



## **A study on Feeding and Breeding habits of Purple sunbird (*Cinnyris asiaticus*) in urban habitat of Haridwar, Uttarakhand**

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### **ABSTRACT**

The purple sunbird is widely distributed species in the world and resident species in Haridwar district (28° 35' N, 77° 12' E) of Uttarakhand. A study was conducted from 16<sup>th</sup> March to 26<sup>th</sup> June 2018 to understand the breeding parameters (pairing, nesting, egg laying, incubation, and hatching). Results indicates, average length of nest was about 13.5 ± 1.07 cms, the average clutch size nest was 2.4 ± 0.55 and sunbird take was 15.2 ± 0.84 days to incubation the eggs. Lantana shrubs are used for nest construction in the urban habitat and it feeds on honey, insects and mistletoes.

**Key words:** Purple sunbird, Nest, Breeding parameter, Incubation, Uttarakhand

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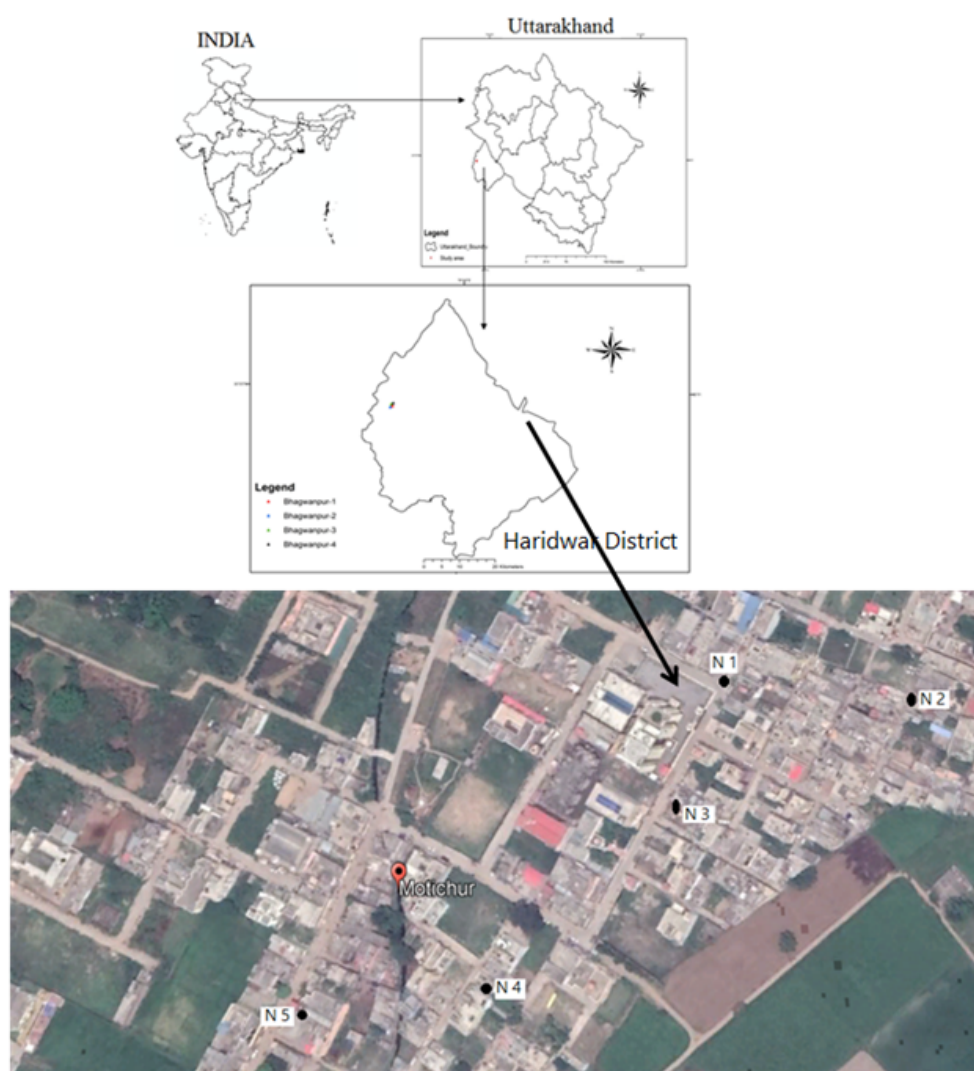
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### **INTRODUCTION**

Avian species are responsible to maintain the natural ecosystem. The studies have documented the effects of urbanization on bird community and their breeding success (1-5). Human interference and presence of non-native predation species affect on the nest placement and bird breeding behavior (6-9). Breeding is an important phenomenon in avian species and this process complete with different phases i.e. nesting, eggs lying, incubation and hatching. To know the breeding behavior of bird species in urban habitat, purple sunbird was selected. The purple sunbird (*Cinnyris asiaticus*) belongs to Nectarinidae family and widely distributed from Afghanistan through India to South Asia. This bird species is very common and resident species in Haridwar district (28° 35' N 77° 12' E) of Uttarakhand. It feeds on honey, insects and mistletoes (10). An attempt was made to understand breeding parameters such as the nesting feature, clutch size, nest height and incubation period of purple sunbird.

