International Journal of Environmental and Ecology Research
www.environmentaljournal.in
Online ISSN: 2664-7117, Print ISSN: 2664-7109
Received: 26-05-2025, Accepted: 25-06-2025, Published: 10-07-2025
Volume 7, Issue 2, 2025, Page No. 1-6

Nest composition and Chicks of Spotted Dove *Spilopelia chinensis*: A study at Arya college Nurpur, Himachal Pradesh

Dr Diljeet Singh
Associate Professor, Department of Zoology, Government Arya Degree College Nurpur, Himachal Pradesh, India

Abstract
The nest composition and chicks of Spotted Dove *Spilopelia chinensis* were studied at Arya college Nurpur (Kangra) in Himachal Pradesh. The observations were carried out during the month of May 2025 (05-05-2025 to 14-05-2025). Two eggs were seen laid and hatched into two chicks. These chicks (hatchlings/ nestlings) were observed for a few days (07-05-2025 to 13-05-2025) but found missing inside the nest on 14-05-2025. The structure and composition of empty naturally dried nest was studied for various parameters such as height, size, shape, weight and constituents: height of the nest from the ground: 2.33 m; weight: 13.92 gm; circumference (outer: 53 cm, inner: 33 cm); diameter (outer: 13 cm, inner: 7cm) and depth: 3.5 cm. The nest structure constituted of various kinds of plant material such as Teak Wood *Tectona grandis* inflorescence stalks [36], Indian Gooseberry *Emblica officinalis* dwarf shoots [17], twigs / stem branches [24] and grass roots/ rootlets [23]. The length of 100 individual parts of the constituents forming the nest structure varied from 9 cm to 31 cm and the average length of most of the constituents was 17 cm to 20 cm. The other material found inside the nest was soft down feathers [4], dried vine leaves [15] and excreta of chicks (5.46 gm). The present study revealed that the nest composition consisted of different kinds of plant material including twigs, stalks, shoots and roots.

Keywords: Spotted dove, nest, *Spilopelia chinensis*, breeding of dove, Himachal Pradesh

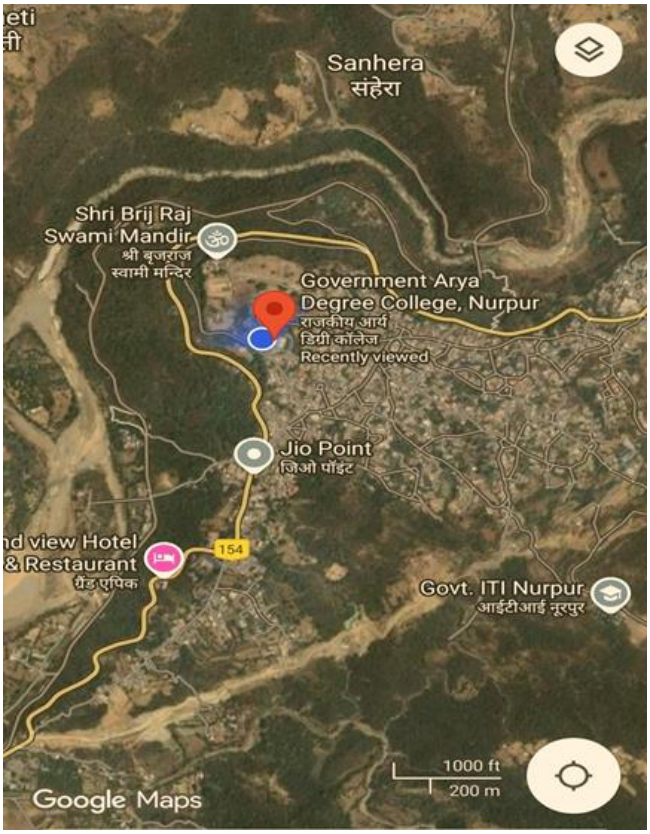
Introduction
The Spotted Dove *Spilopelia chinensis* is widely distributed throughout the Indian subcontinent including India, Pakistan, Nepal and Bhutan. The altitudinal distribution in peninsular hills is upto 1500 m and in Himalayas normally upto 2400 m but rarely upto 4900 m (Ali and Ripley 1981) [1]. It is a common bird around human habitation, courtyards, gardens, groves, open forests, woodlands, scrubs, farmlands and cultivations. The bird is resident with some altitudinal and local migrations (Ali and Ripley 1981) [1]. The nesting and breeding have been observed throughout the year with some variations and peak activities: practically occurs throughout the year, however, in some cold areas mainly from April to July (Ali and Ripley 1981) [1] ; throughout the year but mainly from January to August (Saxena et al. 2008) [2] ; as early as February/ March and extends upto October, howevger peak activity observed between May to August (Lalhmuoklien and Saratchandra 2013) [3]; March to July (Ahmad et al. 2023) [4]. The nest is formed of different kinds of plant material involving intertwined twigs, stems, shoots, grasses and roots : flimsy platform of few twigs and grass stems with a central depression placed low down on trees, thorny bushes, stumps and roofs (eaves/ rafters) of inhabited buildings (Ali and Ripley 1981) [1]; dry grasses and thin twigs on trees and roofs / verandah of houses at the height range of 6 feet (1.82 m) to 20 feet (6.09 m) from the ground (Lalhmuoklien and Saratchandra 2013) [3]; loose platform of thread like sticks and leaves on trees at the height of 1.52 m from the ground (Rajashekara and Venkatesha 2016) [5]; flimsy cup of twigs, dried stems of climbers, grasses and roots on branches of trees (Khaing and May 2019) [6]; broad, flat and elliptical structure of twigs, grasses, feathers and rotten leaves on trees at the height range of 3.1 m to 5.5 m from the ground (Ahmad et al. 2023) [4]. The clutch size is normally 2 eggs, oval and white: normally 2 eggs, exceptionally 3, white with a smooth texture (Ali and Ripley 1981) [1]; 2 eggs, oval and white (Kumar 1981) [7]; 2 eggs, oval and pure white (Saxena et al. 2008) [2]; 2 eggs, oval and slightly glossy white (Rajashekara and Venkatesha 2016) [5]. The incubation period is about 13-16 days: 13 days (Ali and Ripley 1981) [1]; 14 days (Kumar 1981) [7]; 13-14 days (Saxena et al. 2008; Rajashekara and Venkatesha 2016) [2, 5]; 15-16 days (Khaing and May 2019) [6]; 14-15 days (Ahmad et al. 2023) [4]. Both sexes take part in nest building, incubation and care of young ones (Ali and Ripley 1981; Kumar 1981; Saxena et al. 2008; Ahmad et al. 2023) [1, 7, 2, 4]. The present status of the bird is Least Concern (LC) according to BirdLife International IUCN RedList (BirdLife International 2024) [8].

