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Brood parasitism by Common Hawk Cuckoo: a report from Bhubaneswar, Odisha, India with natural history notes

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ABSTRACT

Brood parasitism is a characteristic breeding strategy seen mostly in Cuculidae birds. In the present observation, we report the parasitic behavior of Common Hawk Cuckoo on Jungle Babbler for the first time from Bhubaneswar, Odisha with photographic documentation. Although this pair has been reported from other parts of the country, this contribution is a range extension to the previous records available and new report from the region.

Keywords: Brood parasitism; Cuculidae birds; Common Hawk Cuckoo

1. INTRODUCTION

The animal world is full of fascinating examples of parental care across various taxa. While some are dedicated parents, evolution has also portrayed queer examples of mechanisms like brood parasitism. Brood parasitism is a mechanism where the parent bird parasitizes another live nest of specific host-birds to lay eggs and nurture their young ones by the host. It is a classic example of how the fixed action pattern (FAP) or innate learning can be used in code-breaking (among inter-species causing the exploitation of one species by the other) by different species. Brood parasitism is seen in many species of birds (Attenborough, 1998). In South Asia, brood parasitism has been recorded in 2 families namely Cuculidae and Indicatoridae, where it is mostly seen in the former (Praveen & Lowther, 2020).

Fig 1. Common Hawk Cuckoo

Fig 2. Jungle Babbler

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2. OBSERVATION AND NATURAL HISTORY NOTES

Brood Parasitism by Common Hawk Cuckoo (*Hierococcyx varius*) was recorded and *A. striata* was reported as a more favoured host (Ali, 1968; Himmatsinhji, 1980 and Zacharias & Gaston, 1983), while *Montecincla cachinnans* (Davison, 1883), *A. affinis*, *A. rufescens* (Kumar et al., 2015) and *A. malcolmi* (Praveen & Lowther, 2020) have also been reported as hosts of Common Hawk Cuckoo.

The Common Hawk Cuckoo (*Hierococcyx varius*) is a common resident bird of India found in almost all regions of the country. It is marked by its long reverberating calls and is also known as the Brain-fever cuckoo. It breeds from January to June depending upon the local conditions of its environment (Grimmett et al., 1998). Here we describe the incidence of brood parasitism of Jungle Babbler by the Common Hawk Cuckoo from Bhubaneswar, the capital city of Odisha, an Eastern state of India. The innate behavior of the host (*Argya striata*) forces it to consider any egg in its nest as its own, even if the baby grows out to be that of another bird's!

In the first week of September 2020, a Common Hawk Cuckoo fledgling was spotted making calls at frequent intervals in the campus of Regional Museum of Natural History, Bhubaneswar. The calls sounded intense and not quite normal. On tracking the calls, it was understood that the calls were being made in the desperate request for food to another bird nearby. Subsequent observations revealed that it was a typical case of nest parasitism. It is found that, as a part of evolution, the color of the eggs of the parasite (Common Hawk Cuckoo) and that of the host (Jungle Babbler) is almost similar i.e., turquoise as portrayed by Nahid et al., 2016 (Fig. 3 & 4). The events that could not be recorded were traced back from the present situation where the Jungle Babbler was feeding the fledgling which was almost double its own size.

Fig 3. Egg of a Jungle Babbler*

Fig 4. Egg of a Common Hawk Cuckoo*

**Adapted from Nahid et al., 2016*

We kept track of the juvenile bird for about 2 weeks and found that the whole colony of Jungle Babblers took care of it while the foster mother was busy collecting food. The baby would be hungry at various times during the day and made loud screeching calls to call the mother for food. The foster mother had to bring food for the fledgling, again and again, owing to the fact that the babbler had a small beak capacity in comparison to what the juvenile cuckoo actually needed to satisfy its hunger. In the absence of the mother, the juvenile would hop from one tree to the other (in the same area) trying to trace its mother. Its calls would be constant throughout the time and the intensity would dramatically increase when the mother comes back. All observations were mostly done between 9 am to 5 pm as the calls of the young cuckoo weren't heard late in the evening. Since no other baby babblers were found being fed by the mother, it suggests that the Hawk Cuckoo fledgling had evicted the host eggs before they hatched (Anderson et al., 2009) as is observed in nest parasitism.

Fig 5. Common Hawk Cuckoo juvenile perching on pipes laid on ground

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The fledgling exhibited a peculiar wing movement which was observed during the feeding session. In the present instance, it would raise its left-wing and keep flapping continuously accompanied by loud calls, as a gesture to inform the mother about its hunger. At the end of each round of feeding, the fledgling would rest its wing realizing that food was no longer available and would perch at different places waiting for the mother to return with more food. In another instance, the baby of Jungle Babbler was also found to exhibit similar typical wing movement patterns as seen in the Hawk Cuckoo fledgling which explains the adaptive behavior of the latter.

During such sessions, the young Hawk Cuckoo was also seen perching on the ground following its mother and other babblers in the colony (Fig. 5). Sharma and Sharma (2014) have also observed similar behavior in the same host-parasite duo as reported from Haryana.

