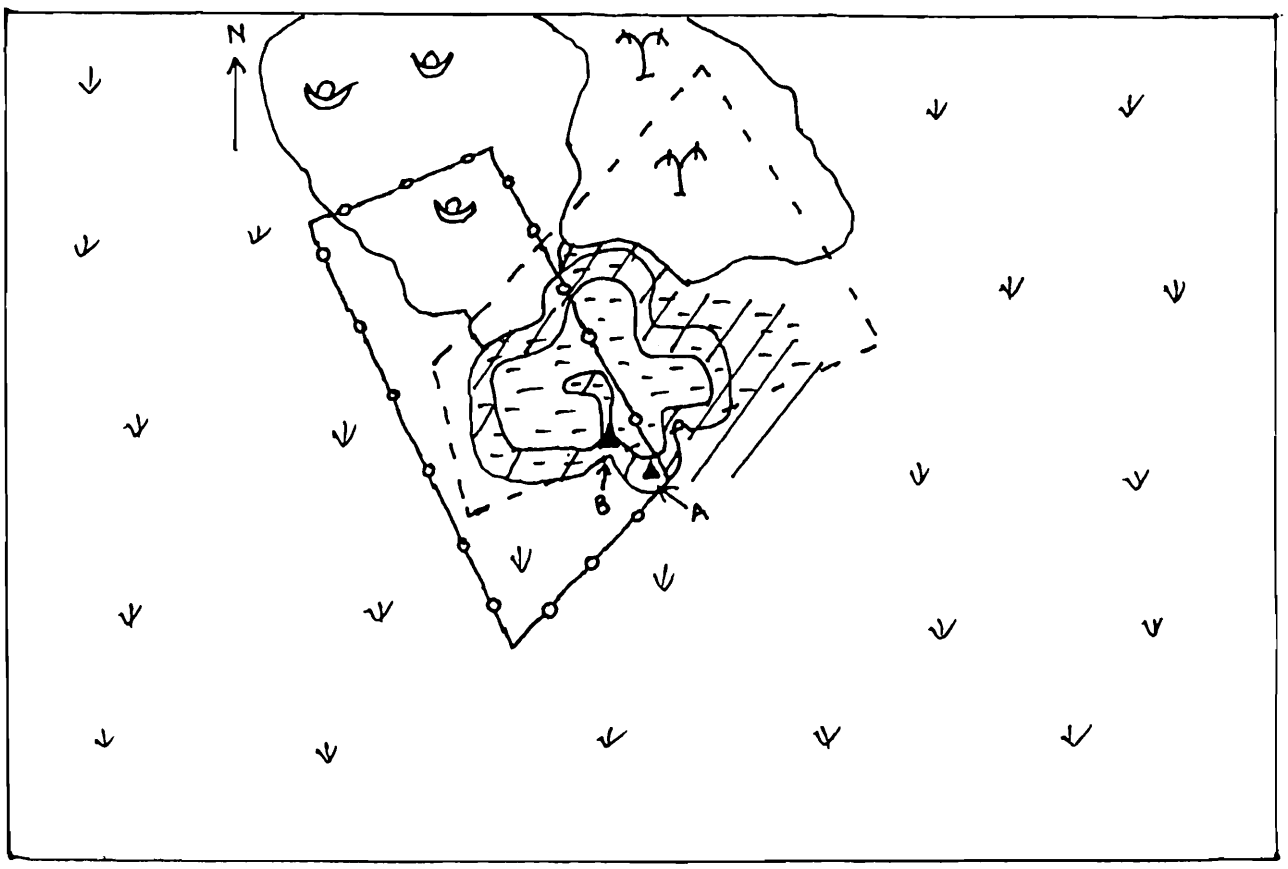
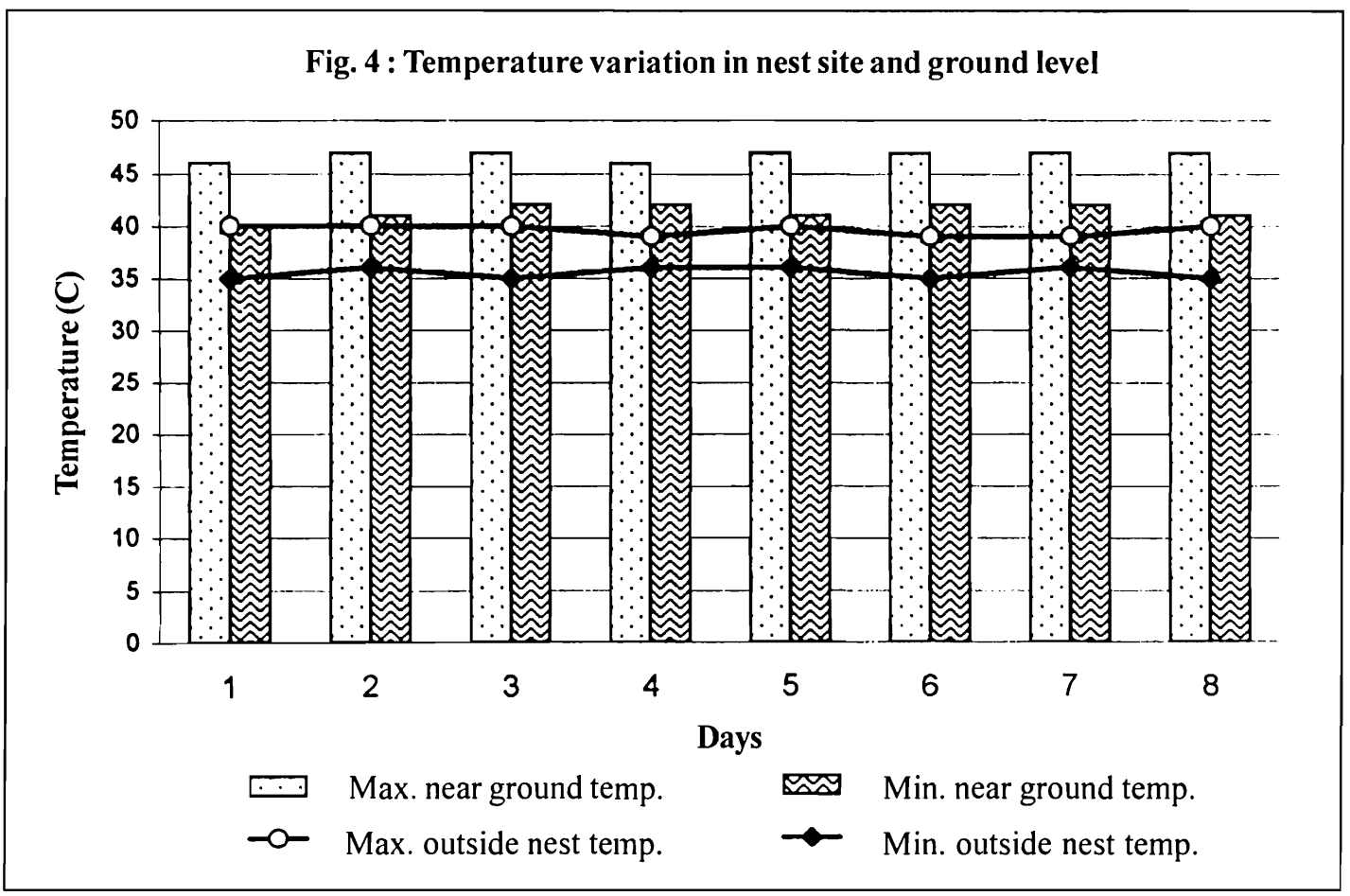


