

REDSTARTS AND COWBIRDS

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The American Redstart is a common victim of Cowbird parasitism (Friedmann, 1929). In Ithaca, Mary Benson (1939) found 74% of the nests in her study area had one or more Cowbird eggs. However, the Cowbird population in this area is particularly high and is probably not typical of the situation in many other parts of the Redstart's extensive breeding range.

The effects of Cowbird parasitism have not been studied extensively in the Redstart. However, Mayfield (1961) found that Cowbird parasitism reduces the number of young produced at all stages in the Kirtland's Warbler. The Cowbird often removes one of the host's eggs and the hatchability of the remaining eggs may be reduced because of the presence of the larger Cowbird egg. In addition, the warbler hatchlings are at a disadvantage in competing with the young Cowbirds. On the other hand, Hofslund (1957) found no indication of reduced survival of young Yellowthroats in parasitized nests although there was loss during the egg stage.

The Redstart has several ways of reducing this parasitism. The first involves prevention of the Cowbird from gaining access to the nest. The female spends most of her time from early nest building through the egg laying period in the vicinity of the nest and reacts aggressively to the presence of Cowbirds. The male usually does not participate in nest defense, probably because he simply does not spend much time in the nest area.

The reaction of the female to female Cowbirds differs from her reaction to other species in several ways. She reacts aggressively to Cowbirds even before the nest is built, and later, at a greater distance from the nest, in an area in which other species are usually tolerated. The Redstart apparently reacts specifically to the Cowbird and I have a few field observations indicating that she sometimes makes "mistakes". For example, in one instance a female made an aggressive approach to a Catbird some distance from the nest, but when she got closer, turned and retreated. A similar incident was noted with a female Redwinged Blackbird. The female never retreated in this manner when a Cowbird was involved and it would appear that a distance these birds were responded to as Cowbirds, perhaps because of their somewhat similar size and coloration.

My observations indicate that the female initially reacts to the presence of a Cowbird in the territory by approaching it and remaining about ten feet away. She then often performs a display, while facing the opponent, termed the Head Forward, which involves a horizontal body, sleeked plumage, and often a gape which exhibits the red mouth lining. The tail is often spread. While in this posture she frequently gives a vocalization termed

the Snarl and sometimes also snaps her bill (Bill Snaps). She continues displaying in this manner while moving all around the Cowbird. If the Cowbird leaves, she then flies after it, Snarling and Bill Snapping until it is out of the territory. If on the other hand, the Cowbird approaches the nest more closely, she increases her attacks and may "dive bomb" her, uttering Snarls and Bill Snaps. If the Cowbird actually enters the nest, the Redstart's attack motivation increases still further and she may then actually land on her back and peck her head, or make flying attacks striking with the feet.

Cowbirds never threaten the female Redstart and usually seem to ignore her attacks. However, the Cowbird often leaves the area after a few minutes and it appears that the Redstart's threats are often influential in causing her departure.

If these aggressive measures fail, and a Cowbird does succeed in laying, the Redstart may desert the nest. This is likely to occur if the Cowbird lays before the Redstart, or if there is only one Redstart egg. A new nest is then built immediately in the same territory and the female often takes much material from the old nest. However, Cowbird eggs are usually accepted if laid after the Redstart has two or more eggs of her own.

Cases have also been reported of Redstarts covering up Cowbird eggs by building a new lining over them and then laying on top of this (Bent, 1953). This type of behavior occasionally occurs in many different species that are parasitized by the Cowbird, but is apparently only commonly employed by the Yellow Warbler (Friedmann, 1929).

It can thus be seen that the Redstart has several ways of reducing Cowbird parasitism. What of other species victimized by Cowbirds? Friedmann (1929) mentions some of these: In addition to covering up the Cowbird egg, they involve desertion and removal of the foreign egg. However the heavily parasitized Kirtland's Warbler apparently has no defenses. Mayfield (1961) discusses this problem and points out that severe Cowbird parasitism is endangering the survival of this species which has an estimated population of fewer than 1000 individuals. He suggests that the lack of defenses is due to the recent contact of these two species; the Cowbird was rare in the eastern United States before the advent of settlers. The Redstart has probably been in contact with the Cowbird for a longer period and thus has had time to evolve mechanisms functioning to decrease parasitism and/or its effects. However, it is interesting to note that some species which are infrequently parasitized (Friedman, 1929), or which apparently have recently come in contact with Cowbirds (e.g. Myrtle Warbler; Kent, 1953), have at least some mechanisms for reducing parasitism. Thus the lack of defenses in the Kirtland's Warbler may be due to some deficiency in the adaptive potential of the species rather than merely lack of time in which to acquire defenses. It has long been known that species which are near extinction may demonstrate a lowered genetic plasticity.

Some of the Redstart's defenses may be a detriment; the vigilance toward Cowbirds in the nest area may aid the Cowbird in finding the nest and

desertion of nests delays the Redstart's reproduction. However, it is obvious that these measures must provide a net positive contribution to reproductive success in the species, although they may be deleterious in some instances.

There is very little information concerning the mechanisms for reduction of Cowbird parasitism in most species, and detailed field observations could add greatly to knowledge in this area. Suggestions for further study would include observations of the behavior of both sexes toward Cowbirds, the reaction to the presence of a Cowbird egg in the nest, and the effects of parasitism on nesting success.

Literature Cited

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