The distribution of Spotted Dove in Himachal Pradesh as recorded by the author varies in altitude from 400 m to 3650 m from subtropical to temperate regions, rarely subalpine and in different kinds of habitats including human habitation, gardens, parks, scrubs, open forests, wooded areas and cultivations (Singh 2015) [9].

Despite the number of studies carried out on the breeding of Spotted Dove since the last many years, information regarding the nest structure and composition was found insufficient. Therefore, a present study was undertaken to investigate the naturally dried nest of Spotted Dove.

Materials and Methods
Study Area
The present study was carried out in the campus of Government Arya Degree College Nurpur in Kangra district of Himachal Pradesh. The study area has an altitude of about 650 m with the geographical location of Lat 32.301312^0, Long 75.881002^0. The climate is subtropical and three main seasons of the area are summer, monsoon and winter along with transitional periods of autumn and

spring. The average annual temperature is 26.85^0 C and average rainfall is 30.1 mm (Global Historical Weather and Climate Data- Nurpur 2025) [10].



Source: @ Satellite Google Maps

Fig I. Location of Study Area (blue dot)

Methodology

The nest composition of a naturally dried nest of Spotted Dove *Spilopelia chinensis* was studied after its removal from the branches of Bougainvillea vine. The nest and chicks (hatchlings/ nestlings) were observed from a distance of about 1-2 feet with naked eyes. The observations of chicks were done during the daytime hours when the parent bird left the nest. The photographic evidence was recorded with the help of a digital camera (Nikon A900). The measurements of height and size of the nest, size of chicks was done with the help of a measuring tape and weight with the help of a digital weighing balance. The measurements of chicks were done inside the nest without much disturbance to them. The empty/ abandoned naturally dried nest was removed from the branches of the vine after birds left it and studied for its structure and composition. The individual constituents of the nest were separated from each other and grouped together for similar kinds such as inflorescence stalks, dwarf shoots, twigs/ stem branches and grass roots/ rootlets. The number of individual parts of each constituent was counted, length of each individual part was measured and average length of most of the individual parts of a constituent was evaluated on the basis of higher percentage. The total weight of all individual parts of a constituent was measured.

