

Observations on the breeding behaviour of the Broad-tailed Grassbird *Schoenicola platyurus* at Belgaum, Karnataka, India

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Abstract

The Broad-tailed Grassbird *Schoenicola platyurus* is an endemic of the Western Ghats, India. It inhabits grassy, bracken-covered hillsides, and swampy patches. It breeds from July to September, as well as from March to May. Various aspects of its breeding were studied: territoriality, courtship, nesting, eggs, incubation period, nestlings, parental care, and dispersal. Some interesting observations recorded for the first time include, mate selection attempts, response to a perceived threat by intruders, a clutch-size of five eggs, an incubation period of c. 10–13 days, and a fledging period of 13 days. We noted that the female alone incubates, but the nestlings are fed by both parents. It is interesting that in the study area many other Broad-tailed Grassbird individuals were present, especially since this is a habitat quite different from those noted by earlier observers.

Introduction

The Broad-tailed Grassbird *Schoenicola platyurus* is an endemic bird of the Western Ghats, India, and is categorised as 'Vulnerable' by BirdLife International (2016). It is restricted to the grassy, bracken-covered hillsides, reeds, swampy patches, and bamboo clumps in the Western Ghats ranges (Ali & Ripley 1997; Rasmussen & Anderton 2012). In the Western Ghats complex it ranges from western Maharashtra in the north, through Belgaum, Karnataka, and Goa, to eastern Kerala, and up to western Tamil Nadu in the south (Ali & Ripley 1997; Madge 2016).

Our knowledge of the breeding habits of the species are still very sketchy, known only from sporadic observations. Ali (1999), noting the status of birds' gonads, recorded that it had two breeding seasons: from July to September, and from March to May. Its nest is a bulky ball of coarse dry grass blades, with an entrance hole at the side. The nest is well-concealed and placed up to one meter above the ground in tall, dense grass, or grass tussocks. The nest is, in all probability, built entirely by the female, while her mate sings from a nearby perch. Two to three eggs comprise a clutch (Jackson 1971; Ali & Ripley 1997; Madge 2016). It is pertinent to mention here that much of its breeding biology was recorded in Baker (1924), from the Belgaum area, based upon the nests collected by E. H. Butler, in September 1880, and T. R. Bell, in September 1900. Both the

gentlemen noted nest structure, and brood-size, and described its eggs (Baker 1933). Recently studies have also described a few details of the breeding behaviour of Broad-tailed Grassbird (Anonymous 2011; Ramesh *et al.* 2011; Rahane *et al.* 2016).

However, despite these observations, a comprehensive picture of its breeding behaviour is still lacking, partly due to the shy, and skulking nature of the bird, and also since it is scarce, and not easily seen. Details of display, flight song, incubation period,

