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Breeding and Feeding Behavior of *Pycnonotus cafer* (Red-vented bulbul) in KHB Layout Hassan. Karnataka, India

LATHA, K
Maharanis Science College for Women (Autonomous), JLB Road, Mysore, India
E-mail: latha.gsch@gmail.com

ABSTRACT
The breeding and feeding behavior of *Pycnonotus cafer* (Red vented bulbuls) was studied locally in Hassan KHB Layout, Karnataka, from January 2022 to July 2023. Red vented bulbuls nest building and feeding behavior, egg, clutch size, and hatchlings were studied. We noted nests in the surrounding area during the inspection. Both male and female birds actively participated in selecting the location and building the nest and the parental care was very pronounced. The size of the clutch determines the number of hatchlings. Environmental elements including the availability of food and nesting materials during breeding season have a direct impact on egg size, laying and hatchling development. Protein-rich invertebrate food is essential to both adult and newborn survival. The percentage of nests with two eggs per nest was 40%, and the percentage with three eggs per nest was 30%. A total of 17 red vented bulbul eggs were found in 10 nests.

Key words: *Pycnonotus cafer* parental care, nesting ecology, parental behavior. Anthropogenic

INTRODUCTION

Pycnonotus cafer, the red-vented bulbul (Linnaeus 1766) belongs to Pycnonotidae family which have 138 species, distributed with 27 genera throughout Africa, south Asia, and the islands of the west Indian Ocean. The Red-vented Bulbul, one of the 100 bird's species worldwide, is categorized as an invasive species. The Red-vented Bulbul has eight subspecies and can be found from Sri Lanka to Pakistan, western Himalaya, as well as from the Indus valley in the west to the Myanmar region, northern Thailand, and southwest China in the east (Ali 1996). Its habitat is highly varied and found in dry deciduous woodlands, sparse secondary forest, dry scrub, orchards, gardens, plains, and cultivated lands in the region of its usual distribution in Asia. The birds are impacted by intense anthropogenic pressure (Zohaib et al. 2022). The chatty, musical Red Vented Bulbul, speaks in whistled words, "witiwet.". It is a resident breeder that is widely dispersed over tropical Asia, this bird does not migrate. The Size: 8 to 9 inches. Its short crust vent is red with a black tip, and its bears are dark and black. The male and females look identical; however, the males tend to be a little bigger. The Indian subcontinent is home to a resident breeder of the Red Vented Bulbul which lives in gardens, shrubbery, forests, and urban areas and breeds throughout the year. However, the greatest period for reproduction is from January to October (Khan et al. 2023). The bird can produce up to three broods in one season. The birds lay two to four eggs at a time in numerous clutches. The eggs have a light pinkish tint with dark purplish brown markings. It takes roughly 14 days for the eggs to hatch. When not reproducing, they frequently form sizable flocks and congregate on open roosts. The choice of nest site has a direct impact on breeding success. The availability of nesting materials and environmental conditions have a major role in nest location selection. Greater numbers of *P. cafer* were found in the human habitat region than in the non-human habitat region. Its habitat consists of open spaces in bushes, and brush that are adjacent to human settlements. Additionally, it lives in gardens, shrubbery, forests, and urban areas (Chishty et al. 2021). Commonly found on climber jasmine, betel, rose and hibiscus, *Psidium guava* bushes. It is present extensively in open area and resistant to human pressures. In open habitats created by humans in tropical Asia, it is one of the most widespread and significant seed dispersal agents. Bulbul favors nest structures that are between 1.5 and 3.25 meters high. Because of cat and squirrel predation, reproduction success was only moderate (Nowakowski and Dulisz 2019). The objective of this study was to gather data regarding the breeding and feeding habits of the species *P. cafer* in the study area of Hassan.

STUDY AREA

The present study was carried out at Hassan, a city in Karnataka's southern region on NH-75, located halfway between Bengaluru and Mangalore with an area of 66.12 km^2, at an elevation of 950m (76.11505 E Longitude and 13.00765 N Latitude). The area reported 26°C mean temperature, 24 km/hr westerly wind, and 70% humidity. The location picked for the study was about 1.5 kilometers from the New Bus Stand called KHB layout developing residential area. Ten years ago, the region was a paddy field besides a lake called Channapatna. Today, it is a thoroughly urbanized residential area with many buildings under construction. The investigation was carried out from January 2022 to July 2023. Visual and mobile camera capture modes were used to directly monitor variations in clutch size and breeding behavior.

