

# Female Brown-headed Cowbird observed investigating Black-capped Chickadee nest cavity

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## Introduction

Brown-headed Cowbirds (*Molothrus ater*) are the only obligate brood parasite in Ontario. Females always lay their eggs in the nests of other species and never provide parental care, relying on the hosts to care for the eggs and young. Cowbirds are generalist parasites with over 220 documented host species across their range; 144 species have successfully reared cowbird young (Lowther 1993). Yellow Warbler (*Setophaga petechia*), Song Sparrow (*Melospiza melodia*), Red-eyed Vireo (*Vireo olivaceus*), Chipping Sparrow (*Spizella passerina*) and Eastern Phoebe (*Sayornis phoebe*) have the greatest observed rates of parasitism (Lowther 1993).

Controlled experiments have shown that cowbirds prefer parasitizing active nests (Lowther 1993). Ontario nest records indicate that the majority of host nests are off the ground and about half of those are 1-2 m above ground level (Peck and James 1987).

Female cowbirds may find active nests in one of three ways: by perching in shrubs or trees and quietly watching for nest building activity; by walking on the ground and observing the activity of other birds; or by making a short series of flights between shrubs, landing in leaves, and flapping their wings, perhaps trying to flush potential hosts from their nests (Lowther 1993).

Once they have found a suitable host nest, cowbirds may lay their eggs while the host species is in various stages of nest building, egg laying, or incubating eggs. They will often remove one or two host eggs from the nest (Lowther 1993).

The strategies of host species to avoid brood parasitism vary greatly. Some species (or individuals) will exhibit aggressive behaviour toward cowbirds in an attempt to deter egg laying (Robertson and Norman 1977), while some will sit quietly on the nest trying to avoid detection (Uyehara and Narins 1995). Others may avoid areas of high cowbird abundance (Forsman and Martin 2009).

Once a nest is parasitized, host response also varies: some species will eject cowbird eggs from the nest (Peer *et al.* 2006); some will bury the cowbird eggs (and possibly their own eggs) by building a new nest over the original (Graham 1988); others will abandon a parasitized nest for another site (Graham 1988). All of these responses result in an energetic cost to the hosts.

Brood parasitism of cavity nesting birds is rare. There are 38 Ontario bird species that will nest in cavities of which 25 are obligate cavity nesters (i.e., nesting only in cavities) (MacDonald 1992). Of those obligate cavity nesters, only eight species are known to have been very rarely parasitized by Brown-headed Cowbirds: Eastern Bluebird (*Sialia sialis*) (>10 records), Great Crested Flycatcher (*Myiarchus crinitus*) (>10 records), Tree Swallow (*Tachycineta bicolor*) (<10 records), White-breasted Nuthatch (*Sitta carolinensis*) (<10 records), Red-breasted Nuthatch (*Sitta canadensis*) (<10 records), House Wren (*Troglodytes aedon*) (<10 records), Black-capped Chickadee (*Poecile atricapillus*) (<10 records) and Red-headed Woodpecker (*Melanerpes erythrocephalus*) (one record) (Lowther 2016).

Black-capped Chickadees are primary cavity nesters. While the female alone builds the nest, pairs work together to excavate nest cavities by removing substrate with their beaks. In a minority of cases, chickadees will use either natural cavities or those previously excavated by other species. Cavities are usually between 1.5 and 7 m above ground level. In Ontario, they are most commonly found in birch (50%), aspen (14%) and sugar maple (14%) (Foote *et al.* 2010).

While brood parasitism of Black-capped Chickadees has rarely been reported in Ontario (two of 192 nests or 1%) (Peck and James 1987), there is evidence elsewhere that they are capable of raising cowbirds to fledge. Lowther (1983) reported observing a chickadee pair that raised three cowbirds and one of their own young to at least 20 days. He also cited other authors (Packard 1936, Root 1961, Friedmann 1963, 1966, Friedmann *et al.* 1977), who had observed adult chickadees feeding young cowbirds. Lowther (1983) surmised that the lack of parasitism records for Black-capped Chickadee was due to the cavity nesting nature of chickadees, and not to their unsuitability as cowbird hosts.

Cavity nesting likely offers some protection from being parasitized. Pribil and Picman (1997) experimentally tested five hypotheses to determine why House Wrens, secondary cavity nesters, are so rarely parasitized by Brown-headed Cowbirds. Based on their experiments, and a review of the literature, they concluded that nest cavity entrances of 35 – 37 mm in diameter likely represent the lower limit of accessibility for Brown-headed Cowbirds. They also found that, in choice experiments, House Wrens preferentially chose nest cavity entrances smaller than the lower limit (Pribil and Picman 1997).

