PARASITISM BY THE BROWN-HEADED COWBIRD ON A BROWN THRASHER AND A CATBIRD

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DESPITE the accumulation of an impressive body of information (summarized by Friedmann, 1929, 1963) on the breeding biology and social parasitism of the Brown-headed Cowbird (*Molothrus ater*), most of the evidence concerning the cowbird's activities at the nests of its hosts remains circumstantial, and reports of direct observations of these activities are remarkably few. Even in some of these instances it is difficult to interpret the evidence and one often wishes that more details had been given. In view of this, and following the example of Mayfield (1960:164–171), we herewith report our observations (all 1965) of parasitism by a cowbird on a Brown Thrasher (*Toxostoma rufum*) in some detail. Incidentally we have included some brief notes on a parasitized nest of a Catbird (*Dumetella carolinensis*).

OBSERVATIONS AT THE THRASHER NEST

4 May.—A pair of Brown Thrashers completed their nest. It was four feet up and well concealed at the east end of a dense climbing rose which extends 20 feet along the south side of a redwood board fence, just north of our home in Lawrence, Douglas County, Kansas.

5 and 6 May.—No observations.

7 May.—Very early in the morning we caught the female Brown Thrasher in our mist net. We do not know if she had been to the nest earlier that morning to lay an egg. She was badly entangled and we disentangled her with some difficulty. We banded and released her (USFWS 623-40000 and red color band). However, after she had flown some 15 feet, she dropped to the ground and we realized that she had probably sprained her wing. Because of this we watched her closely for the next several hours and were aware at all times of her location and condition. Through this period her mate closely attended her. Neither of the thrashers returned to the vicinity of the nest until late afternoon. At 11:00 we checked the nest. It contained one egg of the Brown Thrasher and one of a Brown-headed Cowbird.

At 12:32 a male and female cowbird flew in from the north and alighted on the fence, about 10 feet east of the thrasher nest and about 2 feet apart, the female being nearer the nest. After remaining thus for about two minutes, the female started edging towards the rose. She was followed by the male who precisely maintained their original distance of separation. The female's actions seemed entirely purposive—she seemed to know of the nest. She disappeared into the cover of the rose near the nest site. The male waited on the fence, facing north, just east of the rose. After about two minutes he flew off to the north. We did not see the female depart and thought she was still at the nest.

At about 12:40, a male and female cowbird appeared from the north and landed in a nearby tree. The male remained there, but the female flew to the fence top, just west of the rose, and immediately disappeared into the cover of the rose. In about 30

seconds, an empty-billed female cowbird emerged abruptly from the area of the nest, chattering sharply, and flew rapidly to the east. She was followed immediately by the male. Since we had seen "two" females arrive and only "one" leave, we assumed that one was still on the nest. Thus we waited eight minutes before investigating.

When we did, we found that no cowbird was at the nest and that the nest now contained only one egg—that of the thrasher. A short search revealed the fragmented shell of the still fresh cowbird egg, parts lying a few inches on either side of the fence, beneath the nest. The horizontal boards of this fence are so lapped that an egg could easily be dropped through one of the interstices. It seems highly probable that the "first" female had departed unseen through one of these openings, dropping the egg en route and being followed by the male. (This route later became the favorite one of the thrashers as they entered and left the nest area.)

8 May.—At 08:30 a female cowbird was seen perched about 10 feet west of the rose looking intently in the direction of the nest. The male thrasher was perched just west of the rose, erect and watchful; after a few minutes the cowbird flew away to the east. We immediately checked the nest, flushing the female which apparently had begun to incubate, and found another cowbird egg, but only one thrasher egg rather than the two we had expected. The female thrasher seemed to be fully recovered from her injury of the day before.

At 12:32 (almost exactly 24 hours after the visit of the day before) a female cowbird appeared alone on the fence a few feet west of the rose. Again, seeming quite purposive, she entered the cover and was out of sight just the requisite time to reach the nest. She then emerged with conspicuous abruptness and departed hastily eastwards, having discovered the female thrasher on the nest.