Fig. 3. Breeding Territory of *Prinia subflava* in two different seasons (summer and monsoon).

For Legend see Table : 10



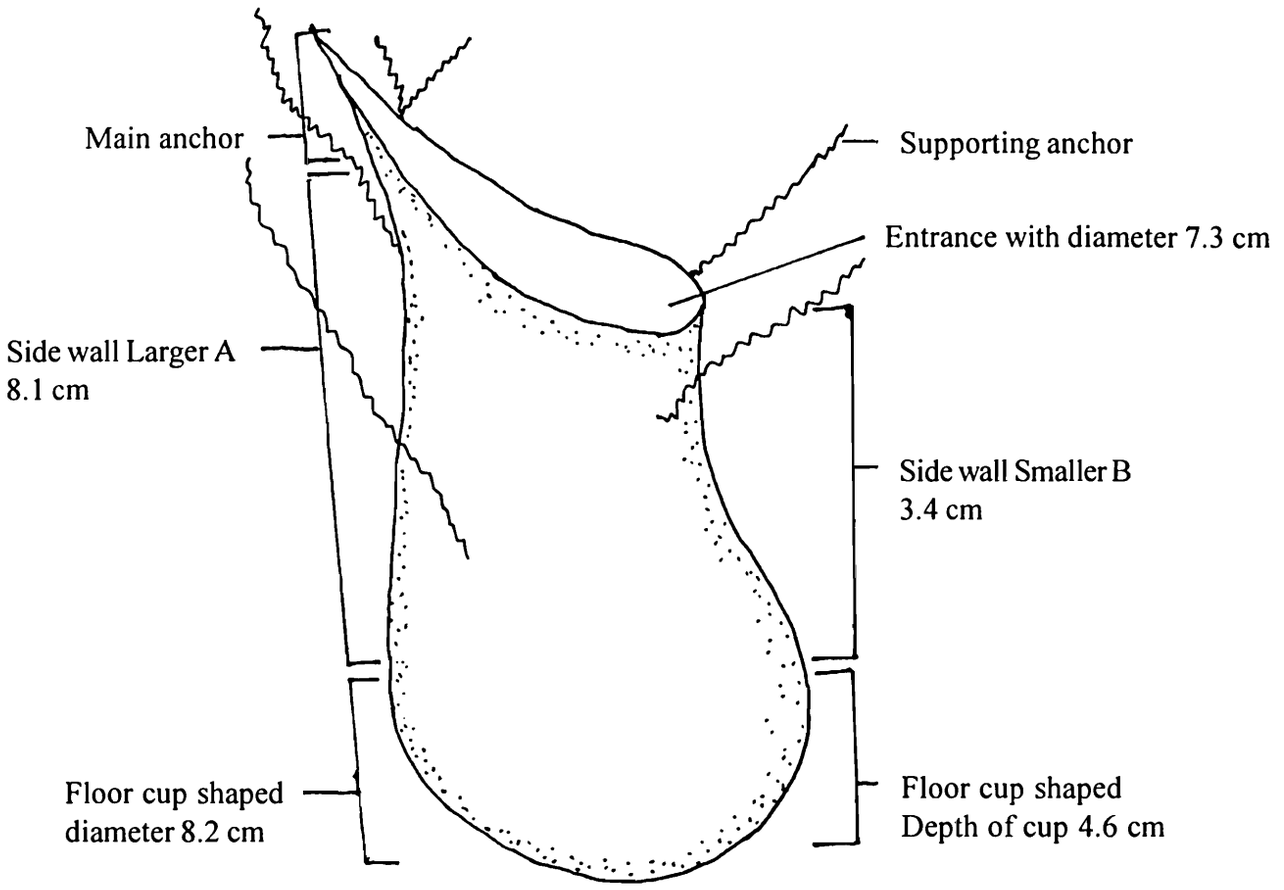


Fig. 5. Nest of *Prinia subflava* – Nest No : 1 constructed in Bena grass (*A. squarossus*).

