

On the breeding of Spotted Dove *Streptopelia chinensis*

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Abstract

Breeding of the Spotted Dove *Streptopelia chinensis* was studied in the wild in Bangalore University during September 2009 to March 2010. Observations on the nest, eggs, nestlings, and parental care were made on four breeding pairs at different periods. Nidification parameters—number of eggs, egg-laying frequency, incubation period, and hatching dates—were similar to what was reported in captivity. Parent birds left the nest on the seventh day, after which the chicks had to fend for themselves.

Introduction

The Spotted Dove *Streptopelia chinensis* is one of the more common, and familiar species around human habitation in India (Ali & Ripley 1983). It is seen in open forests, secondary growth, wooded and cultivated country, parks and gardens, verandas of houses, inhabited bungalows, and agricultural fields (Ali & Ripley 1983). This resident dove is widely distributed across the Indian Subcontinent, Bangladesh, Sri Lanka, and Myanmar (Ali & Ripley 1983). It is a common, abundant, and resident bird in the urban landscapes of the Bengaluru region in Karnataka, India (Verghese & Chakravarthy 1978; Rajashekar 2011; Rajashekara & Venkatesha 2015). It breeds throughout the year (Ali & Ripley 1983; Ali 1996; Rasmussen & Anderton 2005; Grimmett & Inskipp 2005). Although *S. chinensis* is a common bird, finer details of its nidification in natural habitats are unknown (Ali & Ripley 1983). Saxena *et al.* (2008) covered some aspects of its breeding and nidification in artificial habitats. Here, we report on the breeding patterns of the Spotted Dove in natural habitats in our campus, which shall hopefully fill this lacuna.

Methodology

The first nest was found in a Croton (cultivated varieties) garden (3.5 m x 8.5 m) inside the building of the Department of Zoology, Bangalore University, Bengaluru, India (12.97°N, 77.58°E; 827.5 m asl). Observations on the nesting, eggs, nestlings, incubation frequency, and parental care were made on a breeding pair (probably the same pair, nesting in different months, in the same vicinity). All the observations were made during day time, from a hide placed 15–20 m away from the nest. This was to avoid trampling the vegetation, as followed by Verghese & Chakravarthy (1978), and Wang *et al.* (2015). Moreover, the canopy closure of

the nesting bush was assessed using digital canopy photography, and the percent canopy closure was calculated by transforming digital images using Adobe Photoshop software (Engelbrecht & Herz 2001). The weight of the eggs, and developing young ones, were recorded for the first breeding pair. Precautions were taken not to disturb the adult birds, eggs, chicks, and nesting site, except for the first nest where the weight of the eggs, and nestlings, were monitored. Nest predation was determined by the disappearance of the clutch or nestlings (Neto 2006). Otherwise, we recorded the nest as successful (Wang *et al.* 2015).

Results & discussion

An overview of the observations on the breeding status of four different broods of Spotted Doves, possibly the same pair, observed at different periods, and nesting in the same spot are given in Table 1. On each occasion, the nest was constructed on three to four ramified branches (3.5–19.1 cm in diameter) of a Croton plant, at a height of 1.52 m from ground level. The nest was 1 m from a walking path. The simple and fragile saucer nest was built with a loose platform of thread-like sticks and a few dried Croton leaves, similar to that reported by Verghese & Chakravarthy (1978), Ali & Ripley (1983), and Hansell (2000). The nest measured 13 cm in diameter and was slightly depressed (1.5 cm) in the center. It was well aerated and partially open to the sky. Its location and habitat were similar to the observations of Verghese & Chakravarthy (1978), Kumar (1981), Ali & Ripley (1983), Ali (1996), and Subramanya *et al.* (1992).