### **MATERIAL AND METHODS**

Study was carried out in Motichur town of Haridwar district in Uttarakhand from March 2018 to July 2018 (Figure 2). The study conducted from north to south direction between 975masl to 977masl range (N 29° 59' 20.31 - E 78° 11' 24.08 to N 29° 59' 00.00 - 78° 11' 30.41 E). We studied all the breeding parameters (pairing, nesting, egg laying, incubation, hatching and provisioning). To identify the purple sunbird nests started regular monitoring 3 times in a day from March to June. All the activities and observation were recorded by the using DSLR camera (Canon Power shot SX50HS). Recorded data were analyzed with help of computer MS office Excel (version 10).



**Figure 1: Study area location map with nesting sites (N1, N2, N3, N4, N5) in Motichur town of Haridwar district, Uttarakhand**

## RESULTS AND DISCUSSION

On 04<sup>th</sup> March 2018, first nest of Purple Sunbird, *Cinnyris asiaticus*, was observed and rest nests were reported about 1km distance with each other. All the nests were bell shape, repulsive and placed about 1meter height on lantana (*Lantana camara*) and ber (*Ziziphus mauritiana*) shrubs with north face entrance this may be to prevent the predators and direct radiation of the sun. The present observation supports the sunbird behavior study conducted in United Kingdom (11-12).

We found sunbird generally uses polythene fibers, pieces of thermocol, dry litter leaf, and dry grasses to make light weight nest. In addition, cobweb enveloped the nest to provide the strength, flexibility and protects with rain water. Nest had porch like projection above the entrance hole (Figure 2). Some study (12) also reported that purple sunbird uses light weight materials to construct their nest. The average length of nests were calculated about  $13.5 \pm 1.07$  cm and the entrance hole dimension calculated about  $5.16 \pm 0.21$  cm (Table 2).

We collect breeding season data of all the nests and analyzed. The result indicates that mean clutch size in the entire nest was  $2.4 \pm 0.55$ ; incubation period was  $15.2 \pm 0.84$  and purple sunbird take  $14 \pm 1.00$  days as provisioning period Table 1. In addition, we also reported that both the male and female bird regular monitor their nest alternatively after eggs hatch and started feeding to hatchlings from the second day of eggs hatch (Figure 2 and Figure 3). The female left the nest for feeding and promptly returned to the nest for caring the nest and eggs it shows the parental trade-off theory. However, male sunbird was partially involved at the period of nesting as well as incubation period in the study. A study on Fire-tailed Sunbird (*Aethopyga ignicauda*) has been reported that sunbird gives priority to incubate the eggs rather than self-feeding (13). Such parental trade-off theory also reported on Purple-rumped Sunbird

(*Nectarinia zeylonica*) in Tamil Nadu state of India (14). An interesting finding that sunbird is very careful about nest hygienic we observed no faecal matter and hatchlings drop present in the nest during study. We suggested that more study must be conducted on other urban bird species breeding behavior. It will helpful to their conservation and design the urban planning.

**Table 1: showing the Nests characteristics**

	Dimensions of the nests	Materials used
<b>Nest 1</b>	Length of the nest: 15cm Dimension of entrance: 5.5cm	Soft grass, fibres, small leaves, bark, cobweb, pieces of thermacol, caterpillar Droppings, bits of paper, strings etc.
<b>Nest 2</b>	Length of the nest: 12cm Dimension of entrance: 5cm	
<b>Nest 3</b>	Length of the nest: 13.7cm Dimension of entrance: 5.1cm	
<b>Nest 4</b>	Length of the nest: 13.5cm Dimension of entrance: 5.2cm	
<b>Nest 5</b>	Length of the nest: 13.4cm Dimension of entrance: 5.0cm	

**Table-2 Breeding stages of Purple sunbird**

S. No		Shape of nest	Nesting material	Clutch size	Incubation period	Provisioning period	Feeding material observed
1.	Nest 1	Flimsy Cup shaped	Dry leaves of sponge gourd, dry grass and large Pumpkin leaves	04	15	13	Flowers nectar
2.	Nest 2	Flimsy Cup shaped	Large pumpkin leaves sewed with Crown flower	02	15	15	Flowers nectar
3.	Nest 3	Oblong purse like	Bhimal and Common lantana leaves sewed with crown flower fiber.	02	14	13	Flowers nectar
4.	Nest 4	Cup shaped	Crown flower fiber was used to stich large Bhimal leaves.	04	15	14	Flowers nectar
5.	Nest 5	Oblong shaped	Dry grass and bhimal leaves sewed with crown flower fiber	02	14	15	Flowers nectar