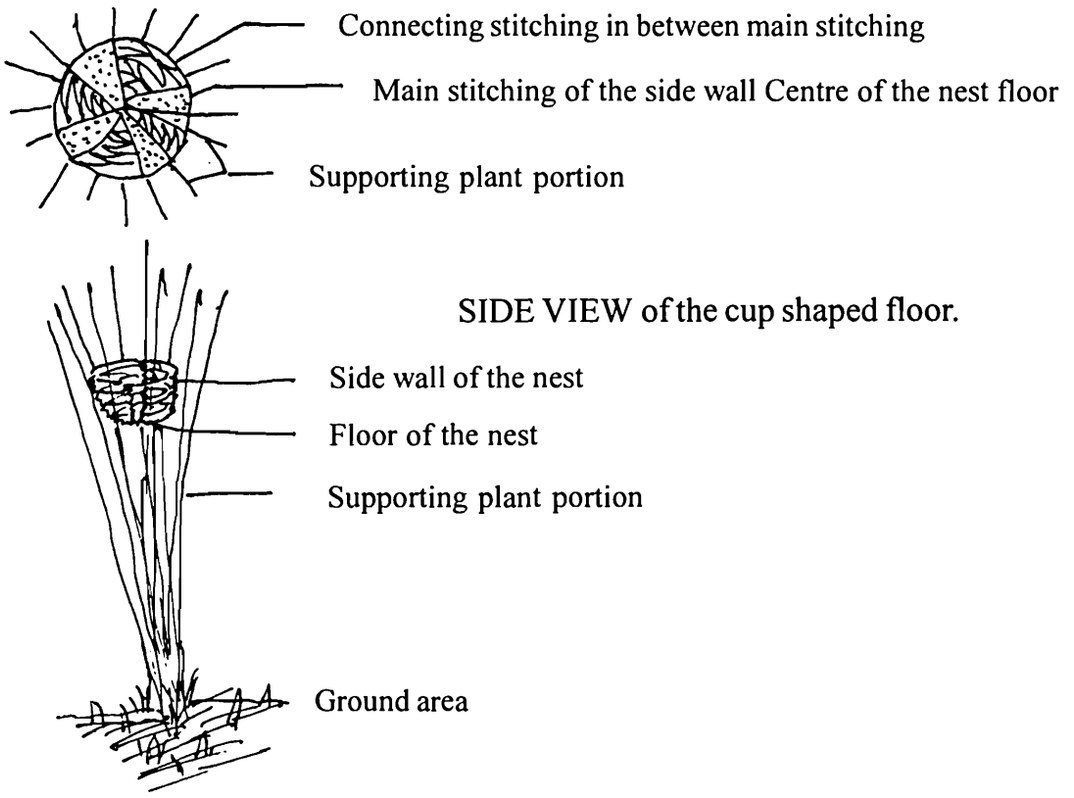
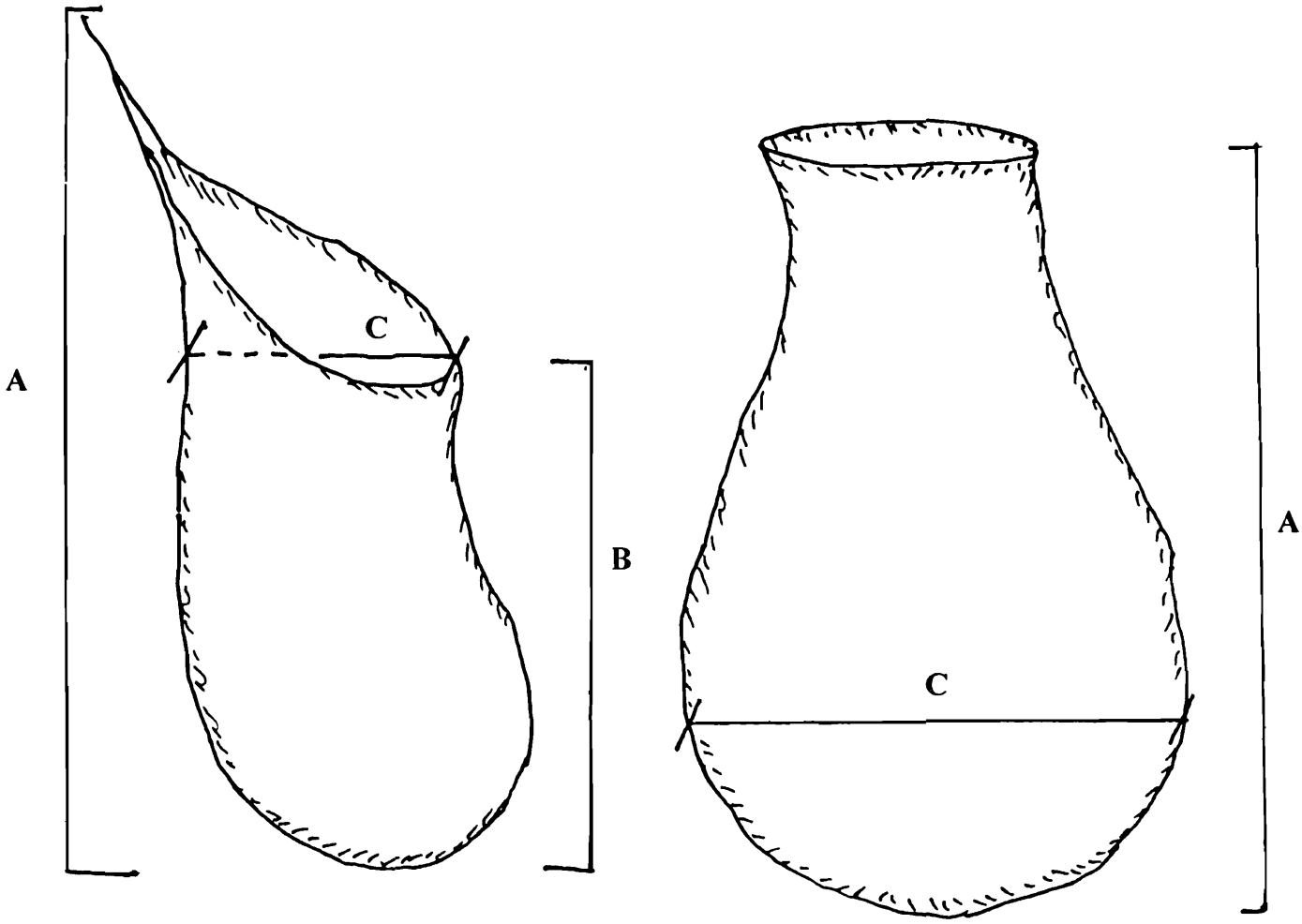


Fig. 6. Nest of *Prinia subflava* TOP VIEW of the cup shaped floor.