During the first observations, the nesting plant had 82.21% of canopy cover (Table 1). Two eggs were laid, in the afternoon, on successive days, as also reported by Hindwood (1960), and

Table 1. Overview of breeding attempts by Spotted Dove *Streptopelia chinensis*

	I attempt	II attempt	III attempt	IV attempt
Sighting date	23 September 2009	12 November 2009	23 January 2010	1 March 2010
Status upon sighting	Nest with two eggs	Nest with two eggs	Renovation of the old nest two days before egg laying	Nest with two eggs
Canopy closure (percent)	82.21	82.21	77.82	77.82
Breeding success	Nestlings completed their development	Nestlings completed their development	Young ones predated by unknown predator; Failed	Eggs predated by unknown predator; Failed

Table 2. Development of nestlings of Spotted Dove *Streptopelia chinensis* (1 time) from 17 November (Day 0) till 3 December 2009 (Day 16)

Days after hatching	Nestlings		Developmental/ Breeding stages
	Young one I (gm)	Young one II (gm)	
0	7.5	6.5	Reddish body and blind; body sparsely covered with grey hairs. Eyes closed. The Parent incubating the nestlings.
1	9.5	8.5	Small black bills and eyelids were poorly developed.
2	19.5	10.5	Body grey hairs were darkened, beak was prominent and eyelids were slightly developed.
3	27.5	15.5	Eyelids opened.
4	29.5	17.5	Eyes clearly opened, black feathers turned to brownish black.
5	37.5	24.5	Parents fed the young ones.
6	47.5	31.5	Nestlings showed little movement. Legs appeared pale crimson red.
7	51.5	35.5	The parent left the nestlings. Crop size increased in nestlings. They responded to human movements. Bill appeared steel grey.
8	53.5	37.5	Parents never visited the nest. Feathers turned to dark brown.
9	Unmeasured	Unmeasured	Body color turns brown to grey and nestlings showed slight head movements despite parents being absent.
10	65.5	53.5	Nestlings started raising their heads. Neck and wing feathers were developed.
11	Unmeasured	Unmeasured	Tail feathers were poorly developed.
12	67.5	55.5	Flight, tail and wing feathers were well developed. Crops size decreased.
13	69.5	57.5	Nestlings were made attempt to fly.
14	Unmeasured	Unmeasured	Nestlings were active and continued their attempt to fly. Tail feathers measures 4 cms in length.
15	Unmeasured	Unmeasured	Young birds moved away from the nest to nearby branches of the plants.
16	Unmeasured	Unmeasured	Young birds found 15–30 m from the nest site.

Kumar (1981). These were oval, white, and slight glossy. They were of the same size—2.5 cm long, and 6.2 cm in diameter. However, the first egg weighed 4.5, and the second, 5.5 g, as reported by Kumar (1981). The size of the eggs was similar to measurements in earlier reports (Kumar 1981; Ali & Ripley 1983; Saxena *et al.* 2008). The adults incubated the eggs for four to five days. The birds began at about 0900 hrs and were intermittently incubated up to 1800 hrs. The doves took three to four 45–90 min breaks from incubation daily. One parent stayed back in the nest from the evening at around 1830 hrs to the following morning at 0900 hrs. The mean incubation length of two eggs was 452.50 (± 127.57) min per day. Incubation period was similar to that reported in captive breeding (Saxena *et al.*, 2008). For every attempt at breeding, the pairs laid two eggs; columbids are known to lay a clutch of two eggs (Kumar 1981; Ali & Ripley 1983; Ali 1996), or rarely three (Ali & Ripley 1983). The eggs hatched synchronously in the order they were laid, as reported by Kumar (1981), and Saxena *et al.* (2008). One egg hatched on the fourth day, and another on the fifth, similar to the eggs laid on successive days, also reported by Kumar (1981). Since we did not mark the eggs, we cannot be absolutely sure that it was the older egg that hatched first every time. Post hatching, the eggshells were discarded by the parents. The nest was generally kept neat, and the shell pieces were discarded far away from the nest, as reported by Kumar (1981). After the nestlings hatched, the brooding and recesses patterns of the parents were similar to those followed during incubation. The nidicolous nestlings were naked, blind, helpless and completely dependent on their parents. Fresh nestlings showed no movements during the first four days, and on subsequent days they turned slightly, in different directions, once in a while. The parents started feeding the one-day old nestlings regurgitated pigeon milk. The nestlings showed an increase in their crop sizes on the sixth day, and the

crop milk stored therein sustained them for a week. The weight, and growth pattern, of the nestlings during their development is given in Table 2. The fledglings flew out of the nest in c. 16 days after hatching, as reported by Hindwood (1960), and Higgins & Davies (1996).