9 May.—Morning and evening checks of the nest revealed its contents unchanged. A thrasher flushed from the nest at 09:00, but the birds seemed somewhat less attentive than they had on 8 May, and none was on the nest at the evening check. At 18:48, a female cowbird appeared on the fence about 25 feet east of the rose. She took considerable time going to the rose but seemed entirely purposive. After a short time at the nest (as indicated by agitation of the surrounding vegetation) she departed to the north. The contents of the nest remained the same as before, i.e., one cowbird egg and one thrasher egg.

10 May.—At 10:00 the nest now contained two Brown Thrasher eggs and one cowbird egg.

11 and 12 May.—Situation unchanged. The thrashers seemed very attentive during these two days and one was flushed at the times of the three checks we could make (both mornings and the first evening).

13 May.—At 11:00 the nest was checked and a thrasher flushed. The nest contained two thrasher eggs but no cowbird egg. An immediate search revealed no trace of the missing cowbird egg, but we did discover an egg of a thrasher, one end embedded in the mud and its shell nearly intact save for the point of impact, where it was badly smashed. The yolk was hard and dry. It was just south of the fence, at a point previously unsearched, about six feet west of the nest and still within the confines of the rose.

Subsequent days.—The male thrasher evidently met with some accident and was not seen after 15 May. The female incubated her remaining two eggs in an increasingly desultory fashion for two more days, being last seen on 18 May. After that date two different thrashers appeared regularly in the yard. On 21 May we took the two abandoned thrasher eggs. They contained moderately advanced embryos.

OBSERVATIONS AT THE CATBIRD NEST

A pair of Catbirds built a nest in a forsythia bush about 25 feet from the site of the Brown Thrasher nest. Three Catbird eggs were laid in the nest, one each on 30 and 31 May, and 1 June, and two Brown-headed Cowbird eggs were laid there, one each on 31 May and 1 June. The female Catbird stayed at the nest much of the time after the appearance of her first egg, although we do not know if she was incubating. A female cowbird appeared near the bush on several occasions but she always disappeared behind the bush and we were not able to see if she went to the nest or flew directly away. In any event, no eggs were removed from this nest. The female Catbird was apparently incubating the cowbird eggs along with her own when the nest was destroyed by a violent hailstorm in the early evening of 1 June.

These data are presented because there are few records of a Catbird accepting cowbird eggs (see Friedmann, 1963:69–70). The fact that the cowbird did not remove any of the host's eggs from this nest may result from the very early attendance by the female Catbird to her nest.

DISCUSSION

Proprietary interest by cowbirds in nests of their hosts.—On the basis of his own observations of Kirtland's Warblers (*Dendroica kirtlandii*) and those of various other workers on other species, Mayfield (1961) concluded that cowbirds show a proprietary interest in nests which they have parasitized or are about to parasitize. Our observations strongly support that conclusion. In all, we recorded five visits to the thrasher nest by a female cowbird, ranging from 08:30 to 18:48 and on three days. Although we kept no record of our total observation hours, we spent a very small proportion of our time watching the nest, and the five visits thus suggest a high degree of interest by cowbirds in the nest site.

Pair bonds of cowbirds.—Our observations agree with those of Laskey (1950) which suggest that cowbirds form a pair bond and tend to occupy a certain area or "domain" (see pp. 166–167). Our two observations of a male cowbird accompaning a female to the nest site, and of his waiting for her while she went to the nest, seem to be unique. At no time did we see more than one male and one female in the area until 1 June, when a flock of 10 (about equal numbers of males and females) was seen in a neighbor's yard, about 100 feet from the nests in question. Throughout the period, a male cowbird frequently sang from a television antenna across the street. We are inclined to think, therefore, that we may have been observing the activities of only one pair of cowbirds, in their domain, and that all four eggs may have been those of one female.

