

First Record of a Brown-headed Cowbird Parasitizing an Ash-throated Flycatcher Nest

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ABSTRACT

The Brown-headed Cowbird (*Molothrus ater*) is a common brood parasite whose range has undergone a major expansion into western North America. We describe an apparent first report of an Brown-headed Cowbird parasitizing an Ash-throated Flycatcher (*Myiarchus cinerascens*) nest. Although Brown-headed Cowbirds are unlikely to parasitize most cavity-nesting species, cavities with larger entrances are at a higher risk. Host choice significantly affects Brown-headed Cowbird breeding success, and the Ash-throated Flycatcher is unlikely to be an important host. We also report briefly on Western Bluebirds (*Sialia mexicana*) laying eggs opportunistically in Ash-throated Flycatcher nests.

Brown-headed Cowbirds (*Molothrus ater*) rarely parasitize cavity nesting species, with the only common exception being the Prothonotary Warbler (*Protonotaria citrea*; Friedmann 1929, Peer and Liang 2025). Cowbird parasitism from other cavity nesters such as bluebirds (*Sialia* sp.), Northern House Wrens (*Troglodytes aedon*), and Tree Swallows (*Tachycineta bicolor*) has been documented, but is rare (Friedmann 1929, Friedmann 1938, Friedmann 1963, Peck and James 1997, Peck and James 1998, Truan 2003, Peer and Liang 2025). Cavity entrance size has a significant effect on the likelihood of cowbird parasitism (Pribil and Picman 1997). When the entrance diameter is too small, the cowbird female struggles to enter and exit the cavity, which makes it more difficult for them to parasitize cavity nesting species (Pribil and Picman 1997, Peer and Liang 2025). Only one *Myiarchus* species, the Great Crested Flycatcher (*M. crinitus*) has been recorded as having been parasitized by the Brown-headed Cowbird, and only rarely (Friedmann 1963, Peck and James 1997, Miller and Lanyon 2020).

The Shiny Cowbird (*Molothrus bonariensis*) commonly parasitizes cavity nests and is known to parasitize two other cavity-nesting *Myiarchus* species, the Brown-crested Flycatcher (*M. tyrannulus*) and Puerto Rican Flycatcher (*M. antillarum*; Cardiff and Dittman 2020, Cox 2020, Lowther and Post 2020). Thus, the Short-crested Flycatcher (*Myiarchus ferox*) and the Grenada Flycatcher (*M. nugator*), cavity nesters whose ranges also overlap with the Shiny Cowbird, are likely vulnerable to cowbird parasitism as well, although we could find no confirmed reports (Joseph 2020, Buckmire and Boesman 2025). To our knowledge, there are no published records of cowbirds parasitizing an Ash-throated Flycatcher (*Myiarchus cinerascens*) nest.

STUDY AREA

The nest was in an artificial nest box at the University of California, Davis Putah Creek Riparian Reserve at Russell Ranch, Yolo County, California (38.537529° N, -121.866293° W).

METHODS

The nest box was monitored during the 2025 breeding season as part of the Putah Creek Nestbox Highway Project (Riggio et al. 2022), where 160 nest boxes were monitored weekly. Entrance diameters were consistently sized to approximately 40 mm to allow use by Ash-throated Flycatcher and smaller cavity nesters and exclude the larger nonnative European Starlings (*Sturnus vulgaris*). All flycatcher nestlings' wing chords were measured during each visit, and they were banded with USGS service bands and auxiliary color bands once they reached the appropriate age and size, 12-to-13 days or a wing chord between 55 and 60 mm.

RESULTS

On 5 June 2025, we found three warm (i.e., incubated) Ash-throated Flycatcher eggs in the artificial nest box. One week later, one warm Brown-headed Cowbird egg was also present (Figure 1). A nest check on 18 June revealed that all four eggs had hatched (Figure 2). Both flycatcher parents were near the box and calling, and we could hear a cowbird chick begging when we were within 10 m of the box. The wing chords of the flycatchers' were each 12 mm, while the cowbird's wing chord was 6 mm. Based on their wing chord measurements, the flycatchers were about 3 days old (M. Truan, unpublished data). Meanwhile, the cowbird chick's wing chord indicated that it was no more than 1 day old (Scott 1979). Wing chord length is a reliable measurement for estimating the age of nestling passerines (Ricklefs 1975, Haggerty 1994, Jongsomjit et al. 2007, Brown et al. 2011).



Figure 1.

Nest on 12 June with three Ash-throated Flycatcher eggs and one Brown-headed Cowbird egg (bottom right).