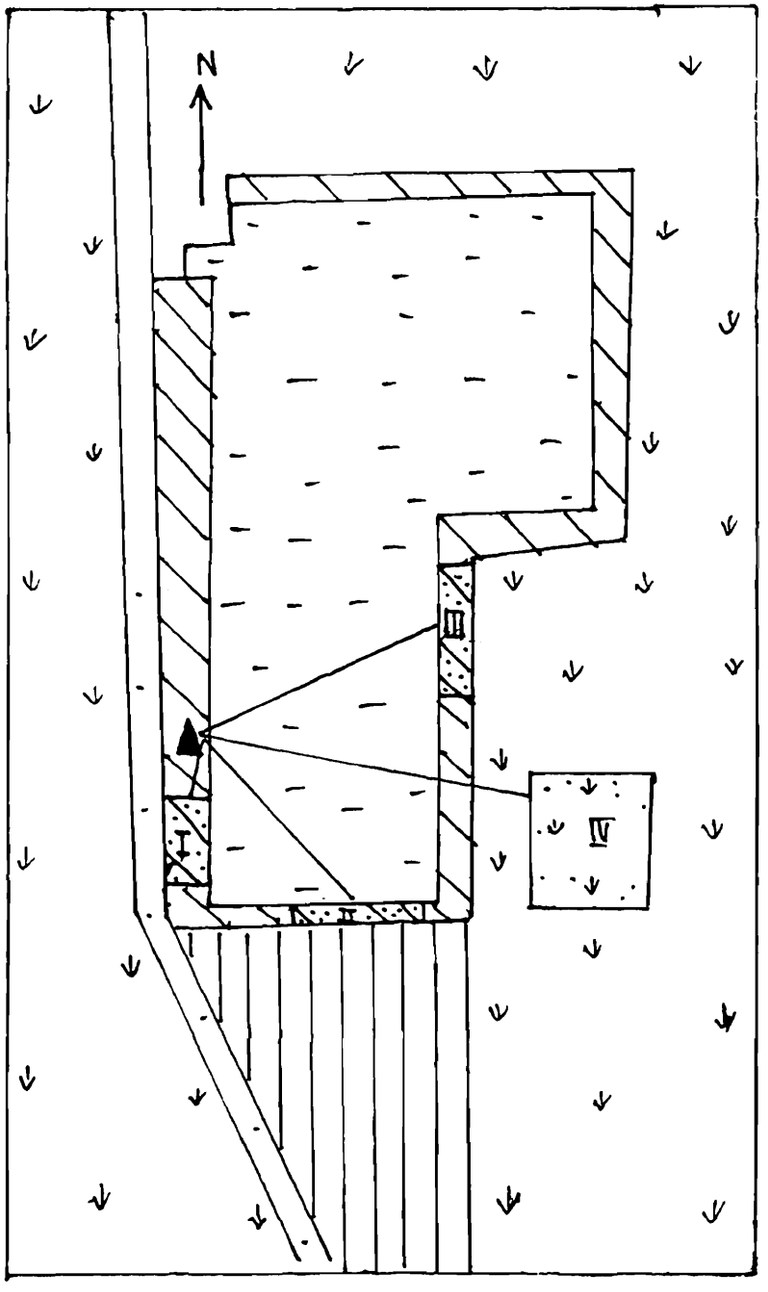
A B C type nest

Ref : Table 7

A C type nest

Ref : Table 7

Fig. 7. Diagramatic representation of two types of nests of *Prinia subflava*.



MATERIALS COLLECTED

Site	Material
I	Bena & Kush grass
II	
III	Same as above
IV	Cobweb (?)

Total time taken for nest construction – 6 days.

Average visit to collection site during the observation period – 2.83 times per hour (visits during actual nest building period only considered).

LEGEND

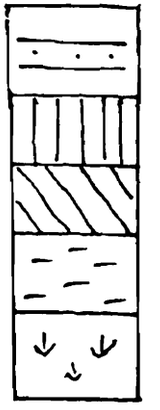
Mud track

Dal cultivation

Bena bushes

Waterbody

Paddy cultivation



Boundary of collection site

Nest No : 1

Length	Breadth	Site No :
18 feet	7 feet	I
27 "	8 "	II
32 "	7 "	III
Undetermined		IV

Distance	between	Nest	and	Site
50 feet	"	1	"	I
131 "	"	1	"	II
148 "	"	1	"	III
149 "	"	1	"	IV

Fig. 8. Nest material collection sites of *Prinia subflava*. Nest under consideration—Nest No : 1. Observation : 12. 4. 99 to 17. 4. 1999.

