

Breeding biology of White-breasted Kingfisher *Halcyon smyrnensis*

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Introduction

White-breasted Kingfisher *Halcyon smyrnensis* is a familiar and common resident, breeding bird of India, Bangladesh, Pakistan, Sri Lanka and Myanmar (Ali & Ripley 2001). Its Marathi names are 'Khandya, Dheesa and Dheewar.' This bird is less dependent on water than other members of the Alcedinidae.

According to Ali & Ripley (2001) the breeding season of the White-breasted Kingfisher is March–July.

In this note we present its nesting activity in Chiplun city, Ratnagiri dist. (Maharashtra, India) and introduce a simple method that allows a birdwatcher to look into a hole / tunnel nest.

Study site & methodology

Chiplun (17°31'N 73°31'E) is a small city that is surrounded by foothills of the Western Ghats. It is 50 km away from the Arabian Sea.

Vindhyawasini is a locality of Chiplun city. The area has semi-evergreen vegetation that includes teak *Tectona grandis* and mango *Mangifera indica* trees. There is a small nullah here that flows only during the rainy season. Average rainfall is 3,500 mm. Temperatures in this area ranges from 23°C to 40°C.

In this area we studied five different nests of the White-breasted Kingfisher during 2004–2006, using a convex mirror

with a 5 cm diameter and a 20 cm focal length, mounted on a 1 m long metal rod that was bent at a 60 degrees angle, and 10x50 power binoculars to view activities within the nests. We used convex mirror as it allowed a full view of the interior of the chamber. After inserting the mirror stick into the chamber of the nest, we focused a torch on the mirror, which reflected the light on the base of the chamber. This enabled us to get a good view.

We made observations at the nests at least twice a day, i.e., once in the morning and once in the evening, during their breeding period. Care was taken to insert the mirror only after the bird had left the nest.

We also made readings of temperatures inside (26.9°C–32.7°C) and outside (25.7°C–40°C) the nest with a digital thermometer that had a 2 m long sensor.

Observations & results

Courtship

Courtship starts from March. Birds are very vocal during this period and utter their cackling call 'kili-kili' repeatedly from a treetop for extended periods of time (Ali & Ripley 2001). Birds sit close to each other and repeatedly call. We also observed courtship feeding during the nest excavation.

The nest & its construction

The nest is a horizontal tunnel, up to a meter long, which ends in a widened egg chamber and has a 7 cm wide entrance (Table 1). It is excavated in a vertical cutting of earth on the bank of a river, stream, nullah or a roadside land cutting (Ali & Ripley 2001).

The egg chamber is slightly inclined, perhaps to prevent the flow of water into the chamber. Also, it makes disposal of waste material from within easy, as the chicks grow. In some nests the egg chamber is curved to the left or right. Lining of the egg chamber was not observed.

Both the birds participate in nest excavation. One of the birds flew full tilt at the prospective spot and hit it with the tip of its bill. It immediately returned to the perching site while its partner repeated same process. This went on until a nest entrance had formed. After the entrance was at least 5 cm long, both birds took turns to sit at its edge and excavate the tunnel further. Excavation ceased if the pair encountered problems such as rocky or hard soil, and a new site was selected. We have observed pairs occupying the same area for 3–4 years. However only ringing will confirm the reuse of a nest or site by the same pair.

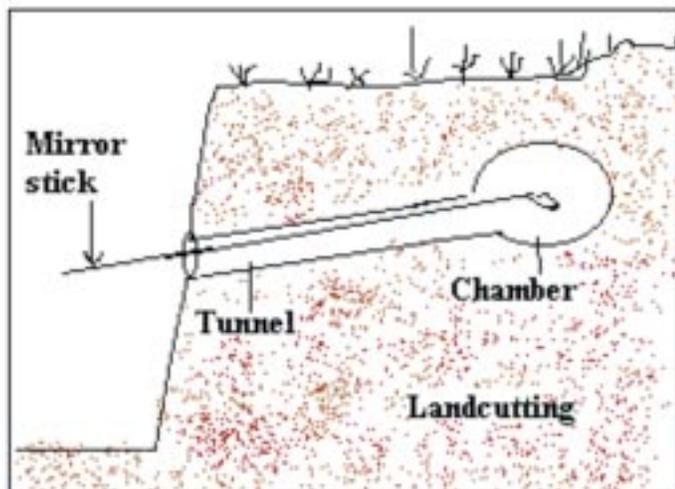


Fig. 1. Diagrammatic representation of the method used in nests of White-breasted Kingfisher *Halcyon smyrnensis*.