Photo by Karene Liu.



Figure 2.

Nest on 18 June with three flycatcher nestlings and one smaller cowbird (the chick with mouth open and orange gape).

Photo by Maggie Bourda.

On 20 June, we checked the nest box, and the cowbird chick was missing. We searched ground around the tree, but found no cowbird carcass.

Depredation is unlikely to have occurred because the flycatcher chicks were still present. Their wing chords were 15, 17, and 18 mm, which is within the average wing chord length for their age (M. Truan, unpublished data). We banded the flycatchers on 28 June, with an average wing chord of 60 mm, which is expected for their 13-day age. All three flycatchers fledged successfully. Of our 385 nesting attempts by Ash-throated Flycatchers on Putah Creek since 2000, this is the only instance of cowbird parasitism. We measured the entrance diameter of the nest box and found it was slightly larger than our average box at 41 mm instead of 40 mm.

DISCUSSION

Brown-headed Cowbirds do not typically parasitize birds in songbird nest boxes because the small entrances make it difficult to enter and exit. Pribil and Picman (1997) found that a hole diameter of 38 mm is the smallest that a cowbird can move through without issue. The entrance diameter of boxes on the Putah Creek Nestbox Highway is typically 40 mm. However, the entrance diameter of the box parasitized by the cowbird was 41 mm which may have made the box marginally easier for the cowbird to enter.

We are uncertain of the fate of the missing cowbird chick. It seems likely that incompatible differences resulting from age at hatching, competition with larger Ash-throated chicks, and behavior between the cowbird and the host may have led to premature mortality of the cowbird chick (Peer and Bollinger 1997, Heeb et al. 2003, Langmore et al. 2003, Grim 2006, Rivers et al. 2014, Yasukawa et al. 2016). If the cowbird perished in the nest due to these differences, the parent likely removed it from the nest. Great Crested Flycatchers are known to remove dead chicks from the nest, and it is probable that Ash-throated Flycatchers do the same (Taylor and Kershner 1991).

Historically, the breeding ranges of the Brown-headed Cowbird and Ash-throated Flycatcher in California were allopatric. The earliest records of Brown-headed Cowbirds from the Central Valley were documented after 1890 (Laymon 1987). They were observed with some regularity in the Sacramento Valley by 1927 (Grinnell and Miller 1944), and the cowbird naturalized in the Sacramento Valley by the early 1930s as human development drove the expansion of the cowbird range, thereby bringing the two species into contact (Laymon 1987, Rothstein 1994, Cardiff and Dittmann 2020, Lowther and Post 2020). Thus, the species ranges have overlapped significantly for at least nine decades in the northern end of the Central Valley, potentially more (Rothstein 1994).

Generally, cowbird eggs are laid during the laying period of the host, and hatch earlier than the host's eggs due to their relatively shorter incubation period (Friedmann 1929, Lowther and Post 2020). The cowbird egg, however, was laid after the flycatcher eggs were already being incubated. As a result,

the cowbird hatched later than the flycatchers, putting it at a disadvantage (Scott and Lemon 1996). Parasitism of hosts with small clutch sizes increases the likelihood that cowbirds will lay their eggs asynchronously with the host's clutch and thereby increases the likelihood that the cowbird will hatch later than the host eggs (Scott and Lemon 1996). Choice of host is important to the cowbird's success (Weatherhead 1989, Scott and Lemon 1996, Rivers et al. 2014). The lack of reports of Brown-headed Cowbird parasitism of the Ash-throated Flycatcher, despite a long period of extensive overlap in the geographic range, and our observation of this single incidence of unsuccessful parasitism on the Putah Creek Nest Box Highway, indicates that the flycatcher is an infrequent and unimportant cowbird host locally and generally.

Of interest, we observed two instances of Western Bluebirds (*Sialia mexicana*) laying eggs in Ash-throated Flycatcher nests on Putah Creek, one at Russell Ranch in 2017 and one at Old Davis Road Restoria, Solano County, California (38.517459° N, -121.759359° W) in 2024. Young of both species were successfully fledged only at Russell Ranch. Similarly, Mountain Bluebirds (*S. currucoides*) have also been reported to lay eggs opportunistically in Ash-throated Flycatcher nests, leading to fledglings of both species (Simpkin and Gubanich 1991). There is also one record of a European Starling (*Sturnus vulgaris*) laying an egg in a Great Crested Flycatcher nest, although it is unclear whether the egg hatched (Bent 1942).

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A juvenile
Ash-throated Flycatcher.
near Winters, Yolo
County, California.

Photo by Lee Howell.