Fig. 9 : Nest Building Frequency

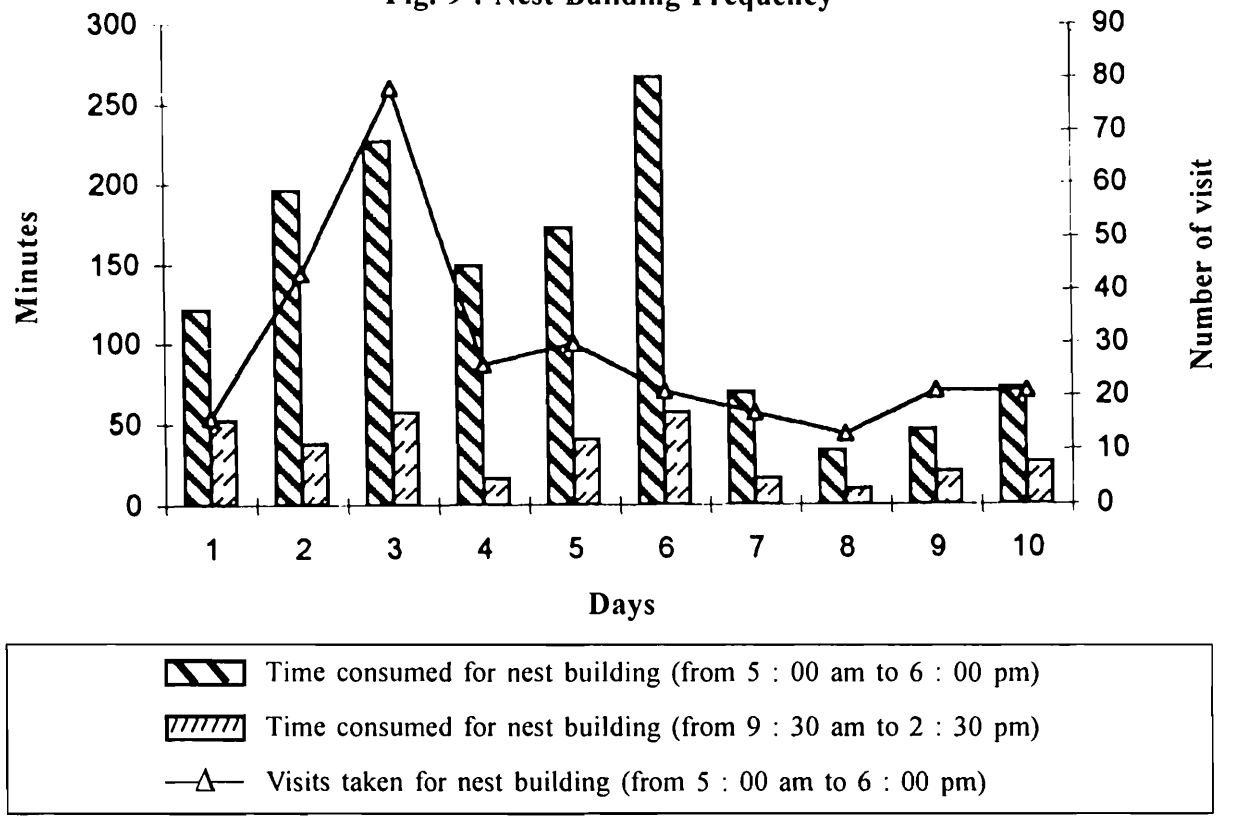
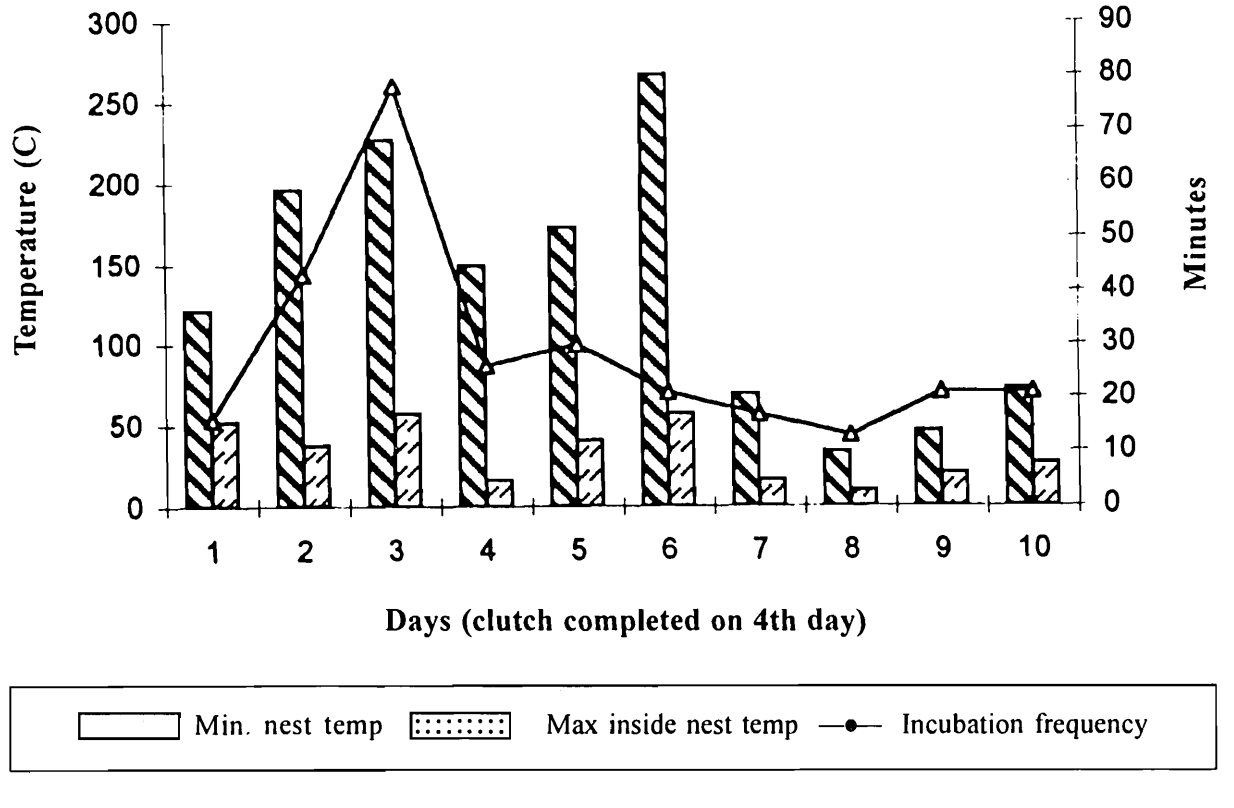
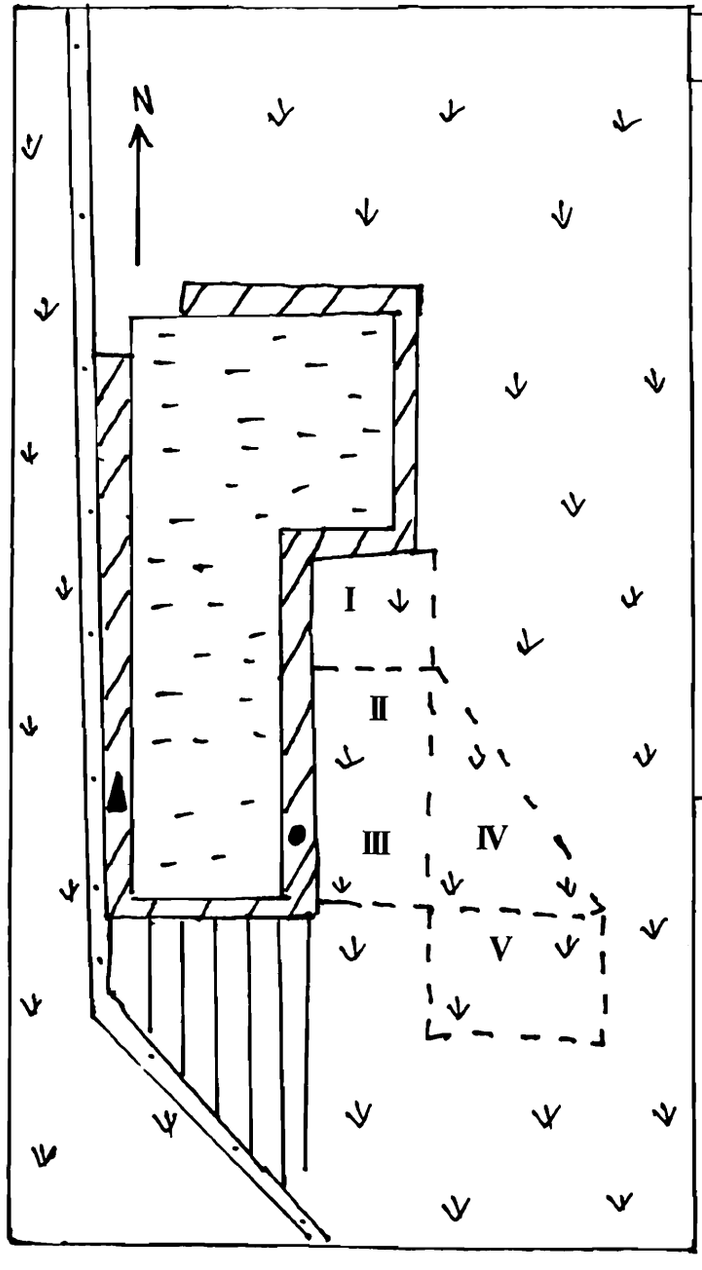


Fig. 10 : Incubation freuency before and after clutch completion





L E G E N D

Nest No 1

Paddy field

Waterbody

Bena bush (*Andropogon squarossus*)

Area not used for food collection

Area no known whether food collection was done from here.

