

Aspects of Breeding of Tickell's Thrush (*Turdus unicolor* Tickell, 1833) in Kupwara, Jammu and Kashmir, India

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ABSTRACT

Tickell's thrush (*Turdus unicolor* Tickell, 1833), a lesser studied bird species is endemic to the Indian sub-continent. Locally known as Kastur, the bird is very famous for its melody songs. It is a summer visitor to Kashmir and begins to arrive here in early April, breeds here, and stays until August when the outward migration begins which is complete by mid-September. Though the bird is common in Himalayas and is evaluated as Least Concern by International Union for Conservation of Nature (IUCN), the information on its various ecological aspects is not available. The present study has been carried out to provide a better understanding of some aspects of breeding biology of the Tickell's thrush in Kupwara District of Kashmir for two breeding seasons (April to August) of 2015 and 2016. Peak nesting was in May and peak laying in June. Average clutch size was 3.84 (± 0.59 SD) and average incubation period 18.5 (± 0.69 SD) days. Hatching and fledging success was 77% and 71% respectively.

Key words: *Tickell's Thrush, Breeding, Hatching, Fledging, Kupwara, Kashmir*

INTRODUCTION

Tickell's thrush (Passeriformes: Turdidae) is endemic to the Indian sub-continent and has a discontinuous breeding range from Pakistan through Kashmir to Nepal and western Bhutan (Grimmett *et al.*, 1998). The global population size has not been quantified, but the species is described as

common in the western Himalayas and uncommon in Nepal (Del Hoyo *et al.*, 2005). Evaluated as Least Concern (IUCN, 2016), the species has a large range and is not believed to be decreasing rapidly (Birdlife International, 2019). The population trend is difficult to determine because of uncertainty over the impacts of habitat modification on

population sizes (Birdlife International, 2019).

It is a common summer visitor to Himalayas found from Chitral, east through Kashmir to Nepal and Sikkim (Ali and Ripley, 1987). It is a summer visitor to Kashmir and begins to arrive here in early April, breeds here, and stays until August when the outward migration begins which is complete by mid-September. Locally called as “Kastur”, the bird is very famous for its melody songs. It is an ashy grey bird, paler below. At close quarters it may be noticed that in the female chin and throat is almost white, bordered by black stripes. The bird feeds on ground mainly on worms and insects. It is not a shy bird and does not hesitate to appear in well-populated areas. The data on distribution, conservation status, breeding biology and ecological requirements of species is lacking from Kashmir Himalaya which invites a detailed study on these aspects.

Breeding is a key aspect of the life history of any animal species. In birds, studies on reproductive biology vary from simple records of breeding in general avifaunal inventories to detailed studies based on monitoring of nests and young throughout the breeding cycle. Information derived from these studies is essential for the improvement of avian life history theory and the implementation of sound management and conservation actions for these organisms and their habitats (Mauricio *et al.*, 2013).

The present study on breeding aspects of the Tickell’s thrush at Kupwara is therefore, a step aimed at to generate the data on timing of breeding, breeding habitat, nest location, clutch size, incubation, nesting and hatching success which are necessary for improving our understanding of life history strategy of the bird species. Further, the baseline data on these aspects may help in better management planning to save the breeding grounds of this bird species in the Kashmir Himalayan region.

MATERIAL AND METHODS

The present study was carried out during two breeding seasons (April to August) of 2015 and 2016 at Kandi Khas village (34°38.490'N, 074° 29.540'E and elevation, 5254 ft.) in Kupwara district of Jammu and Kashmir (Fig. 1A). The nests were located by generally following the birds during breeding season usually with the nesting material or food or other cues (Balakrishnan, 2010). A nest was defined as any depression in which the bird laid one or more eggs (Miller and Jhonson, 1978). Once found, the nest was visited every alternate day. Studies on egg laying, clutch size, incubation behavior and incubation period were conducted. Clutch initiation dates were determined either by direct observation or by back dating (hatching dates minus mean incubation period). Care was taken to avoid the disturbance of the bird or nest during monitoring and to expose the nests to

predation (Martin and Geupel, 1993). Nests that produced at least one young were considered successful. Hatching and nestling success were respectively defined as the probability that eggs laid would hatch and the probability that hatchlings would fledge. These calculations were done as per the method provided by Mayfield (1961). Analysis of digital images was done by using Image J analysis software (Version 2.01).

RESULTS AND DISCUSSION

Nest building

Nest building started from mid-April and continued throughout June. May was peak nesting month with 60% nests built in this month (Table 1). Nests were built on various plants and also under the roof of buildings and in walls. Out of 67 nests, 54 were built on plants (Table 1) and only 13 were found under roof tops or in walls. Bates and Lowther (1952) observed the nests in mulberry trees, willows and poplars within village limits and in gardens and groves. Base of the nest is made by mosses mixed with wet clay so that it remains fixed with support. Soft twigs, leaves, grass, root hair, animal hair, pieces of cotton and cloth were used in nest building. Bates and Lowther (1952) found that the nest is neither huge nor neat but compact and cup deep, built chiefly of dry grass with a lining of fine roots and usually contains a quantity of moss, a few leaves and other material.