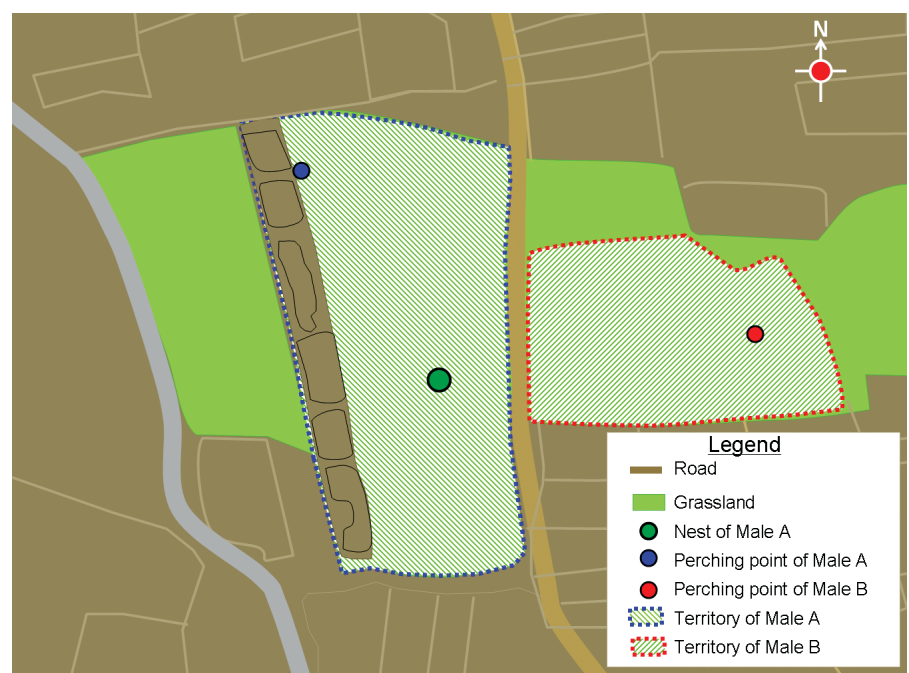


Fig. 1. Breeding territories of two Broad-tailed Grassbirds.

and parental care have, hitherto, been incompletely described. The present study attempts to provide some supplementary observations to fill some of these gaps in the breeding habits of the species.

Methodology

Study Area

Two male Broad-tailed Grassbirds (designated A and B) were sighted on 25 August 2016, on the gentle slopes of a small hillock near Yellur Village (15.87°N, 74.5°E), approximately seven kilometers south of Belgaum, Karnataka.

We recorded their activities between 25 August and 25 October 2016. The birds were observed in the morning between 0630 and 0930 hrs, almost every day, and additionally, a few times in the late afternoons before sunset. We ensured a safe distance between us and the nesting birds, so as not to disturb them. The breeding activities were observed from a vantage point in the field. We exercised extreme caution while examining nests for eggs, and chicks, when both parents were away. Visits to the nest were kept brief, and all care was taken to minimize any disturbance. The male and female could be separated from each other, in the field, by the dark mouth, and upper mandible, of the breeding male, and a pinkish-to-reddish mouth, and a pale bill in females (Rasmussen & Anderton 2012; Madge 2016).

Over several visits, we identified, and marked, the singing locations of males to map their respective territories, and calculate their areas (Bibby *et al.* 1998). The territories were

adjacent to each other, and were separated by a road (Fig. 1). The breeding territories were in a patch of wild grass surrounded by small agricultural fields where various crops were grown. The patch where the birds nested, on a hillside, was covered predominantly with *Themeda tremula*, *Alysicarpus pubescens*, and scattered bushes of *Flueggea leucopyrus*. In general, the height of the grass was c. 90 cm.

Observations

Male A (*henceforth*, MA) [50] had a territory of c. 1.2 ha in the wild grass patch, and male B (*henceforth*, MB), c. 0.8 ha of similar habitat. The males were not observed crossing the boundaries of their respective territories.

Territorial and courtship displays

On 25 August, MA, and MB were both seen singing and displaying from the tops of bushes in their territories. They also performed several aerial display flights, during which, the birds would soar in the air for about 5–10 min, singing, and then parachute down, near to where they started the display. The flight was clumsy and, while descending, the wings were spread out, and the tail feathers fanned open. Territorial song, and display flights were performed almost continuously in the morning, their frequency reducing considerably by the evening. The display, and singing of MB [51] was more vigorous, and sustained for a much longer duration than that of male A. The males did not face each other while performing their respective aerial displays.

Interestingly, MA displayed, and sang from the north-western corner of his territory, whereas his nest was located in the south-eastern block of his territory (Fig. 1). MA uttered a harsh “ttrrrrr” warning call whenever MB ventured close to its territory.

When the study began, MA had already paired with a female, which was sighted only a couple of times during the study period. Her presence was first confirmed only when she uttered the “peek peek” call, and came out of the grass for a brief period of time, only to disappear into the grass again. Whenever the female showed up, MA would immediately follow her into the grass. After a few minutes, he would emerge from the grass, and fly to its favourite perch, from where it sang, and displayed. Once the female started incubating, his singing reduced considerably, and the aerial displays almost stopped.