Paddy field nos., or collection site nos.

Observers position

Dal caltivation.

Observer's Field Note :

During observation Paddy was ripe & ready for harvesting. Harvesting started from site I and progressed successively through site II, III, IV and V. It was noted that birds favoured unharvested areas & quickly shifted to the other when one field was harvested.

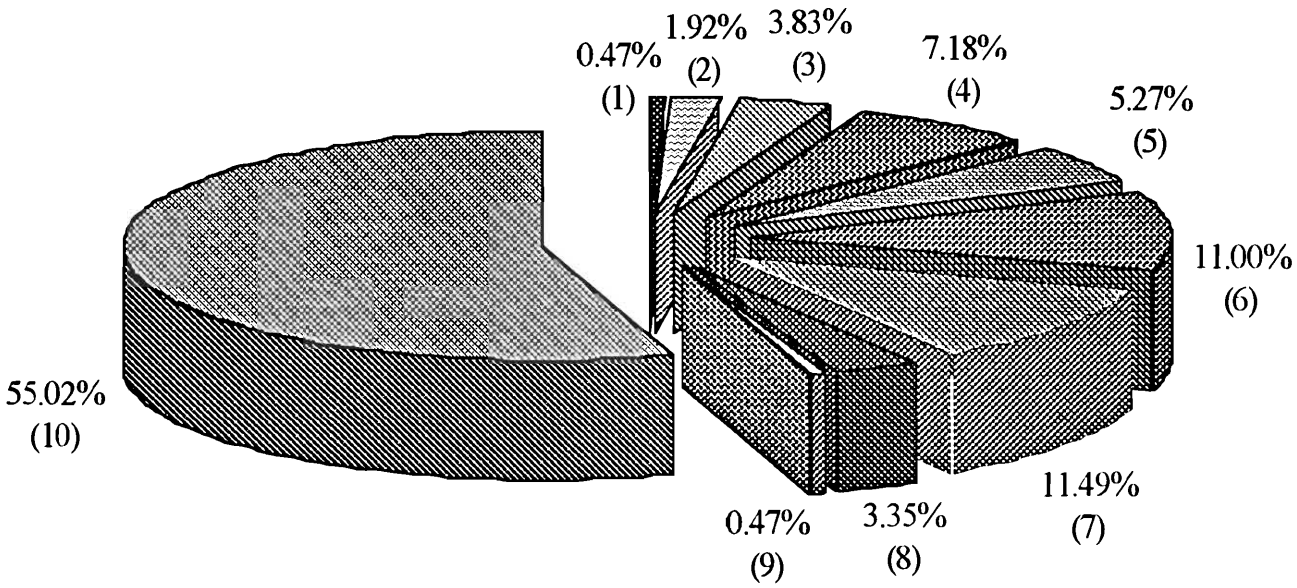
Distances between nest and collection sites :

Nest number 1 to site number – I – 168 feet.
– II – 149 "
– III – 149 "
– IV – 229 "
– V – 246 "

Fig. 11. Food collection site for Nestling Feeding of *Prinia subflava*.
Nest under consideration – Nest No : 1. Location – Ramchandrapur Village, South 24 Parganas.
Date of observation – 2.5.1999 to 13.5.1999. Food collection by – Individual/Pair/Male/Female/Not known.

Figure : 12. % of used Nestling Food of *Prinia subflava.*

Serial No.	Food Items	Colours	Description & Size
1.	Fly or Bee	Black	Wings transparent
2.	*Modicogryllys confirmatus* (Orthoptera/Gryllidae)	Black & Brown	Pin like tail Antenna Prominent
3.	Unidentified	Green & Muddy	not known
4.	Moths	White & Brown	10 mm to 20 mm >
5.	Larvae	White & Green	5 mm to 8 mm
6.	*Pardosa* sp.	Green & Muddy	Roundish body with scattered legs
7.	Larvae	Yellow & Green	10 mm < to 30 mm ±
8.	Mealworm	Chocolate	Slender, Small
9.	Mud chips (?)	Muddy	Collected from the ground. Half sft. of that area from where the food was collected was devoid of any vegetation.
10.	*Atractomorpha* sp. (Orthoptera/Pyrgomorphidae)	Brown & Green	10 mm to 40 mm±



