

A BROWN-HEADED COWBIRD PARASITIZES NORTHERN ORIOLES

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The Northern Oriole (*Icterus galbula*) is rarely reported to be parasitized by the Brown-headed Cowbird (*Molothrus ater*) (Friedmann 1963, Friedmann et al. 1977). Rothstein (1977) demonstrated that the Northern Oriole rejects cowbird eggs virtually 100% of the time and often within minutes of laying.

While examining nests in a small riparian woodlot west of Fort Collins, Colorado, I found two parasitized nests of Northern (Bullock's) Orioles. One contained three oriole eggs and one cowbird egg; the second contained one egg of each species. I found the first nest at approximately 0830 and the second at 0930 of the same day, 23 June 1977. Two other oriole nests were situated in the woodlot, but one was inaccessible and the other contained four young orioles.

I collected the cowbird eggs and determined their permeabilities to water vapor. Permeability to water vapor is a property of an egg dependent upon its physical construction. Permeability values are determined by measuring weight loss per day per vapor pressure difference per unit of surface area (see Ar et al. 1974). Observations of Sotherland et al. (1979) indicate that permeability of an egg to water vapor is an expression of the genome of the female and that eggs laid by a single female are likely to have similar permeabilities to water vapor. They found that variance in permeability to water vapor is greater among clutches than within clutches of Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*) and Black-billed Magpies (*Pica pica*). The two cowbird eggs had identical permeabilities to water vapor ($0.54 \text{ mg day}^{-1} \text{ kPa}^{-1} \text{ cm}^{-2}$). Volumes of the cowbird eggs, determined by water displacement, were identical (3.1 ml). Additionally, coloring of the two eggs was very similar, further suggesting that they were laid by a single female.

The rejection response of the Northern Oriole weakens approximately 3 days after completion of the clutch (Rothstein 1977). However, the first clutch had been smaller two days previously and the second was incomplete at the time of collection. Cowbirds generally lay at dawn (Harrison 1973, Rothstein 1975). Since both eggs had probably been laid by one female, it is likely that one of the eggs had been in the nest for 26 hours or more and the other for 2 to 3 hours. The orioles thus had ample time in which to notice and reject the cowbird eggs. No other parasitized nests of any species were found in this woodlot, including four nests of Yellow Warblers (*Dendroica petechia*), one of the most frequently reported hosts of the Brown-headed Cowbird (Friedmann 1963, Friedmann et al. 1977).

Both the Northern Oriole and the Brown-headed Cowbird were among the species described by the first naturalists in north-central Colorado (Bailey and Niedrach 1965). This area is part of the original range of the Brown-headed Cowbird before its expansion with agriculture (see Mayfield 1965). Since Rothstein (1977) has shown that the Northern Oriole rejects cowbird eggs even in areas outside of the original range of the cowbird, it seems peculiar to find any orioles accepting cowbird eggs in Colorado. One would expect rejection to be a particularly ubiquitous response in such an area of long standing sympatry.

NOTES

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Brown-headed Cowbird

Northern Oriole

Sketch by Keith Hansen