The systematic studies of nest construction, hatching and brooding, rearing, clutch size variations were noted during the course of the 24 months (two years). The observations were made between twilight (6 to 9.00 p.m.) and daybreak (6 to 7 a.m.). In order to evaluate clutch size variation, breeding behavior, hatchling success, and nesting status of red vented bulbul a mobile camera (Samsung GalaxyA70s 64mp back camera) was used.

RESULTS

Breeding is observed in monsoon season, when red vented bulbuls breed. Both male and females assist in nest-building throughout the breeding season as seen participating in the process of looking for a suitable location to build nests. The pair sometimes rejected the nest they had built earlier or another area where a bird had been frequently visiting. They also looked for potential nesting places in the garden, on old swing's handle, beetle leaf, jasmine climber, bushes such as *Hibiscus,* rose and *Psidium guava*, decided to pitch up camp. Before choosing a nest site, the red-vented bulbul spends three to four days observing the area. During the present study it was observed that some pairs made repeated unsuccessful attempts to build their nest. It's interesting to note that when the nest building failed, they made no attempt to fix its position and instead began creating a new one from scratch. All natural materials, including dried leaf fragments, grasses, twigs, fibers from coconut tree, cotton, twigs, grass blades and plant roots were used to construct the nest. Once a good location is chosen, nesting begins, the construction of the nests took about 6-7 days to finish. The study showed that birds utilizing thread and wires build their nests more slowly than birds using other available material in the area such as dried grass, twigs, cotton and feathers (Khan et al. 2023, Lamba 1968).

On forks, the success rate of nests was the highest. The majority of the nests were discovered to be constructed on tall, prickly shrubs and thorny plants. Clutch size variation studied and documented in Udaipur district Rajasthan by Chishty et al. (2022) and mentioned by Ali (1996) in his 'The Book of Indian Birds'. A crisscross pattern of sticks, twigs, and small strips of garden-grown banana tree leaves were used to construct the nest. The nests of the field birds contained the same kind of construction at height of 3.9-5.0 ft, but in the open field area nests on 7-8 ft high on climbers and trees were also noticed. The nest's outside diameter is 15.2±1.53 cm. and the inner diameter 15.3±1.65 cm. Outside nest height was 5.5±32 cm and the depth inside 4.5±44cm. The bulbul nest was found to be a little bowl-shaped structure in the current investigation.

The pair was seen sitting closely together and tickling one other's bodies during courtship, five times throughout this incident, it was noted that one bird's red wing patch was somewhat brighter than the other, and that bird's call was louder than the other birds. The pairings were observed raising their pelvic region repeatedly. Additionally, spooning and billing were seen. The percentage of nests with two eggs and hatchings was 40%, and three eggs per nest was 30%. During the present study four nests had both eggs and hatchlings, compared to three nests that contained nine eggs and three empty nests 30% (Table 1). Size of the clutch affects how many young hatchlings are there. There was a total of 17 red vented bulbul eggs found in 10 nests with mean length and breadth of the egg 2±5488 and 1.5±3437 (Table 2).

Egg dimensions and incubation time

The eggs ranged in size from 1.5 to 2.5 cm in width and 2.5 to 3 cm in length. They had dots that were

Table 1. Total number nests and egg, hatchings observed

S.N.	Construction height variation in different nests	Nest	Eggs	Vegetation
1	3.9 ft	3	2 eggs and hatchlings present	*Psidium guajava, Rosa rubiginosa*
2	5ft	3	3 eggs were present	*Piper betel, Psidium guajava*
3	3.2ft	3	Empty nest	*Hibiscus rosa sinensis, Piper betel*
4	7.2ft	1	2 eggs and hatchlings present	*Jasminum officinale, Psidium guajava*
Total		**10**	**17 eggs**	

Table 2. Number of eggs observed

Total number of eggs and hatchings	Mean length of eggs (cm)	Mean breadth of eggs (cm)
8 eggs and hatchings present 9 eggs present	2± 5488	1.5± 3437