All these observations were made in the campus of Regional Museum of Natural History, Bhubaneswar where the birds were found interacting mostly on trees like *Polyalthia longifolia*, *Tectona grandis*, *Terminalia catappa*, *Mimusops elengi* and *Putranjiva roxburghii*. It is also noteworthy that the place of recording is the backyard of a public place which is otherwise usually frequented by human beings in the daytime. This observation was recorded during the lockdown due to the global pandemic for COVID-19 when the museum was closed for public visitation and was not used by staff on daily basis.

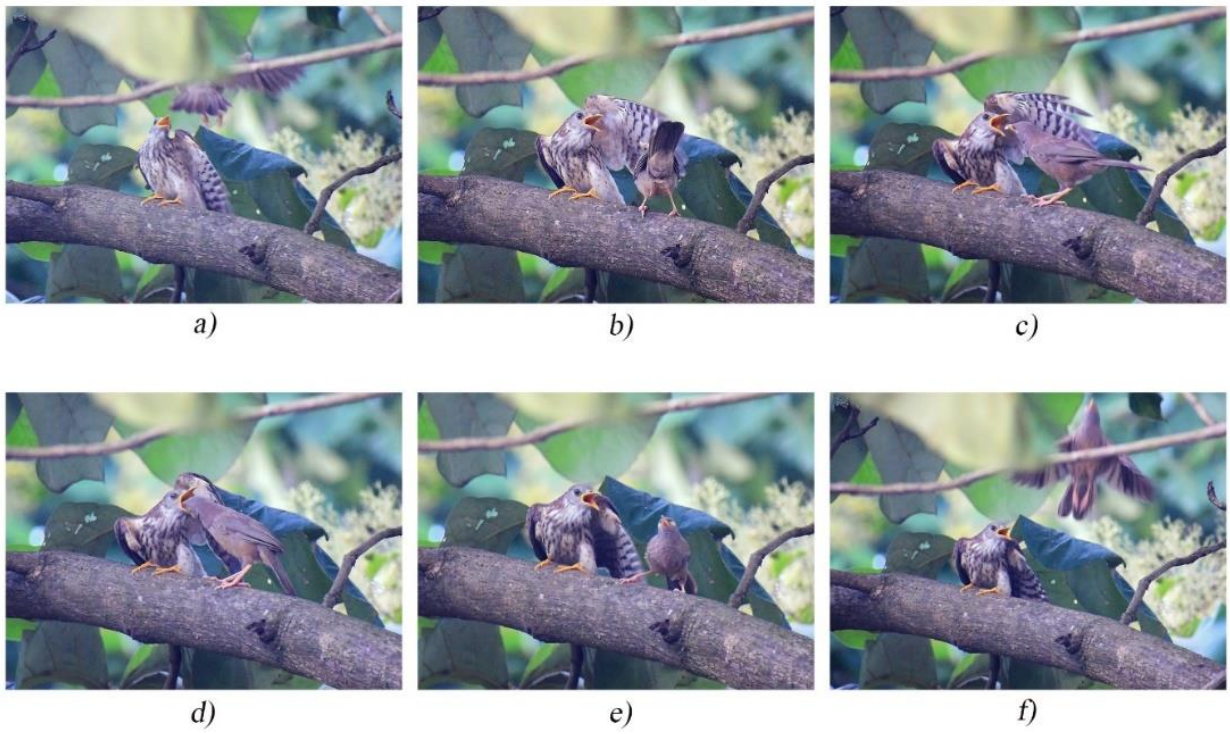

Fig 6. Jungle Babbler adult feeding the Hawk Cuckoo fledgling

(a) The juvenile Cuckoo perches at different places and gives loud calls to the foster mother seeking food. When the mother has collected the food, it flies back to the baby.
(b-d) The juvenile spreads its wings, typically raising the left wing, as a gesture for the mother to feed it. It continues to remain in this position all the time while it is being fed.
(e) Owing to the large size of the young cuckoo's mouth and the small beak feeding it, the mother has to give the food in repetitive turns to pacify its hunger. After the feeding round is over, the mother wipes its beak on the branch and realizing the food was over for this round, the baby closes its wing too.
(f) The mother takes flight in search of more food for the next round of feeding as the juvenile continues to stare at it in that position with loud calls. Once the mother is gone, the juvenile also stops calling.

While there are many accounts of brood parasitism of Common Hawk Cuckoo hosted by Jungle Babblers reported from various places (Gaston & Zacharias 2000), this is the first report from Bhubaneswar, Odisha. Natural history observations and documenting interactions in nature around us is crucial and a precursor to the conservation of biodiversity. Interactions of this sort depict the

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well-evolved, intricate inter-specific behavior of one organism and its dependence on another for its survival. Further studies in this direction can reveal more about the ethology and population dynamics of these birds in an urban man-modified ecosystem.

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Conflict of interest

The authors declare that there are no conflicts of interests.

Ethical approval

The Animal ethical guidelines are followed in the study for species observation & identification.

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Data and materials availability

All data associated with this study are present in the paper.

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