Results

Observations of the Nest and Chicks

The nest was found constructed among thorny ramified branches of Bougainvillea woody vine in the plantation area of the college campus. The height of the nest from the ground was 2.33 m (233.6 cm). The nest was a cup-like structure, circular in shape, intertwined/ woven with plant material like tree inflorescence stalks, dwarf shoots, twigs/ stem branches and grass roots/ rootlets (Fig 7). The nest was first observed on 5th May and two ovals shaped, white coloured eggs were seen inside it. The parent bird was seen incubating and sitting over the eggs for most of the day time (Fig 1). Both eggs were found hatched on 7th May and sizes of both chicks/ hatchlings were measured. The size of one chick was found larger (7 cm) than the other (5 cm) and the beak was 1.0 cm (Fig 2). These hatchlings were blind with closed eyelids or rudimentary eyes, helpless and had pinkish skin covered with sparsely arranged soft light brown/ pale coloured feathers. Each chick had pinkish light grey beak with a dark circular band near the tip for separating a part of the light coloured tip. These hatchlings showed very little movement of their head and neck regions. The parent bird was seen protecting the newly hatched chicks most of the time of the day and kept sitting over them for long hours in a day for the next 1-2 days. On 8th May, two hatchlings were seen showing more movements of their heads and necks with little body shifting movements. The skin and beak colour of the chicks changed from pinkish to greyish pink shade (Fig 3). From 8th to 10th May, eyes were in the developing phase and the changes in the skin colour and feathers of the body were progressing. On 11th May , the eyes of both chicks/ nestlings were seen starting to open, beaks and skins of their bodies turned more greyish pink in colour (Fig 4). The parent bird now started to leave the nest for quite a long time during the day hours and leaving behind the chicks of their own. On 12th May, both chicks/ nestlings were observed to become quite active and showing more movements of their heads, necks and bodies inside the nest. There were changes in skin colour, nature of feathers and sizes of the chicks. The feet of the chicks were developed with small claws and greyish pink in colour (Fig 5). On 13th May, sizes of both chicks/ nestlings were measured and found to have increased slightly from the earliest stage after hatching, the larger one became 8 cm and the smaller one 6 cm and the beak was 1.4 cm (Fig 6). These chicks now started to open their eyes for a long time and their skin colour changed toward greyish pink shade with the emergence of needle-like hard feathers having a greyish base and light brown/ pale upper part, grown on their wings and bodies. These chicks were able to change their positions inside the nest, showing little movements of their wings and more movements of their heads, necks and bodies. These chicks were also heard to make low whistle-like voices in the nest. These two hatchlings were found missing inside the nest on 14th May. These might have fallen down the nest or might have been taken away by some predator from the nest. The abandoned/ empty nest was removed from the branches of the vine and studied for its structure and composition.

Structure and Composition of the Nest

Abbrev: m: meter, cm: centimeter, gm: gram

Shape: The nest was cup-like and circular in shape (Fig 7).

Dimensions: The outer circumference of the nest was 53 cm and inner circumference was 33 cm. The outer diameter of the nest was 13 cm and the inner diameter was 7 cm. The depth of the nest was 3.5 cm.

Weight: The weight of the nest including all the constituents (stalks, shoots, stem branches and roots) was 13.92 gm.

The different types of constituents made the structure of the nest such as tree inflorescence stalks, dwarf shoots, twigs / stem branches and grass roots/ rootlets. These were studied for their types, number, length and total weight. The length of individual parts of the constituents varied from 9 cm to 31 cm and the average length of most of the constituents was 17 cm to 20 cm.

1. Teak *Tectona grandis* Inflorescence Stalks (Fig 9)
In total, 36 branched inflorescence stalks of the Teak *Tectona grandis* with a total weight of 4.85 gm formed the major part of the walls and base of the nest. The length of stalks varied from 14 cm to 31 cm and average length of most of the stalks was 19 cm.

2. Indian Gooseberry (Amla) *Emblica officinalis* Dwarf Shoots (Fig 10)
In total, 17 unbranched dwarf shoots of Indian Gooseberry *Emblica officinalis* with a total weight of 1.37gm formed the walls and base of the nest. The length of dwarf shoots varied from 13.5 cm to 24 cm and average length of most of the shoots was 22 cm.

3. Stem branches / twigs (Fig 11)
In total, 24 stem branches/ twigs with a total weight of 4.30 gm lined the walls of the nest. The length of stem branches varied from 11 cm to 24 cm. The average length of most of the stem branches was 19 cm.

4. Grass roots / rootlets (Fig 12)
In total, 23 grass roots /rootlets with a total weight of 2.80 gm lined the base and walls of the nest. The length of roots/ rootlets varied from 9 cm to 24 cm. The average length of most of the roots/ rootlets was 14 cm. One such identified Scutch Grass *Cynodon dactylon* root with some stem part was of length 22.5 cm.