Table 3. *Pycnonotus cafers* visiting nest for feeding

After hatching	Parents visiting the nest times/hr (Approximately)		Invertebrate food (%)	Plant food (%)
1 to 2 days	4 to 6	45 miutes to 1 hr	10.12	13.11%
3 to 4 days	5 to 7	35 minutes to 45 minutes	12.14	14.23%
5 to 6 days	6 to 8	30 minutes to 40 minutes	11.14	15.15%
6 to 7 days	4 to 10	25 minutes to 40 minutes	48.34	21.43%
7 to 8 days	5 to 8	25 minutes to 40 minutes	55.68	22.23%
9 to 10 days	6 to 8	40 minutes to 50 minutes	53.54	25.54%
11 to 12 days	4 to 5	Able to fly independently	53.14	30.13%

brownish and had a bright pink tint (Fig.1). Incubation period was 14 days and both parents actively participated in feeding the chicks throughout feeding period. As the pairs do not exhibit any overt sexual dimorphism, comparatively male is larger and female smaller in size. While male parent sat around watching the nest, the female parent brought the food in its mouth.

The sequence of egg hatching developmental events from day-1 to day-10 was given in the Figures 1 and 2. The just hatched young ones were very sensitive with unopened eyes and from day three the parents start feeding them with invertebrate meal. The fact that the meal included red or black ants, other insects, green or red berry-like fruits, and grains suggests that the animals were omnivores. It has occasionally been seen that the birds also give their regurgitated food to the chicks. From the day eggs hatch, nest visits from parents become more frequent till the chicks become fledglings (Table 3). We noticed that because of the chicks' screams, the birds brought food every 4-5 min. Once fed, they were silent and started acting the same way again after about five minutes. After around 5.30 pm in the evening, the feeding process ended. During afternoon between 12 noon and 1 pm more frequent feedings were observed. The field birds fed consistently for the same amount of time due to the availability of the food.

Clutch size and parental care

The average clutch contained two chicks. Brown feathers the colour of chocolate enveloped the chicks. The birds exhibit highly obvious parental care

Figure 1. Behavior of nest building and egg hatching of *Pycnonotus cafer*

Figure 2. Behavior of feeding of *Pycnonotus cafer*

behaviors. During a turbulent session one evening, it became more obvious. It's interesting to note that just one bird was seen acting as a defender; the other bird was absent during the storm. When the first adult chick took flight, another chick inspired and gave an attempt to fly, it was really fascinating to observe.

Another very interesting instance of parental care was observed at the time of flight of the first grown up chick. The parents accompanied the chick for about 6-7hrs. During this period, they did not come to feed the other chicks in the nest. The second chick flew away after 1 day of the first chick

DISCUSSION

According to the results of the current study, the red vented bulbul's breeding season occurs between January and June, when the weather is dry (Chishty et al. 2022). Other reports include a few tiny differences. Additionally, July and August are said to be the bulbul's breeding months. The increased photoperiod and temperature are closely related to the breeding season. The findings of numerous authors support this (Khan and Naher 2020) and (Rakha et al. 2022). The red-vented bulbul is a highly territorial bird, and in order to conserve energy during the breeding season, its territory range is less during the nesting period than it is during the pre-nesting period (Khan and Naher 2020). According to reports, the territory boundaries remained stable both before and after nesting. The disruption caused by red-vented bulbul nest building process led to leaving the site by them after 5-6 attempts (Verma and Lalm 2022). Both sexes exhibit parental care behaviors, whereas the female bird has a more significant role in feeding the chicks and male has the role of train their young for independent life. There is no such sexual dimorphism. Based on size we have observed their parental behavior. The reasons for the high nesting success rate in this region include an availability of food, ideal nest-building conditions, including vegetation hidden by thorny bushes, dense cover, suitable atmospheric conditions, lower rates of infection among hatchlings, and lower rates of predation, among others (Rakha et al. 2022). The parents' provision of plant food and protein-rich invertebrate food suggests a connection between nutrition and growth rate. Predation, tree cutting, rain, and storms were all factors in the losses of eggs and nestlings (Khan et al. 2022). One of the causes of egg losses is cats and the capture of bulbuls for bird markets (Awais et al. 2015). Small, green, and dense bushes are preferred by *P. cafer* for nesting. It favors several plant species as a nesting location. This may be explained by the lack of nesting materials or by a desire to forego the labor-intensive process of obtaining nesting materials from distant locations. It was discovered that they avoided attempting to build their nest at their chosen location when it was disturbed by both human activity and other bird activity. It is very fascinating to record the reproductive parental care of *P. cafer.*