Time of removal of eggs by a cowbird.—It now seems to be a well established fact that the female cowbird does not remove an egg at the time she lays, but does so any time from the day before to (rarely) the day after that event. Our observations support this fact although we were unable to

tell whether the cowbird was removing eggs in advance of or after deposition. The time of day of egg removal on 7 May was approximately 12:30. It is possible that the female which appeared at about that time on the next day also came for that purpose but was frustrated in her attempt by the presence of the female Brown Thrasher. This is somewhat later in the day than that observed by most, but not all, workers (see Norris, 1944, for a summary, and Mayfield, 1960:160).

Discrimination by the cowbird between eggs.—Our evidence clearly indicates that a cowbird egg was removed by a cowbird, on 7 May, and it seems very likely that the second cowbird egg was removed by a cowbird also.

We know of only a few other reported instances where the suggestion has been made that a cowbird had removed a cowbird egg from a host's nest. Mayfield (1960:164), in his extensive study, found no evidence that the cowbird ever made such a mistake at the nest of a Kirtland's Warbler. However, Hann (1937:204) found that approximately 30 Ovenbird (*Seiurus aurocapillus*) eggs and 4 cowbird eggs disappeared "under circumstances which indicated that the Cowbird had taken them." Laskey (1950:171–172) reported the apparent destruction by cowbirds of cowbird eggs in a nest of a Cardinal (*Richmondena cardinalis*) and one of the Rufous-sided Towhee (*Pipilo erythrophthalmus*). However, she found that at both nests several cowbirds had been engaged in heated disputes, and she concluded that the destruction of cowbird eggs resulted from the rivalry of two or more females.

Erwin E. Klaas (pers. comm.) has evidence (which he plans to publish later) which suggests that cowbirds have, on occasion, removed their own eggs from nests of the Eastern Phoebe (*Sayornis phoebe*). In these instances, however, the cowbird may have had no choice, since it is possible that only cowbird eggs were present.

It is possible that a cowbird also removed the cowbird egg which disappeared from one nest of a parasitized Brown Thrasher reported by Taylor and Goertz (1965).

Because the eggs of Kirtland's Warblers, Ovenbirds, and Brown-headed Cowbirds are all whitish and lightly speckled, Mayfield (1960:164, 1961:165) concluded that the cowbird discriminates on the basis of size. He noted (1961:165): "The mean size of Brown-headed Cowbird eggs in Kirtland's Warbler nests is 20.9 by 16.5 mm (N = 24); of Ovenbird eggs, 20.3 by 15.6 mm (N = 48, Hann, 1937:172); of Kirtland's Warbler eggs, 18.1 by 13.9 mm (N = 154)." We measured 27 Brown Thrasher eggs (which also are whitish and lightly speckled) in the University of Kansas collection, these being one each from 27 clutches taken in Johnson and Jackson counties in western Missouri. The eggs are highly variable in size, shape, and color, but they averaged 26.9 mm (range, 24.2–29.6) by 19.8 mm (18.9–21.2).

Thus, if the size of the egg is important, even in part, in the cowbird's ability to discriminate between eggs, we would expect a rather high percentage of mistakes to be made at Brown Thrasher nests, since in these the cowbird's egg is the smaller egg, the opposite of the situation with nearly all regular hosts. We think this might account for the fact that there are surprisingly few records of parasitism of Brown Thrashers (see Friedmann, 1963:71), the evidence regularly being destroyed by the cowbirds themselves.

SUMMARY

Two Brown-headed Cowbird eggs were laid in a Brown Thrasher nest. A male and female cowbird, which, from the attendance of the former on the latter, seemed likely to have a pair bond, twice visited the nest area. We think this was the female that also showed a high degree of interest in the nest on other occasions over several days. Both cowbird eggs were eventually removed from the nest, at least one being thrown out by a cowbird. The cowbird may discriminate between its own and, at least, similarly colored eggs on the basis of size and would thus be expected to make a high percentage of mistakes at Brown Thrasher nests.

Two cowbird eggs were also laid in a Catbird nest and were being incubated by the Catbird until the nest was destroyed by a storm.

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