

Some cuckoo problems from Uttarakhand: Two cases of parasitism, and a case of egg-predation

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Introduction

Many species of the cuckoo family (Cuculidae) have evolved as brood-parasites: laying their eggs in the nests of other birds, foisting on them the burden of incubating their eggs, and the labour of bringing up their voracious young. Eventually, parasitic cuckoos transfer the entire cost of parental care to their hosts. It is well known that the host achieves little or no reproductive success from a successfully parasitised nest (Davies & Brooke 1988; Payne 2005), and synchronisation of the host's breeding cycle is crucial for successful parasitism (Wyllie 1975). Here, I discuss this subject in light of my field observations, by describing two cases of brood-parasitism, and a case of egg-predation, from the high-elevations of Uttarakhand, India.

Large Hawk Cuckoo *Hierococcyx sparveroides* parasitizing Chestnut-crowned Laughingthrush *Trochalopteron erythrocephalum*

On 06 September 2017, at 1205 h, while birding near the meadows of Dophanda Bugyal (30.55°N, 78.85°E; 3,020 m asl), I came across a young cuckoo perched motionless on a horizontal branch of a kharsu-oak tree *Quercus semecarpifolia* c.12 m above the ground. The dark streaking on the cuckoo's breast and chin, along with other plumage features, ruled out a *Cuculus* species, and I was easily able to identify it as a juvenile Large Hawk Cuckoo, which is one of the most vocal cuckoos in early summer at this elevation and habitat. The tree was shielded by Himalayan bird cherry *Prunus cornuta* with undergrowth of *Viburnum grandiflorum*, *Rosa sericea*, and *Cotoneaster acuminatus*. The forest was primarily oak *Q. semecarpifolia* and rhododendron *Rhododendron arboreum* with some stands of maple *Acer* sp., and a few silver firs *Abies pindrow*. In the bushes below the tree, I spotted the movements of a Chestnut-crowned Laughingthrush, trying to make its way up; but it retreated on sensing my presence. I decided to hide behind a bush and wait for the bird to appear again, taking the opportunity to observe the cuckoo fledgling [92], which was still perched calmly on the branch. As I was on a slope, the branch was nearly at my eye-level with good views of the forest floor through binoculars. After about four minutes, the laughingthrush appeared again in the bushes below, and quickly made its way up to the tree. It flew and hopped, branch by branch, up to the height where the cuckoo was perched, in swift agile movements; the cuckoo was not approached directly. The laughingthrush fed the young cuckoo on the tree branch and quickly retreated back down to the bushes on the ground.

During the period of observation, each feeding sortie lasted between 3–9 sec and the foster parent fed the cuckoo nine times in 30 min at slightly variable intervals. The cuckoo fledgling became excited each time it spotted its foster parent, whereas it would remain calm in between feeding sorties, when the foster parent was absent. When perched calmly, it constantly opened and closed its beak, and sometimes puffed its feathers, stretched its wings, and scratched its head (Sharma 2017a). In the absence of the foster parent, it would utter soft begging calls at times and slightly shiver its wings (Sharma 2017b). It remained fixed on the tree-perch and never followed the foster parent to the ground. From its tree-perch, it constantly kept a watch on the movements of the foster parent on the ground or the bushes below the tree. In the presence of its foster parent, the young cuckoo would utter loud begging calls and shivered one of its closed wings rapidly—which movement became more pronounced when the foster parent approached closer (Sharma 2017c). During the actual transfer of food to the chick, its loud begging calls would be uttered incessantly, as it received each mouthful, accompanied by an exaggerated display of opening one of its wings while simultaneously shivering it rapidly (Sharma 2017c). This host-present begging call can be described as nasal, whining, upslurred, then downslurred notes at around 2–4 kHz, lasting just under 0.1 sec, repeatedly uttered at the rate of one note per second. Once, when the feeding event was finished, the young cuckoo aggressively charged at the foster parent as though wanting to peck at it, probably to solicit more food. Two laughingthrushes were observed in the immediate vicinity; however this precludes making any claims about the actual number of birds feeding the cuckoo, or whether two birds were equally involved in feeding the cuckoo in succession.