On 16 September 2016, one female was observed visiting MB's territory. She moved around, visiting various bushes, possibly inspecting suitable nesting sites. The male followed



50. Male A singing in his territory.



51. Territorial display flight of Male B.



52. Nest with eggs.

her, and perched on a nearby bush, when she dove into a bush surrounded by grass. He neither sang, nor displayed while she moved around. Both birds uttered soft “*peenk peenk*” calls. After c. 30 min, she flew away, and he trailed her up to the boundary of his territory. He then flew to his favourite perch, started singing, and performing display flights. The same sequence of events was repeated again a couple of days later, but it could not be ascertained whether it was the same female that visited the territory. Notably, it was a different female as the female of MA was incubating in its nest. MB was eventually unsuccessful in finding a mate.



Pics: Niranjan Sant

53. Female that paired with Male A carrying food to nest.

Nest and eggs

On 04 September 2016, in MA's territory, we spotted the female carrying some grass into a bush. Later, after she had left, we found a completed nest. The nest was c. 40 cms above the ground, in grass, very close to a *Flueggea leucopyrus* bush. It was a small ball of grass, c. 20 cms in diameter, with a large entrance of around 5 cms, facing west [52]. It comprised dried grass blades, was lined with finer grass, and on the outside was covered with large grass blades.

The nest already held three eggs; blotched heavily with purple and pink. A fourth egg was seen on 07 September, and a fifth on 08 September. The female was seen leaving the nest quite often, or, was at least heard, till the fifth egg was laid. Then onwards, the female was observed incubating during most of the day. She would come out of the nest for only a few minutes and disappear at the bottom of the grass (probably foraging?). Whenever she flew out of the nest, MA would accompany her. He followed her close behind, flying above her as she took short flights. Both birds uttered the “*peenk peenk*” call at this time. He also followed her, every time she returned to the nest, and would perch on a bush near the nest, for few seconds, and then fly away. We did not see him taking any part in the incubation.

During the incubation period, MA was very aggressive towards other birds like Plain Prinia *Prinia inornata*, Zitting Cisticola *Cisticola juncidis*, and Malabar Lark *Galerida malabarica*. If any of these birds approached his territory, he chased them away. MA uttered a harsh “*tttrrrrr*” call when he spotted a Black-winged Kite *Elanus caeruleus*, or a Pallid Harrier *Circus microrurus* in the vicinity of the nest. This call was similar to the warning given to MB, mentioned earlier.

Nestlings

On the morning of 17 September, the female was observed carrying small items of food to the nest [53]. When she left the nest, we checked it, and were delighted to see three hatchlings; an unhatched egg also remained in the nest. The fifth egg was missing. Both the parents were seen feeding the nestlings [54]. They brought them grubs, egg sacks of various insects, and larvae of various insects including—mantids (Order: Mantodea), grasshoppers (Order: Orthoptera), and earthworms (Order: Megadrilacea). The birds would land in the branches of the *Flueggea leucopyrus* bush, and walk down the branch to the nest, before entering it.

During the first three days, very small prey items were brought to the nest. The size of prey, and the feeding frequency increased as the days progressed. For a few, initial days, the birds came six to seven times in an hour, with prey. Later, this increased to c. 14 deliveries per hour. The birds hunted for prey by diving to the bottom of the grass tussocks, and scampered around like mice, searching for food. They hunted food from around the nest, never ventured out of their territory. The frequency of feeding reduced drastically by 28 September, when only three prey deliveries were made in an hour. At this time, we heard the nestlings call for the first time; it was similar to, but softer than the “*peenk*” of their parents. We saw the three chicks huddled together, while the (fourth) unhatched egg was missing. The nestlings had yellow beaks and were reddish-brown above, lighter than the adults.

Post hatching, and during the period the pair fed their nestlings, we did not observe any territorial displays by MA. However, we observed another type of display by both birds, where they raised their wings, as if they were going to take off,



54. Male A carrying food to nest.



56. Fledgeling of Broad-tailed Grassbird.



55. Male A displaying with raised wings, and fanned tail.

Pics: Niranjan Sant

and fanned their tails. They did this when they neared the nest for feeding the young. MA displayed thus 13 times [55], while his hen, thrice.