A female Brown-headed Cowbird found dead in a Carolina Chickadee (*Poecile carolinensis*) nest in Ohio is the first known cowbird mortality in the cavity nest of a host species (Zuwerink and Marshall 2006). The cavity entrance was 38 mm x 42 mm, about average for Carolina Chickadee. The cowbird was wedged in the cavity and likely could not remove



Figure 1. Wet beech-maple forest on Tulip Tree Trail in Rondeau Provincial Park showing location (white arrow) of Black-capped Chickadee nest cavity in rotten American Hornbeam (*Carpinus caroliniana*) stump. Photo: Glenn Stronks

itself after laying an egg (Zuwerink and Marshall 2006). Like Black-capped Chickadee nests, Carolina Chickadee nests are rarely parasitized (<10 records) (Lowther 2016).

Peck and James (1987) reported entrance diameters ranged from 25 – 57 mm for 10 Black-capped Chickadee nest cavities in Ontario. Based on the experimental results of Pribil and Picman (1997) and the observations of Zuwerink and Marshall (2006), the lower end of this range would make entry into a Black-capped Chickadee nest cavity for egg laying, and subsequent exit, difficult for a cowbird.

This note reports the apparently rare occurrence of a female Brown-headed Cowbird investigating a Black-capped Chickadee nest cavity.

### Observations

On 7 May 2017, at about 17:40, while birding the Tulip Tree Trail in Rondeau Provincial Park (42°16'49.3"N 81°50'42.0"W), we (WID, JMK, GCS and TRS) observed a pair of Black-capped Chickadees entering a probable nest cavity site in a rotten tree stump.

The Tulip Tree Trail loops through pine-oak and beech-maple forests with boardwalks crossing several wet sloughs; typical Carolinian species such as Tulip Tree (*Liriodendron tulipifera*), Sassafras (*Sassafras albidium*) and Shagbark Hickory (*Carya ovata*) occur along the trail. The habitat where the chickadees were excavating the nest cavity was wet beech-maple forest. The chickadees were excavating an American Hornbeam (*Carpinus caroliniana*) stump that was about 1.5 m tall (Figure 1).



Figure 2. Female Brown-headed Cowbird at Black-capped Chickadee nest cavity site on 7 May 2017 inspecting and partially entering nest cavity. Photo: Warren Dunlop

We watched the pair take turns entering the cavity and removing substrate for several minutes. After about 5 minutes, at 17:45, we observed a female Brown-headed Cowbird silently arrive and perch on the stump while both chickadees were absent.

The cowbird proceeded to inspect the site, including inserting its head into the cavity, perhaps determining the size of the opening or checking if a nest or eggs were present (Figure 2). It continued investigating the site for about 2 minutes.

The chickadees did not return while the cowbird was present, nor did they return for the next 5 minutes after the cowbird left when we ended our observations.

We (WID, JMK, GCS, JS, KS and TRS) returned the next day (8 May 2017) at about 15:20 and again observed the chickadee pair taking turns excavating the same cavity (Figure 3). We observed them for about 10 minutes; the cowbird did not appear during our observations.



Four days later, on 12 May 2017, we (GCS, JS, KS and TRS) returned to the site at 07:45. The pair of chickadees returned at 07:50; one entered the excavated hole (Figure 4), and the second landed approximately 2.5m away. The first individual stayed in the cavity for approximately 30 seconds and then both birds flew off. We left at 08:10 having observed no other birds in the area. We searched again from 09:03 until 09:15; there was no bird activity at the site, although Ruby-crowned Kinglet (*Regulus calendula*), American Goldfinch (*Spinus tristis*) and Wood Thrush (*Hylocichla mustelina*) were heard in the area.



Right: Figure 3. Black-capped Chickadee pair. One individual is exiting nest cavity carrying substrate in beak while its mate waits at the entrance. *Photo: Warren Dunlop*

Below: Figure 4. Black-capped Chickadee perched at nest cavity on 12 May 2017. *Photo: Glenn Stronks*



Due to the nature of our visit to the area, we were not able to make additional observations. We do not know, therefore, if the chickadees successfully nested and raised a brood, nor do we know if the nest was ultimately parasitized. We also do not know whether the chickadee pair was aware of the cowbird's visit, however, if they were, they apparently did not abandon the site in response.

A female Brown-headed Cowbird investigating a Black-capped Chickadee nest cavity is likely an uncommon occurrence and probably rarely seen. The authors agree that our bird watching experience was enhanced by slowing down and observing the interactions between these two species and their habitat.

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