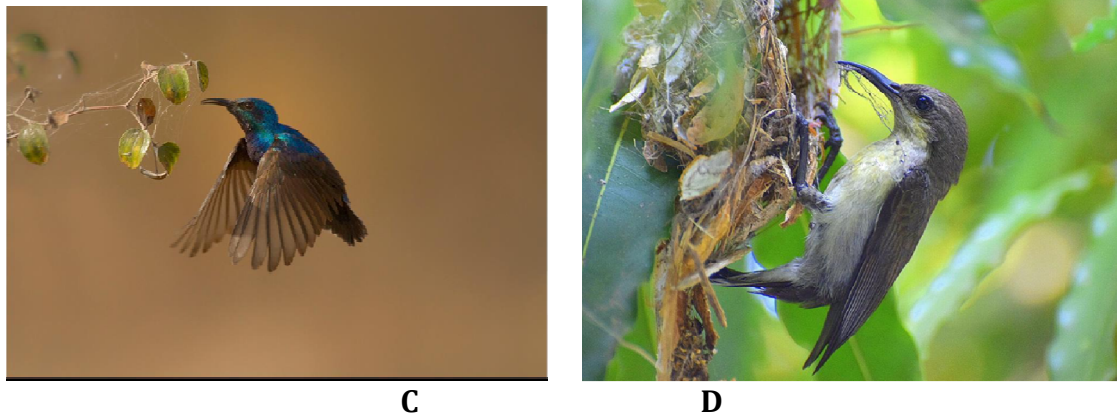


**A**

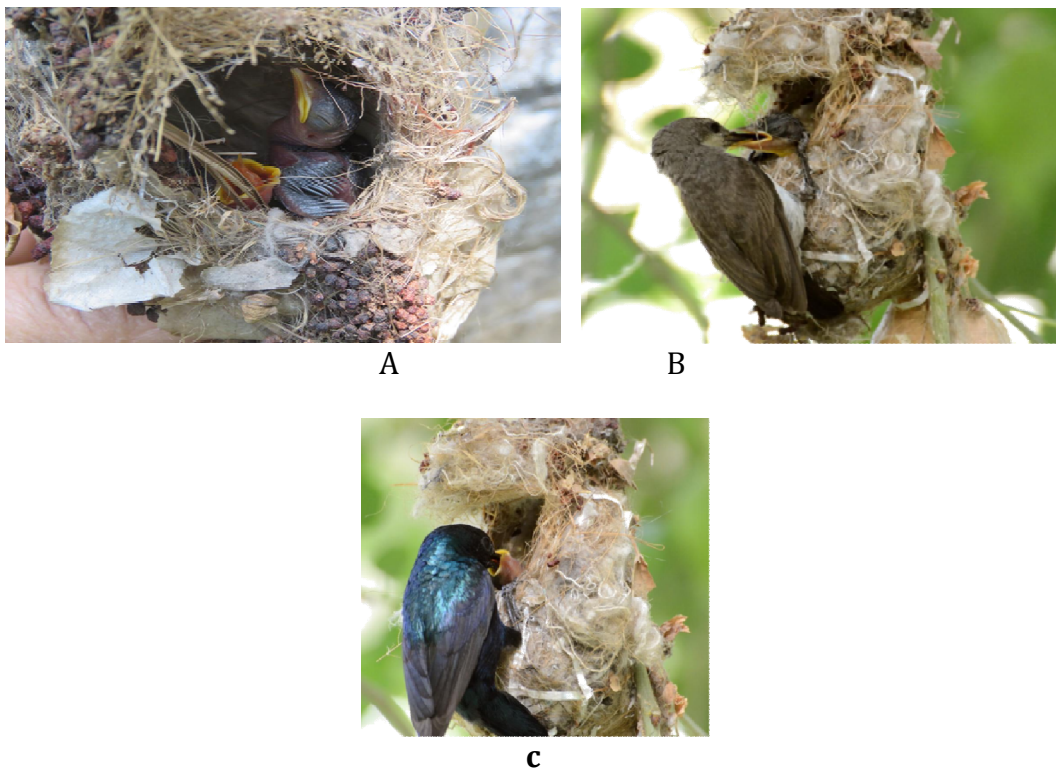


**B**





**Figure 2: Showing using nesting material during nest construction (a, b); using cobweb during nest construction (c,d)**



**Figure 3: Juveniles of purple sunbird (a), Female sunbird and Male sunbird feeding their juveniles (b, c)**

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