On the morning of 30 September we noticed that all three nestlings had fledged, and were in the grass nearby. They could not be seen in the thick grass, but were, presumably, at the bottom of the grass. Based on the feeding trips made by the parents, and the calls of the fledglings, it could gauge that one of the fledgling was c. 3 m behind the nest, and remaining two, some 5 m in front of it.

The fledgelings' wings had not developed fully, and they were not ready to fly. Brooks (1880) mentioned that this species, for its size, has rather sturdy legs. This suggests that the nestlings come out of the nest well before they can fly. It is possible that the juveniles do this to avoid predation, thus increasing the chances of survival.

It was interesting to note that the female fed one nestling while MA fed the other two. After 30 September, during several visits to the site, we observed that the nestlings had changed their location, but had not ventured more than 10 m from the nest. On subsequent visits, we observed that the nestlings had moved quite far from the nest and from each other. The parents located the nestlings by their calls and fed them.

On 10 October, we observed one of the fledgelings for the first time after it had left the nest [56], when it took off from the bottom of the grass and sat on a clump of grass for a very brief period. It was almost the size of the parent, except it had a very short tail. The colour of the nestling was olive on top and yellowish below, with a yellow beak, and pale-coloured legs. No sooner did it appear on top of the grass, than the female came up to it, 'frantically' uttering the "peenk peenk" call till it dived back to the bottom of the grass, a few meters from where it had perched. The female later brought food, and fed the nestlings. On subsequent visits, we found the family in constant contact, but the feeding frequency had gone down considerably. On 18–19 October, no feeding was observed, but the birds kept

Table 1: Observation on breeding behaviour of male Broad-tailed Grassbirds carried out between August and October 2016.

Behaviour	Male A	Male B
Territorial, and courtship display	Started on or before 25 August, continued till 8 September, when female started incubating.	On or before 25 August till 27 September.
Nest building	Female was seen taking few grass blades on 04 September.	No further observations since the male could not find a mate.
Eggs	Five eggs: three on, or before, 04 September, fourth on 07 September, and fifth on 08 September. Egg-laying commenced on 02 September.	-
Nestlings	Three nestlings on 17 September, one egg unhatched, and one missing.	-
Fledging	All nestlings left the nest on 30 September but stayed in the vicinity of the nest.	-
Fledglings, and dispersal	Parents fed the fledglings till 19 October. The nestlings stayed in the vicinity of the nest at least until 25 October.	-

calling. On 25 October, we saw one adult and two nestlings for a fleeting moment, but did not observe any interaction between them.

Discussion

There is very little published information on the breeding of the Broad-tailed Grassbird, perhaps due to its elusive habits, and skulking nature. The clutch-size noted by earlier workers (Baker 1929; Baker 1933; Ali & Ripley 1997; Ali 1999; Anon. 2011) was between two and four, while the nest observed during the present study held five eggs. Earlier studies (Baker 1929; Baker 1933; Ali & Ripley 1997; Ali 1999; Anon. 2011; Rahane *et al.* 2016) do not mention any incubation, or fledging periods. The present observations indicate that the incubation period of the Broad-tailed Grassbird lasts for about 10–13 days. The nestlings fledged approximately 13 days after hatching.

That only the female incubated requires further study, for species in which only the female incubates, the needs of the embryos must be balanced with nutritional needs of the incubating female (Conway & Martin 2000). Further, we did not observe the male feeding the female, which could have, partially, or fully fulfilled the nutritional needs of the female.

The species' habitat in the study area, near Belgaum, is different from the habitat in which the Broad-tailed Grassbird is usually seen in the Western Ghats. The successful breeding near Belgaum shows that this is probably an adaptive species, considering these dissimilar habitats: Hilly regions, at higher altitudes of the Western Ghats, and the grassy areas surrounded by agricultural fields near Belgaum. It is important to note that in early 2017, we observed four more males, and a female, not very far from the breeding territories studied above (Sant *et al.* 2016). This makes a total of six males, and three females, in a radius of four kilometers, suggesting a good population of these birds. Hence, there could be more breeding pairs in this area. A further survey of this bird around Belgaum, in similar habitats, will further clarify the status of this Vulnerable species in this region.

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