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continued on the back inside cover

Cover: Leaves and fruits of *Terminalia arjuna* in water colour artwork on cold pressed water colour paper by Bhama Sridharan.

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SHORT COMMUNICATION

A preliminary observation on the nesting of the Indochinese Roller *Coracias affinis* Horsfield, 1840 (Aves: Coraciiformes: Coraciidae) in Assam and northern West Bengal, India

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Abstract: The nesting of Indochinese Roller was observed in Rani, Kamrup, Assam for 49 days in April–May 2022. The male was noted hunting more frequently compared to the female, but its prey items consisted of smaller biomass than those the female hunted. Opportunistically, more nests were recorded at Buxa Tiger Reserve, West Bengal and Kaziranga National Park, Assam. The preferred tree species for nesting were Sal *Shorea robusta*, Mynah *Tetrameles nudiflora*, and Koroi *Albizia procera*; the preferred nest height was 9.2 m.

Keywords: Buxa, cavity nesting, Kaziranga, parental role, prey base.

The Indochinese Roller *Coracias affinis* Horsfield, 1840 also known as Black-billed Roller and Burmese Roller, has been recently raised to the species level (Johansson et al. 2018; Gill et al. 2021). Formerly it was considered the subspecies of Indian Roller *Coracias benghalensis*. Its 'unstreaked smoky-purplish brown face and breast' differentiate it from the Indian Roller *C. benghalensis*. Its distribution is across Nepal, Bhutan, northeastern India to south-central China, northern Malay Peninsula, and Indochina (Ali & Ripley 1987).

The nesting of Indochinese Roller was observed at Belguri Village (25.9996^{0}N, 91.5484^{0}E), Rani, Assam since 2007 (n = 16). Each year, a pair occupied the same nest in the Sal *Shorea robusta* although we could not ensure it was the pair of the same individuals. In 2022, we followed the focal animal sampling method and recorded the parents' and nestlings' activities once per minute (Altmann 1974; Palmer et al. 2001). The observations were categorised in three sloughs 0600–1000 h (n = 1,417), 1000–1400 h (n = 1,444) and 1400–1800 h (n = 2,151). The activities were compared between these sloughs and significance was checked with chi square test. The observations period was from 13 April–31 May 2022 when two nestlings fledged out (Image 1). The young ones followed the parents for about 90 days during which the begging calls for food were noted (https://xeno-canto.org/819166). We also made opportunistic observation on the nesting of the species in Buxa Tiger Reserve (26.6744^{0}N, 89.7472^{0}E), Alipurduar District, West Bengal and in Kaziranga National Park (26.5758^{0}N, 93.1670^{0}E), Golaghat District, Assam.

The height and girth of the nesting tree Sal was 26.8 m and 2.3 m, respectively, while the nest was at a height of 11.6 m. The parents perched (n = 113) around the nest during the breeding period on 10 trees which were at a distance of 5.2 m to 34.4 m from the nesting tree. Most of the trees were young trees including *Tectona*

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Image 1. Nestlings of Indochinese Roller in the nest cavity.

Image 2. Male Indochinese Roller on ground.

Image 3. Female Indochinese Roller with a cicada kill.

grandis (8), one mature *Shorea robusta*, and one mature *Moringa oleifera.* The tree heights ranged 7.6–27 m and the most frequent perching height was around 11.6 m on all of these trees.

The prey items were photographed and identified with keys and opportunistically similar items were weighed with digital weighing balance to get an idea of the biomass.

Results

Observations of the nesting pair

The male and female have distinct characteristics as follows: females are slightly larger and males possess brilliant blue colour on the throat (Image 2 & 3). The incubating and brooding parents could not be observed, but the activities of the parents were recorded for perching, hunting and carrying the food.

Overall, the male was engaged in hunting for a longer duration throughout the day as compared to the female, which was statistically significant (P <0.0001). The hunting time of the male and the female was recorded for all the time slots throughout the day (0600 h–1000 h, χ^2 = 38.534, df = 1, P < 0.0001; 1000–1400 h, χ^2 = 15.244, df = 1, P <0.0001; 1400h–1800 h, χ^2 = 15.254, df = 1, P <0.0001. Female was found to be perched for significantly (P <0.0001) higher number of times as compared to the male, except for the time slot between 1400 h to 1800 h where both male and female were observed to be perched equally (0600–1000 h, χ^2 = 40.998, df = 1, P <0.0001; 1000–1400 h, χ^2 = 46.815, df = 1, P <0.0001; 1400–1800 h, χ^2= 0.252, df = 1, P = 0.6154) (Figure 1).