Table 1. Dimensions of nests

No.	Location (Year)	Entrance diameter (cm)	Tunnel length (cm)	Chamber diameter
1.	Vindhyawasini (2004)	10	33	12.5
2.	Vindhyawasini (2005)	7.5	68.5	12.5
3.	Matewadi (2005)	7.5	56	18
4.	Vindhyawasini (2006)	8	34	15
5.	Matewadi (2006)	8.5	6	14

However, the White-breasted Kingfisher is known to use various locational situations for constructing its nest. Balasubramanian (1992) reported its nesting inside paddy haystacks for about two years at Mayiladuthurai, Thanjavur district (Tamil Nadu). Rohan J. Lovalekar (*verbal comm.*) observed a successful nest in Chiplun, which was excavated in the earthen wall of an old house in 1995 and 1996. In 2000, 2006 and 2007 we found nests of this bird, which had been excavated in a cement pipe (10 cm diameter) in a compound wall. The chamber was excavated at the end of the pipe. In Lanja, Ratnagiri district, Rajendra Kokate (*verbal comm.*) observed a nest inside a well in 2003, but due to heavy rainfall the water level rose and all the chicks died. Hussain (2000) too reported nests of these birds in a well in Karnataka.

We observed the nesting activity of this kingfisher at Matewadi an area in Chiplun, where, in 2004, the birds excavated a nest in a vertical bank at a height of 1.5 m from the ground. In 2005 they (or another pair) excavated a new nest, which was about 1 m away from the 2004 nest. Interestingly, between these two nests a pair of Small Bee-eater *Merops orientalis* had excavated their nest. Both, the kingfisher and the bee-eater excavated their nest simultaneously.

Eggs & egg laying

A clutch may comprise 4–7 eggs, but usually contains 5–6. Eggs are white and spherical-oval in shape. The average size of 30 eggs is 29.4 x 26.2 mm (Ali & Ripley 2001, quoting Baker).

Out of the five nests observed, only in one nest, were the eggs laid at regular intervals of 24 hrs. In the other four nests there was at least one gap of 48 hrs in the egg laying process (Table 2). All the eggs were laid after mid-day.

Incubation & hatching

There was negligible incubation up to the laying of last egg—after which, it commenced at night. Both birds participate in incubation. The birds destroyed undigested food pellets that collected in the nest during incubation. During changing over of duties, the relieving bird uttered a call to the incubating bird, at which the latter left the nest. After the eggs hatched, the attending bird removed the shells. In one of the nests the adults also removed an infertile egg.

Skutch (1945) defines incubation period to be the extent of time from the laying of the last egg of a clutch to the hatching

of the last nestling. For the White-breasted Kingfisher it was 21–22 days. Oommen & Andrews (1993) give it as 18–21 days.

Nestling & feeding

Chicks were naked and pink in coloured. Feeding, by both birds, commenced 2 hrs after the first chick hatched. When both the parents brought food simultaneously only one of them entered the nest while the other waited outside. The parents were never observed cleaning the nest and during the rains it became wet, muddy, dirty and foul smelling. One of the adults guards the chicks for the first 8–9 nights. The following food items were fed to the young: common garden lizards *Calotes versicolor*, geckos, centipedes, fishes, frogs, common skinks *Mabuya carinata*, crabs and cockroaches.

Fledging period

Skutch (1945) defines the fledging period as the span of time from the hatching of the last egg of a clutch to the fledging of the last chick. In the White-breasted Kingfisher this was found to be 19 days. All chicks were fledged in the morning.

Mortality

During our study we recorded one infertile egg. In one nest, during the hatching period, black ants attacked the chicks and eggs. At another nest, weaver ants attacked a chick. Other common causes of chick mortality include accidental drowning, caving in of the nest chamber and, falling out of nest hole. Speeding vehicles occasionally knock down adult birds.

Conclusions

Incubation period is 21–22 days and fledging period 20–21 days. In the five nests that were observed, 22 eggs were laid, of which one egg was infertile and black ants attacked one chick and 3 eggs. The remaining 17 eggs hatched successfully (Table 2).

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Table 2. Nesting details

Nest date	Place	Year	Egg laying dates					Egg hatching dates					Fledging
			1	2	3	4	5	1	2	3	4	5	
1	V	2004	3/5	4/5	5/5	6/5	7/5	27/5	28/5	28/5	28/5	29/5	17/6
2	V	2005	30/4	1/5	2/5	4/5	—	23/5	23/5	25/5	I	—	15/6
3	M	2005	14/5	15/5	17/5	18/5	—	7/6	8/6	8/6	8/6	—	?
4	V	2006	2/5	3/5	4/5	6/4	—	D	D	D	D	—	—
5	M	2006	6/4	7/5	8/5	10/5	11/5	30/05	30/05	31/05	1/06	2/06	23/06

Abbreviations: D=Destroyed by ants; I=Infertile egg; M=Matewadi; V=Vindhyawasini; ?=Date not available