

Minivets lay 2 to 3 eggs at a time. What happened to the other chicks? Were they also being fed at the same time, and was there a final re-union?

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14. FREQUENCY AND DURATION OF INCUBATION OF THE EGGS FOR *AEGITHINA TIPHIA*

Material and Methods:

A pair of Iora were observed in their breeding activities from March 22, 1979 and April 27, 1979 in Tiruchirapalli, Tamil Nadu. Incubation of the eggs began with the laying of the first egg on March 27, 1979. There were two eggs in the nest, the second egg having been laid on March 29, 1979. Both the members of the pair were observed closely for two days — on April 4, 1979 and April 7, 1979 — from the first change of duty at 6.40 a.m. till the female sat on the eggs for the night at 4.30 p.m. and 5.05 p.m. respectively. The nest with the two eggs was placed at a height of 20 feet from the ground at the parting of three outer twigs of a neem tree. The observation was made with a pair of binoculars 8 x 30 mm. Field 7.5°.

Results and Discussion:

The results of the observations made on April 4, 1979 and April 7, 1979 were tabulated and given in Tables 1 & 2.

The data for the first day showed that during the period between 6.40 a.m. and 4.30 p.m. the male was on the eggs six times with an average sitting duration of 53 mts and a total of 318 mts for the day. The female bird sat five times with the duration averaging at 54.4 mts and a total of 272 mts. The male had spent longer time on the eggs during the day than the female.

For the second day the data showed a trend similar to that of April 4, 1979, the male warming the eggs six times with a total duration of 325 mts at an average of 65 mts and the female performing it five times for 300 mts at an average of 60 mts.

It was obvious that there was alternate care of eggs by the two sexes. The brooding by the female less by a sitting and for shorter total duration during the day than the male did not indicate a shift to the male the burden of incubating. For assuming that the female rose up for the days at 6.40 a.m. on April 5, 1979 and April 6, 1979 the average duration in minutes for the night shifts would be 832.5 mts for the female.

Conversely, the male and the female were out of the nest alternately for a total of 272 mts and 318 mts respectively, the female foraging for 46 mts more than the male (Table 1). On April 7, 1979 they showed a similar trend, the female having been away from the nest for 25 mts more than the male (Table 2).

Could it be argued that the female was spending more time out of the nest to gather enough food to meet the energy requirement during the night for production of warmth for the eggs? A closer study of the tables suggests that the male bird had spent more time away than the female bird. On both the days under study, the female was away feeding six times. But the average time dura-

TABLE 1

DURATION (IN MINUTES) OF INCUBATION FOR EACH SITTING; 4-4-1979

Duration in minutes of incubation by the male	Time of arrival—male	Time of arrival—Female	Duration in minutes of incubation by female
50	6.40 A.M.	7.30 A.M.	
30	8.05 A.M.	8.35 A.M.	35
40	9.35 A.M.	10.15 A.M.	60
45	11.25 A.M.	12.10 P.M.	70
48	1.24 P.M.	2.12 P.M.	74
105	2.45 P.M.	4.30 P.M.	33
318			272

TABLE 2

DURATION (IN MINUTES) OF INCUBATION FOR EACH SITTING; 7-4-1979

Duration in minutes of incubation by the male	Time of arrival—male	Time of arrival—Female	Duration in minutes of incubation by the female
55	6.40 A.M.	7.35 A.M.	
30	8.10 A.M.	8.40 A.M.	35
45	9.40 A.M.	10.25 A.M.	60
100	12.00 Noon	1.40 P.M.	95
25	2.25 P.M.	2.50 P.M.	45
70	3.55 P.M.	5.05 P.M.	65
325			300

tion for which she was away from the nest was 53 mts, 1.4 mts less than for the five foraging trips of the male for the first day. The corresponding time scales for the female for the next day were 64.16 mts and 4.16 mts

respectively. It was evident that the male was spending more time, on the average, on foraging than the female though the number of trips he made was fewer by one than his mate. This might be a necessary exercise for him

because he had to sit on the eggs six times the total duration of which exceeded that of the female's.

Conversely, the data also suggests that the length of time the female spent on foraging increased from about noon until her sitting on the eggs for the night. The total period for the second set of three foraging for the first day was 198 mts which was 78 mts more than that for the three earlier trips that day. The corresponding values for the second day were 195 mts and 65 mts. It appears as though the female was preparing for the night's brooding, storing enough energy in her body. This argument, however, has the disadvantage that it does not consider the fact that the male was free to forage from the moment he was last relieved from duty by the female at 4.30 p.m. and 5.05 p.m. on the two days of observation. Hence it cannot be said with certainty that the female gathered more food for the nights than the male did for his roosting.

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Conclusion:

The male and the female iora share the duty of incubating the eggs, both taking turns to sit on them. During the day the male incubates for longer duration than the female. The female sits on the eggs for the night.

The male appears to spend more time on the average on collecting food than the female. However the female incubates for much longer duration when the day and night sittings are taken together. Nevertheless, it is not certain if the female accumulates and spends more energy on incubation than the male does. Two more thoughts that occur and need verification are that (1) the periodic shifts might be to dissipate the extra thermal energy generated during incubation; and (2) the out-of-the nest sojourn may have the additional purpose of keeping themselves oriented to the familiar nature environment.

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15. *HYPSIPETES MADAGASCARIENSIS SINENSIS* (LA TOUCHE): A FIRST RECORD FOR INDIA

In late 1981, my wife and I joined Dr. Salim Ali and colleagues from the Bombay Natural History Society in an ornithological survey of the Namdapha Wildlife Reserve, Tirap District, Arunachal Pradesh. On 20 December 1981, we were fortunate to obtain a specimen of an apparently adult female of the bulbul *Hypsipetes madagascariensis sinensis* (La Touche), a first record for India.

The Black Bulbul, *H. madagascariensis*, is a wide-ranging species that occurs from Madagascar to Afghanistan, India, southeast Asia, China and Taiwan (Deignan 1960). Sixteen subspecies are currently recognized (ibid.), and of these, four have been recorded from India: *psaroides*, *ganeesa*, *humii* and *nigrescens* (Ripley 1982). The resident population in Arunachal Pradesh is *nigrescens*, a bird that is



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