The parents did not visit the young ones after they turned seven days old, forcing the latter to depend on the nutrition present in their crop, for about a week, before they flew. In the presence of their parents, the fecal matter of the nestlings are removed by them to maintain cleanliness in the nest. In the absence of their parents, the fecal matter of the nestlings piled up around the nest. However, Saxena *et al.* (2008) reported that young ones left the nest three weeks after hatching when under captive breeding.

During the third, and fourth, nestings, breeding in the canopy cover of the Croton plant- in which the nest was built- reduced from 82.21 to 77.82 percent because of leaf shedding in summer. At this time, an unknown predator attacked the nestlings, in one case, and the eggs in another, destroying them, resulting in breeding failure (Table 1). Fifty percent of nesting success for the Spotted Dove was also reported in earlier works (Verghese & Chakravarthy 1978).

Conclusion

Our study indicates that several nidification parameters like the number of eggs, egg-laying frequency, incubation period, and hatching dates are similar to what is reported in captivity (Saxena *et al.*, 2008). Parent birds abandon the nest on the seventh day, leaving the chicks to fend for themselves. Nest predation and loss of brood may be related to canopy cover but to ascertain this requires further study.

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Sarus spotting through a train window

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The February 2016 issue of *Indian BIRDS* launched me on an instant memory trip. The very attractive painting of the Ibisbill *Ibidorhyncha struthersii*, by Kokay Szabolcs, reminded me of my first introduction to this avifaunal curiosity, way back in 1954. The Indian Military Academy, Dehra Dun, had a well-stocked library with an exclusive section devoted to books authored by Indian Army Officers, and among the new arrivals was the *Breeding birds of Kashmir* by Lieut Col. R. S. P. Bates and E. H. N. Lowther (1952). Surprisingly, I found the text as engrossing as that of any other genre of leisure reading. And where the script on the Ibisbill was concerned, I was particularly glad to come by this field observation by Major R. W. G. Hingston: "The reason why this bird has a bill with so peculiar a curve is disclosed by observing its behaviour. It runs about on the water-worn boulders... thrusting its long bill under the round stones in the hopes of finding insects beneath them... it is curved in such a way that it fits neatly around the boulders when the bird is probing for food".

Hingston had been the Medical Officer with the ill-fated Second British Mount Everest Expedition, 1924 (during which Mallory, and Irvine, had perished), and he had sighted the bird not far from the Base Camp, in a stream going by the Rongbuk Monastery. However, what Bates & Lowther did not mention in their book, was Hingston's claim, that he was the first to have ever seen the Ibisbill parents with two chicks in tow, in the wild! Before the Mount Everest Expedition, Hingston was posted to

Dharamsala (in the Kangra Valley) where he compiled the first comprehensive check list of the birds of the region (Hingston 1921), which Hugh Whistler (1926a, b) used later. Hingston had earlier also published, *A naturalist in the Himalaya* (1920), and later perhaps his seminal work, *A naturalist in Hindustan* (1923).

I had also made a mental note of what Bates & Lowther had called the Ibisbill Island in the Kashmir Valley but my efforts to spot one there in 1960, were futile. However, I had my lifetime's first encounter with it on the Indus River, while fishing for snow trout, opposite the Hemis Monastery in mid-1968. And yet again a few months later, in a tributary of the Shyok River that emanates from Chang La near Darbukh, not far from Chashul.

But where had Szabolcs sighted the bird which he painted? Surprisingly the proud owner of that painting when contacted, professed ignorance [Editor's note: On enquiry, Szabolcs said it was painted from a sighting near Leh]. Surprising yet again, though Otto Pfister, in his seminal book *Birds and mammals of Ladakh* (2004), has a good image of the bird, he too gives no clues to the photo-click site.

Now, coming to the Uttar Pradesh Bird Festival 2015 and its iconic location, aptly named "Sarus Village", I had on many occasions looked out for Sarus Crane *Antigone antigone* in the same general area, between 1994 and 2004, but under altogether different circumstances. My wife and I had set up home amongst the Adivasis, on the Chota Nagpur Plateau, but made three trips to Punjab each year (in the age of slow trains,