92. Fledgling Large Hawk Cuckoo waiting for foster parent Chestnut-crowned Laughingthrush to feed it.

B. H. Hodgson observed the Chestnut-crowned Laughingthrush feeding this cuckoo, which he assessed as nearly a year old, probably in Nepal (Hume 1890). Rattray (1905b) collected the supposed egg of this cuckoo, blue in colour, from a nest of a Variegated Laughingthrush *T. simile*, from Dungagali near 'Murree Hills' in Pakistan in 1903, and noted that it was exactly like one he took 'years ago' from the oviduct of a female, probably from Mussoorie, as he saw this cuckoo only at Mussoorie and Murree (Rattray 1923). It is also not certain why Baker (1906b) stated that Rattray collected the said blue egg from the nest of a Streaked Laughingthrush *T. lineatum*, and not a Variegated Laughingthrush, whereas Rattray (1905a) originally attributed the former species to be parasitized by the Indian Cuckoo *Cuculus micropterus*. Rattray collected a similar blue egg, freshly laid in the nest of a Blue Whistling Thrush *Myophonus caeruleus*, which he discovered on spotting a female cuckoo near the nest; the locality was not mentioned (Rattray 1923). In 1904, Rattray collected a similar blue egg from the oviduct of a female near Murree, Pakistan, which matched his two unknown eggs, and that, according to him, finally settled the species identification (Rattray 1923).

B. B. Osmaston also found a nest of the Chestnut-crowned Laughingthrush with two eggs, near Nainital, at about 8,200 feet (2,500 m asl), during the rains of 1911 (Osmaston 1912). Intending to rear the young birds, he asked his staff to procure the contents of the nest. A few weeks later, the nest contained a young Large Hawk Cuckoo. Next year, in July 1912, A. E. Osmaston found three more nests of the laughingthrush in the same area, containing supposed Large Hawk Cuckoo blue eggs, which also matched well with Rattray's eggs. This instance was further reiterated by B. B. Osmaston after he found similar blue eggs in nests of a Lesser Necklaced Laughingthrush *Pterorhinus monileger* in May 1915 in Maymyo, Myanmar; and compared these with the Nainital eggs (Osmaston 1916).

Becking (1981) believed that blue eggs in the nest of laughingthrushes, attributed to Large Hawk Cuckoo in Baker's collection, all belong to the Common Cuckoo, subspecies *bakeri*. He dismissed the evidence of Osmaston's Large Hawk Cuckoo nestling from the nest of Chestnut-crowned Laughingthrush as the whereabouts of the skin were not known; he also overlooked that Rattray collected a female with a blue oviduct egg. Rattray's (1905a,b, 1923) observations are also cast in doubt by Roberts (1991), based solely on Becking's opinion, and he overlooked Magrath's (1908) record of a calling bird from Thandiani in June, not far from Dungagali; however, there have been no recent records of the Large Hawk Cuckoo from northern Pakistan (Roberts 1991). The Large Hawk Cuckoo is known to parasitize the laughingthrush species in China as well (Erritzøe et al. 2012; Yang et al. 2012). My observations establish that the Large Hawk Cuckoo indeed parasitizes the Chestnut-crowned Laughingthrush in India, and corroboration of this fact with observations in historical literature, which were dismissed previously despite some evidence, must therefore be looked upon as somewhat remarkable.

Common Cuckoo *Cuculus canorus* predated a Grey Bushchat *Saxicola ferreus* nest

On 23 May 2018, I was birding near the meadows of Panwali Kantha (30.57°N, 78.87°E; 3,260 m asl). The habitat is

subalpine, scattered with large oak *Q. semecarpifolia* and rhododendron *R. arboreum* trees with lots of shrubby bushes like *Berberis jaeschkeana*, *Rosa sericea*, and *Cotoneaster acuminatus*. At 1535 h, loud and frantic alarm calls from several bird species caught my attention. To my surprise, a male Grey Bushchat was aggressively mobbing a Common Cuckoo, attacking it with its claws and bill; and repeatedly uttering its nasal, guttural, and buzzy alarm calls. The cuckoo was very persistent and the mobbing continued for well over one minute; after which the cuckoo plunged head first into a small hollow opening in the ground, at the base of a root of a 1.5 m high cotoneaster shrub *C. acuminatus* (Sharma 2018a). The cuckoo appeared exactly three seconds later with a pale-coloured egg held in its bill, while continuously being mobbed by the Grey Bushchat mounted on its hind neck. In the next 20 sec, the cuckoo was charged three times by the bushchat and it tried to evade these attacks by opening its wings and flying to the ground a meter away from the nest, where it swallowed the egg whole, with a backward toss of the head. After an interval of just under 1.5 min, the cuckoo took another egg from the same nest, in a similar way, but with the bushchat mounted on the cuckoo's head clasp the cuckoo's bill with its claws (Sharma 2018a) [93–96].