Conflict of interest: Author declares no conflict of interest

REFERENCES

Ali, S. 1996. The Book of Indian Birds. Bombay Natural History Society and Oxford University Press, Oxford. 354 pages. https://doi.org/10.5962/bhl.title.43949

Awais, M., Ahmed, S., Mahmood, S. and Bibi, K. 2014. Breeding performance of the red-vented bulbul *Pycnonotus cafer* in Pakistan. Podoces, 9(1), 1-6.

Chishty, N., Choudhary, N.L., Parveen, R., Bano, H., Patel, P. and Kumawat, P. (Eds.).2021. A Chronicle on *Pycnonotus cafer*, The Red Vented Bulbul. Books Clinic Publishing, 300 pages.

Chishty, N., Parveen, R., Choudhary, N.L., Patel, P. and Kumawat, P. 2022. Breeding behaviour and egg clutch size variation in Red-vented bulbul (*Pycnonotus cafer*) at Udaipur district, Rajasthan. Indian Journal of Applied & Pure Biology, 36(1), 11-14.

Khan, M.T., Azam, A.R., Ashraf, A., Latif, T., Qadeer, S., Muneeb, A., Ullah, S. and Nasir, M.F. 2022. Spatiotemporal distribution of red vented bulbul (*Pycononotus cafer*) by GIS application in District Mianwali, Punjab, Pakistan. World Journal of Biology and Biotechnology, 7(3), 19-23. https://doi.org/10.33865/wjb.007.03.0618

Khan, R.U., Gabol, K., Sadam, A., Panhwar, W.A. and Rahim, A. 2023. Breeding performance and nest characterizations of red vented bulbul (*Pycnonotus cafer*) in Bajaur Valley, Khyber-Pakhtunkhwa, Pakistan. Pakistan Journal of Zoology 55(3), 1153-1159. https://doi.org/10.17582/journal.pjz/20211009121006

Khan, S.I. and Naher, H. 2020. Breeding Biology of the Red-Whiskered Bulbul, *Pycnonotus jocosus* (Linnaeus, 1758) in Madhupur National Park, Bangladesh. Journal of the Asiatic Society of Bangladesh, Science, 46(2), 179-189. https://doi.org/10.3329/jasbs.v46i2.54413

Lamba, B.S. 1968. Wire nests of Red vented Bulbul *Pycnonotus cafer* (Linnaeus). Journal of Bombay Natural History Society, 65(1), 222-223.

Nowakowski, J.J. and Dulisz, B. 2019. The Red-vented Bulbul *Pycnonotus cafer* (Linnaeus, 1766) – A new invasive bird species breeding in Europe. Bio Invasions Records, 8(4), 947-952. https://doi.org/10.3391/bir.2019.8.4.24

Rakha, B.A., Qayyum, F., Ansari, M.S., Akhter, A., Shakeel, K., Batool, J., Akhtar, F. and Hina, S. 2022. Breeding biology of White cheeked Bulbul (*Pycnonotus leucogenys*) in Margalla Hills National Park, Pakistan. Pakistan Journal of Zoology, 1(1), 1-5. htpps://doi.org/10.17582/journal.pjz/20220210060225

Verma, N. and Lal, 2022. Nesting Ecology, Territoriality and Brood Care in Red-Vented Bulbul, *Pycnonotus cafer* Stanfordi Deignan at Lumami, Zunheboto District, Nagaland. Uttar Pradesh Journal of Zoology, 10(4), 668-679. https://doi.org/ 10.56557/upjoz/2022/v43i243381

Zohaib, M., Ansari, M.S., Rakha, B.A., and Akhter, A. 2022. Nesting and breeding success of Red-vented Bulbul (*Pycnonotus cafer*) in orchards, parks and agricultural fields in Renala Khurd, District Okara, Punjab, Pakistan. Pakistan Journal of Zoology, 5(4), 239-250. https://doi.org/10.17582/journal.pjz/20190718090729

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