5. Other material found inside the Nest

a. Soft Down Feathers (Fig 13): In total, 5 soft down feathers with a total weight of 0.05 gm were seen inside the nest. These feathers might have fallen from the bodies of the parent birds.

b. Leaves of Bougainvillea vine (Fig 14): In total, 15 dried leaves of Bougainvillea vine with a total weight of 0.55 gm were seen inside the nest. These leaves might have fallen from the branches of the vine inside the nest

c. Excreta of Chicks (Fig 15): The excreta / faecal matter of chicks with a total weight of 5.46 gm was also seen accumulated inside the nest.

Fig 1: Parent bird in the nest

Fig 2: 1st day (07-05-2025)

Fig 3: 2nd day (08-05-2025)

Fig 4: 5th day (11-05-2025)

Fig 5: 6th day (12-05-2025)

Fig 6: 7th day (13-05-2025)

Fig 7: Empty Nest on vine (14-05-2025)

Fig 8: Nest after removal from vine

Fig 9: *Tectona grandis* Inflorescence Stalks

Fig 10: *Emblica officinalis* Dwarf Shoots

Fig 11: Stem branches / twigs

Fig 12: Grass roots / rootlets

Fig 13: Soft Down Feathers

Fig 14: Leaves of Bougainvillea Vine

Fig 15: Excreta of Chicks

Discussion

The nest was observed as a cup-like circular structure with intertwining plant material like twigs, inflorescence stalks, shoots and grass roots/ rootlets among thorny ramified branches of a Bougainvillea woody vine at a height of 2.33 m from the ground (Fig 7). In comparison to previous studies, the observations of the nest showed some similarities : flimsy platform of few twigs and grass stems with central depression fairly low down on trees, thorny bushes, stumps, roofs (eaves / rafters) of inhabited buildings (Ali and Ripley 1981) [1]; loose platform of sticks and leaves at the height of 1.52 m from the ground (Rajashekara and Venktesha 2016) [5]; shallow, flimsy platform of sticks, twigs, dried stems of grasses and roots (Khaing and May

2019) [6] ; broad, flat and elliptical structure of twigs, grasses, feathers and rotten leaves at the height range of 3.1 m to 5.5 m and preferably 3.6 m to 4.0 m from the ground (Ahmad et al. 2023) [4].

The breeding period was observed in the month of May which in confirmation with the previous studies of nesting and breeding period: April to July (Ali and Ripley 1981) [1]; January to August (Saxena et al. 2008) [2]; February to October, with peak activity between May to August (Lalhmuoklien and Saratchandra 2013) [3]; March to July (Ahmad et al. 2023) [4].

The clutch size or the number of eggs laid was 2, oval and white in colour which is in confirmation with the previous studies: normally 2 eggs, exceptionally 3 and white with smooth texture (Ali and Ripley 1981) [1]; 2 eggs, oval and white (Kumar 1981) [7]; 2 eggs, oval and pure white (Saxena et al. 2008) [2]; 2 eggs, elliptical and white (Lalhmuoklien and Saratchandra 2013) [3]; 2 eggs, oval and white and one egg slightly heavier than the other (Ahmad et al. 2023) [4].

The newly hatched chicks were blind with closed eyelids, helpless and had sparse light brown/ pale coloured soft feathers on their pinkish skin bodies with light greyish pink beaks. The sizes of hatchlings were 5 cm, 7 cm and beak 1.0 cm (Fig 2). These hatchlings started to open their eyes 4-5 days after hatching and their skin colour changed to greyish pink with the emergence of needle-like hard feathers having a greyish base and light brown / pale upper part. The beaks turned dark greyish pink in colour and sizes of chicks slightly increased to 6 cm, 8 cm and beak 1.4 cm (Fig 6). In comparison to previous studies, similar kinds of observations about the size and body colour of chicks were also made (Kumar 1981; Rajashekara and Venkatesha 2016; Ahmad et al. 2023) [7, 5, 4].

The dimensions of the nest were: circumference (outer 53 cm, inner 33 cm), diameter (outer 13 cm, inner 7 cm), depth 3.5 cm and weight 13.92 gm (Fig 8). In comparison to previous studies, observations about the dimensions of the nest showed some similarities: depth 2-3 cm (Wells 1999) [11]; diameter 13 cm, depth 1.5 cm (Rajashekara and Venkatesha 2016) [5]; diameter 15.17 cm, depth 3.03 cm (Khaing and May 2019) [6].