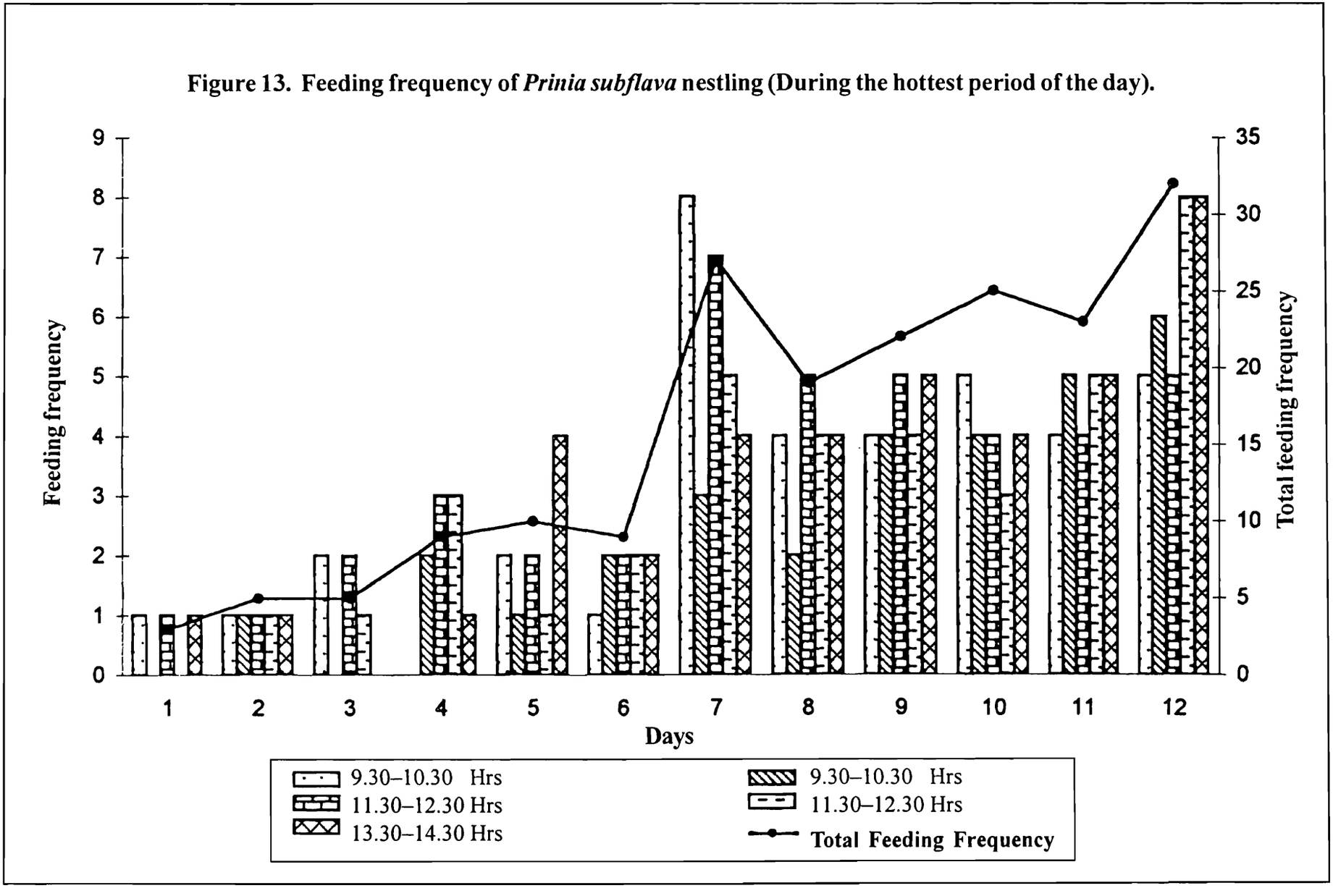


Fig. 13. Feeding frequency of *Prinia subflava* nestling (During the hottest period of the day).

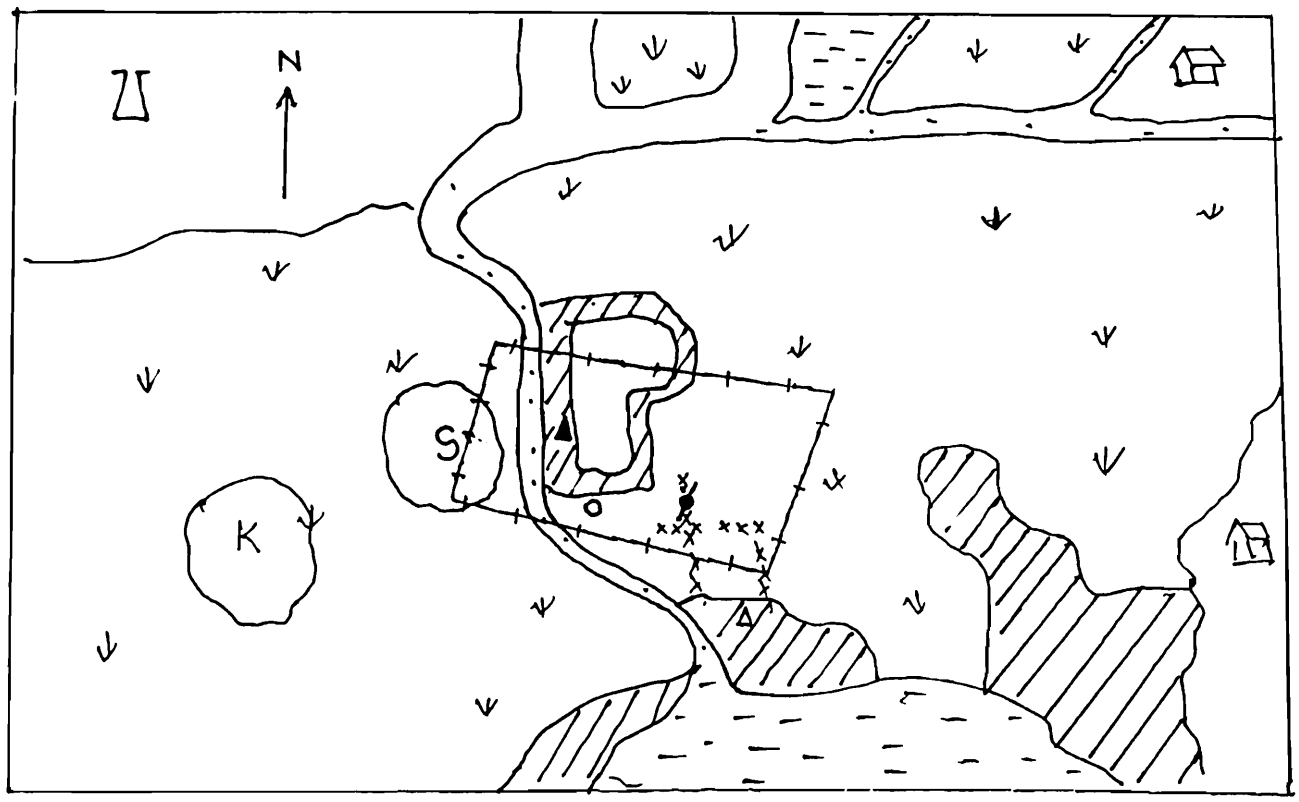


Fig. 14. Territory of *Prinia subflava* during nestling feeding period in Summer.