After four minutes of more mobbing, the cuckoo re-visited the nest twice, appearing to be pecking at its contents for about 10 and 22 sec respectively, at an interval of just over 1.5 min (Sharma 2018b; Sharma 2018c), after which it flew to perch on a short 2 m high *Q. semecarpifolia* stump (Sharma 2018d). Throughout the time the cuckoo was pecking the inside the nest, it was mobbed by the bushchat mounted on its back. After the second pecking instance, it again flew to perch calmly on the same stump that was 3 m from the nest; the bushchat also perched on the same stump. Throughout the period of observation the female bushchat was not seen. At 1555 h the cuckoo flew away, and after waiting for a few minutes, I went to check the nest and found that it was empty, except for a few downy dark-greyish feathers. Despite the bushchat desperately trying to protect its nest, the cuckoo successfully destroyed its entire clutch. It is possible that the latter two nest-pecking visits by the cuckoo were to predate upon the young nestlings, since the first two visits for egg removal, and subsequent consumption, were done in the open outside the nest. The nest was difficult to locate, even from different angles, as it was on a slope and well concealed (probably, not to a cuckoo's eye!). Due to heavy rain and sleet I had to move away for shelter and could not observe the area until 1855 h, when the male was found perched and singing. The nest was checked the next day and it was still found empty but could not be observed again. The nest of the Grey Bushchat was exactly as described by Baker (1933), and would have typically contained 4–6 eggs. The eggs' colour, though it was difficult to determine, appeared pale and whitish.

Hodgson reported a similar instance of egg-predation of this species by the Common Cuckoo from Nepal, where he observed the cuckoo eating two eggs out of four in one nest (Hume 1890). A similar incidence of egg stealing and eating by *C. canorus bakeri*, from the nest of a Pied Bushchat *S. caprata burmanicus*, was reported from Myanmar in May 1938 (Livesey 1938). The egg-stealing behaviour is restricted to the female (Becking 1981). Although it was difficult to determine the sex of the cuckoo, from my observation, it probably was a female.



93. Common Cuckoo and Grey Bushchat stand-off after the egg-stealing and nest-robbing incident.



94. Empty nest of Grey Bushchat.



95. Nest of Grey Bushchat in the ground in the root of *Cotoneaster acuminatus*.



96. Habitat of nest of Grey Bushchat.

It is well known that the female cuckoo removes and eats one or more of the host's eggs and subsequently laying its own in the nest, and even full clutches of eggs, or young, may be removed or predated (Wyllie 1975; Davies & Brooke 1988; Moksnes et al. 2000; Davies 2015). There are three main hypotheses about why adult cuckoos may take all eggs and young from the nests of their hosts:

- I. To destroy whole clutches that have reached an advanced stage, forcing the host to lay a new clutch that would become available for parasitism, thus synchronising their breeding cycle with that of the cuckoo.
- II. To prevent other female cuckoos from laying eggs in suitable nests within the same territory.
- III. For their value as additional food.

It is known that female cuckoos can be very persistent, and will sometimes lay in a host nest even while they are being attacked by the hosts; however, host attacks and mobbing can sometimes damage cuckoos, which can also prove fatal; even smaller hosts, such as pipits and warblers, may damage the cuckoo's plumage during attacks with their bills and feet (Davies 2015). Thus cuckoos not only avoid parasitizing aggressive hosts for fear of getting damaged, but also may not treat the nest-contents as simply food when being mobbed, for the same reason. The latter therefore is carried out with a purpose, other than taking the contents just as food. However, since the cuckoo in question did not lay in the nest at the time of predation, it probably meant that she (the more likely gender) did not have an egg ready to lay. Therefore, future parasitism and the possibility of the cuckoo safeguarding nest-reserves by an act of full predation of nest-contents cannot be entirely ruled out in this scenario. However, another explanation for predation on unparasitized nests is that the cuckoo takes eggs because of their value as food. It could, however, be argued that if this was the reason, the cuckoo should take all the eggs and not act as a partial predator (Moksnes et al. 2000), which is what had happened. It is also known that the cuckoo may try to evade detection by the host by laying eggs very quickly in the host nest. They typically remove one egg and then lay their own, all done very quickly to avoid detection, which might precipitate desertion by the hosts (Davies 2015); however, it has also been proven that most egg-laying takes place in the presence of a host bird (Moksnes et al. 2000), which opposes the theory that the cuckoo solely treats the nest-contents as simply food if it realises that it has been detected. Therefore, in the absence of a single conclusive scenario, my observations preclude any claims other than the probability of the Grey Bushchat being the victim of a Common Cuckoo.