The prey base

In all 100 successful hunting and food carrying attempts that were recorded, the male captured 56 prey items and the female captured 44 prey items (Table 1); but, with reference to the biomass, the female captured more biomass than the male (the prey captured by the

Table 1. Prey items captured by the Indochinese Roller pair.

Prey items	Average biomass of prey item in g	Number of preys captured by female	Biomass of prey captured by female in g	Number of preys captured by male	Biomass of prey captured by male in g	Total prey biomass in g	Total number of prey items
Insects	0.1	35	3.5	51	5.1	8.6	86
Spiders	0.1	1	0.1	0	0	0.1	1
Frogs	10	2	20	0	0	20	2
Rats	15	1	15	0	0	15	1
Reptiles	20	3	60	1	20	80	4
Unknown	1	2	2	4	4	6	6
Total		44	100.6	56	29.1	129.7	100

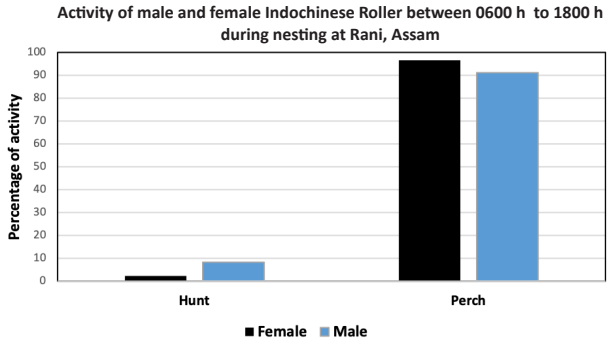

Figure 1. Comparison of activities of male and female Indochinese Roller, Rani, Assam.

female was about 100.6 g while in the case of the male, it was 29.1 g). The female hunted larger prey including mainly frogs (*Fejervarya* spp.), snakes (*Dendrelaphis* spp.), and a lizard (*Calotes* spp.). The male captured more insects, and the cicadas were the most common among the identified insects (*Haphsa scitula* and *Dundubia annandalei*) (Anonymous 2022a,b). Out of the 86 insect prey captured by the pair, 31% were identified while 69% of the prey captures were unknown. The identified prey included cicada (20%), cockroach (1%), dragonfly (5%), mantis (2%), grasshopper (1%,) and termite (alate) (2%).

Preferred nesting trees

The Indochinese Roller's nests were opportunistically recorded in northeast India (n = 38) during 2005 to 2022. Fourteen nest attempts were observed at Buxa Tiger Reserve, West Bengal, 16 nest attempts were recorded at Rani, Assam on the same Sal tree, and six attempts were recorded at Kaziranga National Park, Assam. The tree species preferred were Sal, Mynah, and Koroi. The average height of these preferred trees was 23.7 m and the nest height was 9.2 m.

Discussion

The Indochinese Roller is known to breed in April and May (Ali & Ripley 1987) and our observations exactly match these reports in northern Bengal and Assam. We missed the actual incubation period observation as we avoided checking the nest cavity during this period which might have disturbed the nesting birds (Barve et al. 2020).

The Indian Roller is known to nest at 'moderate height' in the holes in tree trunks as well as in the walls. In the current study, we recorded the nest height as 11.6 m while the mean height of nests on the nine trees was observed to be 9.2 m, ranging between 4.5–14.6 m.

The Indian Roller is known to pounce on frogs, plunge in water for fish, and hunt insects. We noticed and photographed similar behaviour in the Indochinese Roller during the study period. The *C. benghalensis* is known to hunt snakes (Biddulph 1937; Ali & Ripley 1987; Vishnu & Ramesh 2021), our study records the same behaviour in case of *C. affinis* as well. Studies of pellets have suggested that the entomofauna consists major chunk of the food of Indian Roller in south India (Sivakumaran & Thiyagesan 2003). As the prey capture and feeding observations were direct observations, the slightly smaller sized male capturing smaller prey like insects with higher frequency and the slightly heavier female focusing on larger vertebrate prey reminds the reversed sex dimorphism and prey preference in raptors (Schantz & Nilsson 1981), although elaborate data is required in case of *C. affinis*.

The Indian Roller plays an important role in agricultural pest control and similar role is played by the Indochinese Roller as evident from the diet. Though these resident species have stable populations and are included in the 'Least Concern' category of the IUCN Red List of Threatened Species, the migratory species of roller in India, the European Roller *Coracias garrulus*, suffers

a moderate decline (Tucker & Heath 1994). Hence it is high time to collect the baseline data on the Indochinese Roller which remains overlooked so far.

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