For Legend see Table : 10

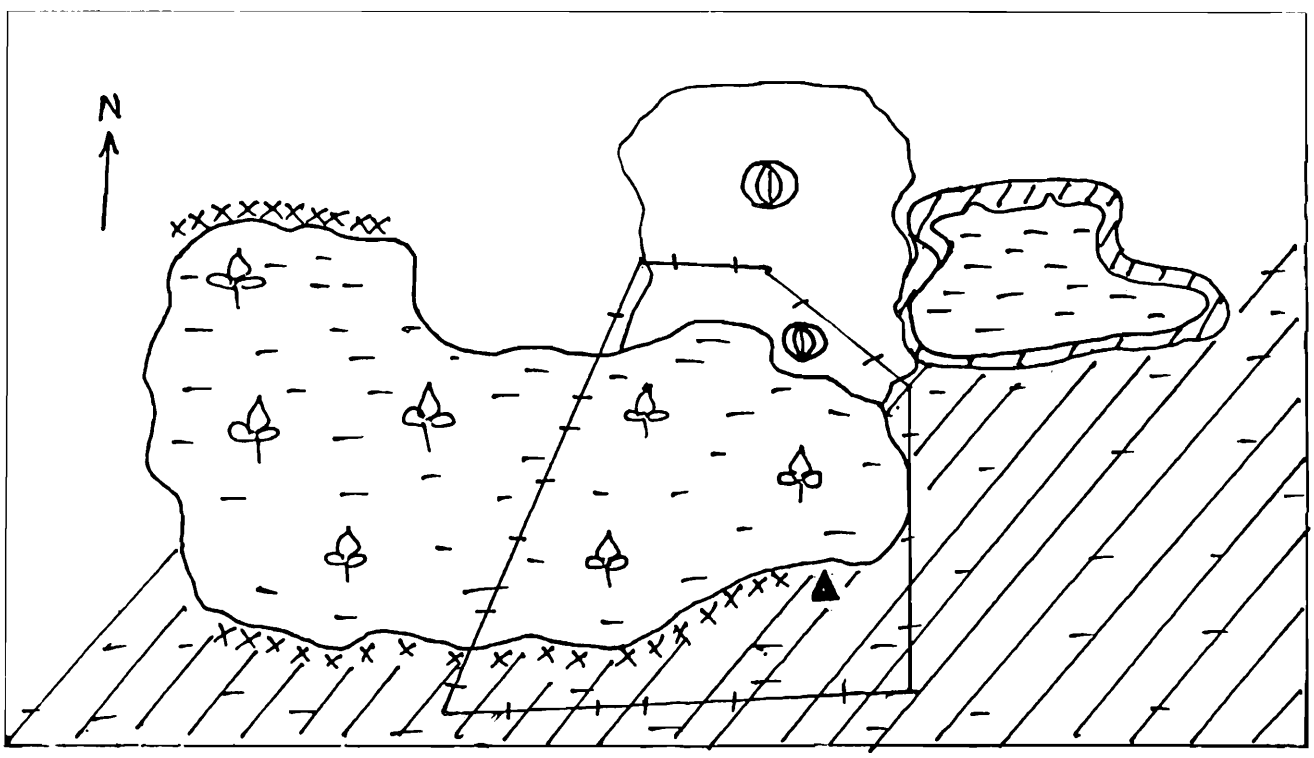


Fig. 15. Territory of *Prinia subflava* during nestling feeding in Post Summer season.

For Legend see Table : 10

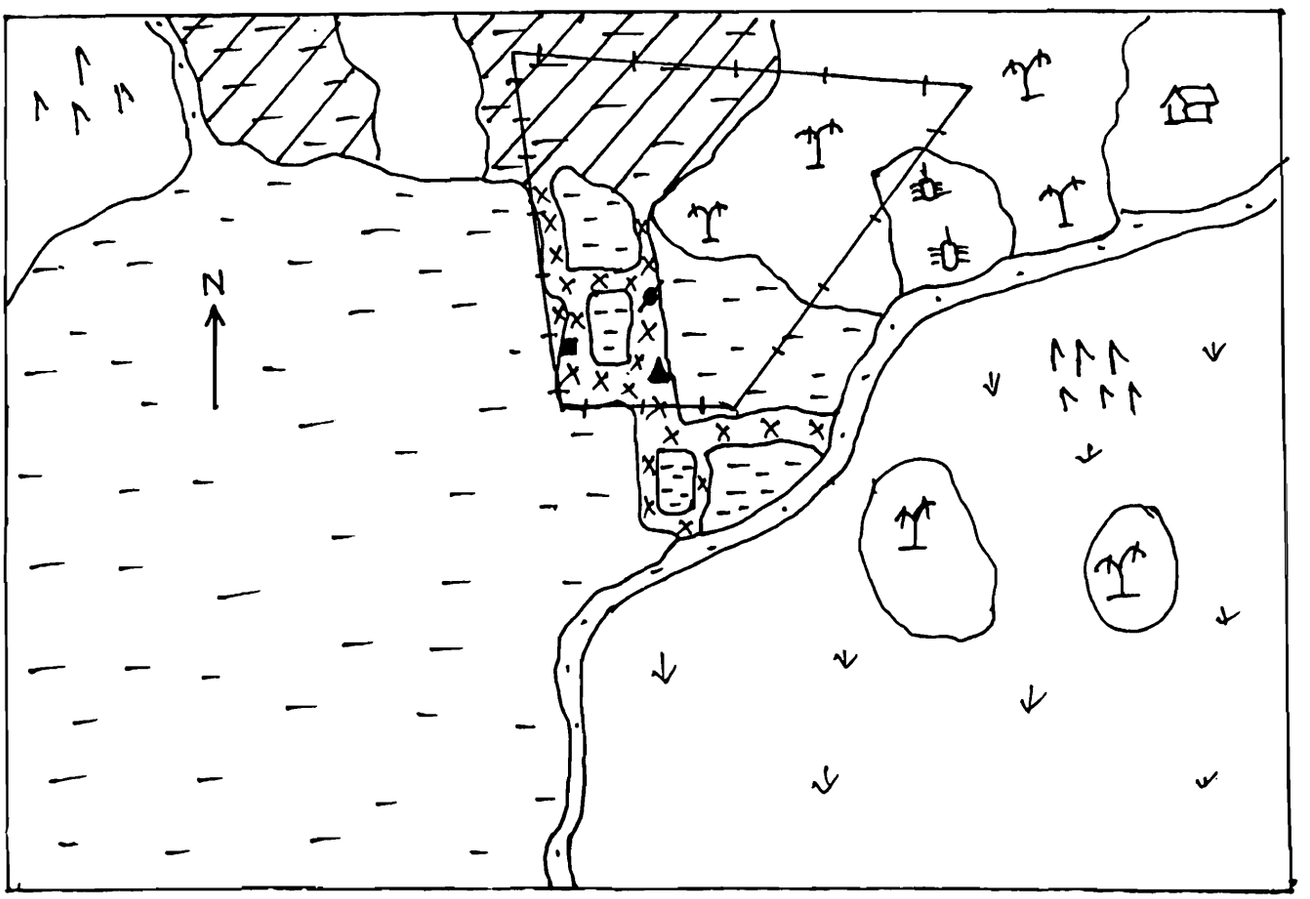


Fig. 16. Territory of *Prinia subflava* during nestling feeding in Monsoon season.

For Legend see Table : 10