Egg laying

Egg laying started after completion of nest building. June was the peak laying month with 50% eggs laid in this month (Table 1). An egg (Fig, 1B) was laid daily or alternately usually in the morning. Out of 40 nests, laying occurred alternately in nine (22.5%) while in the remaining 31 nests laying occurred daily. Alternate laying was observed in late nests (late July and August). Brackbill (1958) observed daily laying in wood thrush (*Hylocichla mustelina*). The egg has greenish background with more or less thickly speckled or blotched dull reddish brown spots. Eggs were variable in shape, but round, elongated or pyriform ovals were common. The clutch size ranged from 3 to 5 with an average of 3.84 (± 0.59 SD, n=67). Kelleher and Halloran (2006) reported a clutch size of 4.1 for song thrush (*Turdus philomelas*). A total of 257 eggs were laid in 67 nests. Clutch size of 3 was found in 18 nests, 4 in 42 nests and 5 in the remaining 7 nests (Table 1). Brackbill (1958) also observed a common clutch size of 3–4 in wood thrush while Davanco *et al.* (2013) reported a clutch size of 2.52 (± 0.72 SD) in pale breasted thrush (*Turdus leucomelas*).

Incubation

Incubation commenced after the completion of clutch. The females incubated eggs while the males stood guard around the nest area and kept keen vigil on enemies. Similar

behavior has been reported by Brackbill (1958) in wood thrush. During incubation the nest was left by female usually in the morning and before evening for 17 to 24 minutes for feeding and defecation. The average incubation period of the thrush was 18.5 days (± 0.69 SD, n=20) (range 18–20 days) (Table 1).

Hatching

Hatchlings (Fig. 1C) were altricial and completely dependent upon parents (Fig.

1D). The average nestling period was 21.24 days (19 to 22). On the basis of exposure hatching success was 77% and fledging success 71% (Table 1). Hatching success of 89.6% for song thrush was reported by Kelleher and Halloran (2006). Natural enemies that destroyed eggs as well as hatchlings were common starling (*Sternus vulgaris*), yellow-billed blue magpie (*Urocissa flavirostis*), blue whistling thrush (*Myophonus caeruleus*) and large-billed crow (*Corvus macrorhynchos*)

Table 1. Different breeding aspects of Tickell’s thrush (*T. unicolor*)

Timing of nest building					
Month	Number of nests built				Percentage (%)
	2015	2016	Total	n	
April	02	01	03	40	7.5
May	14	10	24		60
June	04	05	09		22.5
July	02	02	04		10
Nesting site locations on different plant species					
Plant species	Number of nests located		n	Percentage (%)	
<i>Morus alba</i>	12		54	22.22	
<i>Ulmus villosa</i>	07			12.96	
<i>Salix</i> sp.	07			12.96	
<i>Malus domestica</i>	06			11.11	
<i>Celtis australis</i>	06			11.11	
<i>Prunus amygdalus</i>	05			9.26	
<i>Rosa</i> sp.	04			7.41	
<i>Pyrus communis</i>	03			5.55	
<i>Rubina pseudoacacia</i>	03			5.55	
<i>Populous</i> sp.	01			1.85	
Timing of egg-laying					
Month	Number of eggs laid (n=40)			Percentage (%)	
	2015	2016	Total		
May	11	16	27	16.77	
June	43	38	81	50.31	
July	21	16	37	22.98	

August	09	07	16	9.93	
Clutch size					
Clutch size	Number of nests (± SD)		n=N		
3	18		67		
4	42				
5	07				
Average	3.84 ± 0.59				
Incubation period					
Number of nests	Incubation period (± SD)		n		
12	18		20		
06	19				
02	20				
Average	18.5 ± 0.69				
Mayfield Hatching success					
Variable	Exposure days	Number of eggs	Number of eggs failed	Daily survival	Success rate
Incubation	2820	257	40	0.986	0.77
Nestling	2870	217	44	0.985	0.71

N= Total number of nests, n= Number of nests

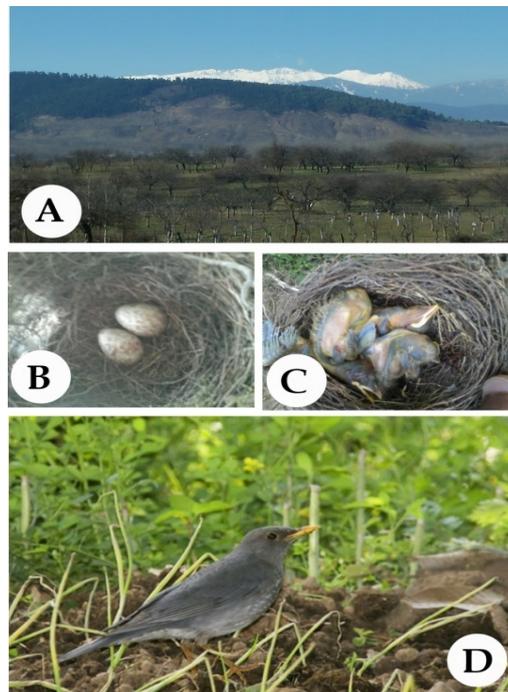


Fig. 1. Breeding aspects of Tickell’s thrush (*Turdus unicolor*). A. A landscape view of the Kandi Khas village (Jammu & Kashmir), B. Eggs laid in nest, C. Hatchlings, D. Adult

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