The nest composition comprised of different kinds of plant material with total number of 100 individual parts of the constituents including tree stalks, dwarf shoots, twigs/ stem branches and grass roots/ rootlets: Teak *Tectona grandis* inflorescence stalks [36], Indian Gooseberry *Emblica officinalis* dwarf shoots [17], stem branches/ twigs [24] and grass roots/ rootlets [23]. In comparison to previous studies, the composition of the nest showed some similarities: 50-150 small twigs and roots (Baker 1913) [12]; twigs and grass-stems (Ali and Ripley 1981) [1] ; twigs, dried stems of climbers, grasses and roots (Khaing and May 2019) [6].

The nest had other material also inside it such as soft down feathers [4], vine dried leaves [15] and excreta of chicks (5.46 gm). In comparison to previous studies, such observations were also made: nests lined with feathers and during brooding become cemented with excreta (Higgins and Davies 1996) [13]. feathers and rotten leaves formed the parts of the nest (Ahmad et al. 2023) [4].

Conclusion

- The nest composition consisted of different kinds of plant material like Teak inflorescence stalks (36), Indian Gooseberry dwarf shoots (17), twigs/ stem branches [24] and grass roots / rootlets [23] with a total number of 100 individual parts of the constituents. The additional material found inside the nest was soft down feathers, dried leaves of vine and excreta of chicks. The length of individual parts of the constituents forming the nest structure varied from 9 cm to 31 cm and the average length of most of the constituents was 17 cm to 20 cm.
- The total weight of the abandoned/ empty nest was 13.92 gm excluding the weight of additional material found inside the nest.
- The normal number of eggs and chicks undergoing development was 2, out of which one chick was found slightly larger in size than the other.
- The hatchlings could not complete their development up to fledgling stage due to their sudden disappearance from the nest.

Acknowledgements

The author is thankful to the principal of Govt Arya Degree College Nurpur Dr Anil Kumar Thakur (PhD Botany) for providing necessary laboratory facilities and helping in identification of plant constituents of the nest structure.

References

1. Ali S, Ripley S D. Handbook of the Birds of India and Pakistan: Together with those of Bangladesh, Nepal, Bhutan and Ceylon. Stone Curlews to Owls. Oxford University Press, New Delhi, India,1981:3(2):152-153.
2. Saxena VI, Pandey E, Agarwal S, Saxena A K. Execution of Breeding and Nidification Behaviour in Pigeon (*Columba livia*) and Dove (*Streptopelia chinensis*). Asian Journal of Experimental Sciences,2008:22(3):405-410.
3. Lalhmuoklien Lal P, Saratchandra Y. Breeding Biology of Spotted Dove Streptopelia *chinensis* in the Imphal Valley, Manipur State. Nagaland University Research Journal,2013:6:159-178.
4. Ahmad T, Razzaq A, Shahzadi H, Rehman F Ur, Li Bo, Ullah S, *et al* Saqib O, Khan T M, Suliman M, Zulfiqar A. Nidification and Breeding Success of Spotted Dove *(Streptopelia chinensis*) in district Dir Lower, Khyber Pakhtunkhwa, Pakistan. Pakistan Journal of Zoology,2023:56(4):1-7. http://dx.doi.org/10.17582/journal.pjz/20230122160135
5. Rajashekara S, Venkatesha M G. On the breeding of Spotted Dove *Streptopelia chinenesis.* Indian BIRDS,2016:11(4):91-93.
6. Khaing NN, May Y Y. Breeding Ecology of *Streptopelia chinensis* (Spotted Dove) and *Pycnonotus cafer* (Red-vented Bulbul) in Mohnyin Degree College and its Environs. International Journal of Scientific Research and Engineering Development,2019:2(1):211-217.
7. Kumar SA. A close study of the Spotted Dove. Newsletter for Birdwatchers,1981:21(7):5-9.
8. BirdLife International. Species factsheet: Eastern Spotted Dove *Spilopelia* chinensis, 2024.Downloadedfromhttps://datazone.birdlife.org/species/factsheet/eastern-spotted-dove-*Spilopelia-chinensis* 15/05/2025.
9. Singh D. Birds Recorded during a Study in Himachal Pradesh. Renu Publishers, New Delhi, 2015, 38.

10. Global Historical Weather and Climate Data. In: Climate Nurpur, Himachal Pradesh, 2025. https://weatherandclimate.com
11. Wells D R. The Birds of the Thai-Malay Peninsula. Non-passerines, Academic Press, London, UK, 1999, 1.
12. Baker ECS. Indian Pigeons and Doves. Witherby and Co, London, 1913.
13. Higgins PJ, Davies SJJF. (Editors). Handbook of Australian, New Zealand and Antarctic birds, Oxford University Press, Melbourne, VIC, Australia, 1996, 3.