The Grey Bushchat is known to be a victim of Common Cuckoo in China (Erritzøe et al. 2012; Yang et al. 2012). However, there are no known records of a Common Cuckoo chick being raised by Grey Bushchats, and thus, to the best of my knowledge, there is no confirmed claim of Grey Bushchat, in its known range, being a biological host for Common Cuckoo. In Pakistan, Marshall, and Rattray found eggs of Common Cuckoo in the nests of this species in the Murree Hills, and Magrath found them at Thandiani (Hume 1890; Rattray 1905b; Baker 1906b; Magrath 1908; Baker 1908; Rattray 1923). J. Scully made similar observations in Nepal in addition to Hodgson's observation of egg-predation (Hume 1890). T. R. Livesey made similar observations in Myanmar

(Livesey 1935). However, there are no studies that endorse the identification of the eggs collected by these gentlemen. It can be concluded that my observations establish that Grey Bushchat is probably a victim of Common Cuckoo in India, but this still remains to be proven. It is uncertain whether my observations were a prelude to an actual case of parasitism or would have precipitated a case of nest desertion by the victim. In the light of this uncertainty, it is unknown whether Grey Bushchat is a true host of Common Cuckoo.

Common Cuckoo and Olive-backed Pipit *Anthus hodgsoni*

On 03 July 2015, while birding at Devkund meadows (30.82°N, 78.67°E; 3,650 m asl), I came across an Olive-backed Pipit actively feeding a young Common Cuckoo. They were on a grassy alpine meadow carpeted with flowering herbs, scattered with clumps of bell rhododendron *R. campanulatum*, and strewn with some big rocks and boulders. The weather was extremely wet and windy at that elevation. At 1630 h, I found the pipit foraging for food on the grassy meadow, and flying to a 2 m high boulder upon which the young cuckoo was perched. The fledging cuckoo uttered loud begging calls each time it was fed, and its host-present begging call can be described as very high-pitched, down-slurred, coarse buzzy notes around 6–7 kHz, lasting just over 0.2 sec, and uttered at the rate of one note per 2 sec (Sharma 2015). In the absence of the host, the cuckoo continued to utter this call at random intervals, while perched motionlessly. The begging call of this fledgling cuckoo sounds impressively similar to the call of the Olive-backed Pipit, which is down-slurred and buzzy, at nearly the same pitch. Due to inclement weather, I was unable to photograph the feeding and begging behaviour, but managed to make an audio recording of the moment (Fig. 1).

It is speculated that there is a possibility of vocal resemblance between the calls of young parasites and that of their hosts (Redondo & Arias de Reyna 1988). In this context, the subject needs further study by obtaining a larger sample size of fledgling Common Cuckoo audio recordings from India. It is well known that the Common Cuckoo lays its eggs in the nests of pipits in India (Baker 1906a), and my observations establish that the Common Cuckoo parasitizes the Olive-backed Pipit in India, at high elevations.

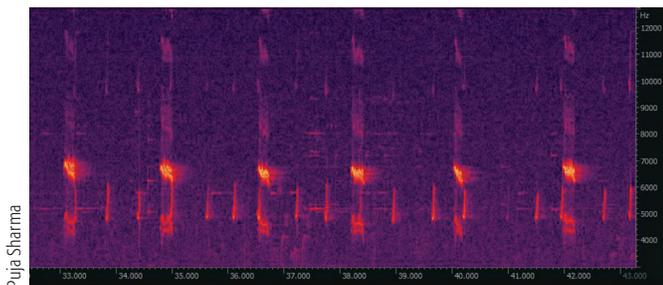


Fig. 1. Spectrogram of begging calls of young Common Cuckoo being fed by Olive-backed Pipit.

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