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## Evidence for Bachman's Sparrow Raising Brown-headed Cowbirds to Fledging

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**ABSTRACT.**—We report the first records of Brown-headed Cowbirds (*Molothrus ater*) raised to fledging by Bachman's Sparrow (*Aimophila aestivalis*). Records are based on field observations of parasitized sparrow nests monitored during two separate avian reproductive studies. One record is of a Bachman's Sparrow nest in southwestern Florida in 2002 and four records are of unpublished data from sparrow nests in central Arkansas during 1983–1985. These observations suggest that Bachman's Sparrow can successfully raise cowbird young. Ours is also the first record of a parasitized Bachman's Sparrow nest in Florida. Received 5 October 2007. Accepted 16 January 2008.

Bachman's Sparrow (*Aimophila aestivalis*) is a resident of pine (*Pinus* spp.) flatwoods, grasslands, and dry prairies of the southeastern United States. It ranges from southern Florida to southern Virginia and west to eastern Texas (Dunning 1993). The range of Bachman's Sparrow receded after an initial increase in distribution and abundance around the turn of the 20th century (Bent 1968), and populations have shown a >50% decrease during 1966–2006 (Sauer et al. 2006). Habitat loss and degradation are the most significant threats to Bachman's Sparrow populations, but the expansion of the Brown-headed Cowbird (*Molothrus ater*) into the southeastern United States may negatively impact host populations that lack historical exposure to parasitism.

Nests of Bachman's Sparrow are infrequently found to be parasitized by the Brown-headed Cowbird (Dunning 1993). Brown-headed Cowbirds are known to parasitize

>220 species, yet more than a third of parasitized species are not known to raise cowbird young (reviewed in Ortega 1998, Rasmussen and Sealy 2006). We found no instances in the literature of a Bachman's Sparrow raising a cowbird to fledging or feeding a cowbird fledgling outside of the nest and only one where a Bachman's Sparrow nest contained a cowbird nestling (Haggerty 1988). We present evidence for the first known instances of Brown-headed Cowbirds successfully fledging from nests of Bachman's Sparrow.

### METHODS

We monitored avian productivity at Myakka River State Park (MRSP) in southwest Florida (27° 12' N, 82° 15' W) from April to August 2000–2004. MRSP is 11,800 ha of primarily dry prairie and flatwood habitats characterized by an understory of herbaceous ground cover and saw palmetto (*Serenoa repens*) with a canopy of scattered longleaf pine (*Pinus palustris*), slash pine (*P. elliotii*), live oak (*Quercus virginiana*), and sabal palm (*Sabal palmetto*). Prescribed fire programs at MRSP were initiated in the mid-1970s to restore natural characteristics of fire-dependent habitats, including those occupied by Bachman's Sparrows, which are year-round residents.

### OBSERVATIONS

We monitored 285 nests of 25 breeding bird species in MRSP from 2000 to 2004. Ten nests were from at least nine Bachman Sparrow pairs. One nest was discovered on 9 June 2002 when the female flushed from the nest which was on the ground and hidden beneath two saw palmetto fronds. The nest contained three pinkish-white sparrow eggs and one speckled cowbird egg. The nest contents were photographed following discovery to confirm identification of the cowbird egg. We assume the egg was of a Brown-headed Cowbird and

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not a Shiny Cowbird (*Molothrus bonariensis*) which has not been confirmed breeding in North America.

The nest was monitored every 2–4 days and on 21 June was found to contain three nestlings (i.e., 1 cowbird, 2 sparrows) and one cracked sparrow egg. The cowbird nestling was slightly larger than the two sparrow nestlings indicating that it likely hatched on 19–20 June while the sparrow nestlings hatched on 20–21 June. The three nestlings were in apparent good health and begged on subsequent nest-checks. All nestlings were large and well-feathered on 29 June with the cowbird nestling being slightly larger than the sparrows. All birds appeared to be within 1–3 days of fledging from the nest. The nest was last checked on 2 July and was empty and showed no signs of disturbance. Two adult sparrows were chipping nearby and at least one sparrow young was heard calling from nearby vegetation. We estimate that all nestlings fledged between 30 June and 1 July but the cowbird likely fledged earlier than the sparrow nestlings. We were not able to locate the cowbird fledgling outside of the nest, possibly due to the presence of dense vegetation where fledglings could be hidden. We assume the cowbird fledged from the nest because there was no evidence that it or any of the sparrow young did not fledge.

Haggerty (1988) monitored 66 Bachman's Sparrow nests in Hot Spring County, Arkansas (34° 11' N, 92° 48' W) from May to August 1983–1985. Sites primarily consisted of shortleaf (*Pinus echinada*) and loblolly pine (*P. taeda*) plantations. With the author's permission, we present observations of all four parasitized Bachman's Sparrow nests, two of which likely fledged cowbird young. Nest #6 was found with one cowbird egg and three Bachman's Sparrow eggs. All eggs hatched but the nest was depredated on day 5 of the nestling period. Nest #61 was found with three sparrow eggs and one cowbird egg. The cowbird egg and two sparrow eggs hatched. The nest was depredated on about day 7 of the nestling period. Nest #35 was found with a single cowbird egg and four Bachman's Sparrow eggs. Three sparrow eggs disappeared during the laying period and the first few days of incubation, one of which was found pierced on the ground near the nest.

Both the remaining sparrow egg and cowbird egg hatched and both nestlings fledged on day 9 of the nestling period. They were not observed again in the adult territory. Nest #60 was found on day 4 or 5 of the nestling period based on the size of a recently dead sparrow nestling. The two nestlings remaining in the nest were both cowbirds of similar age. The fate of this nest is not known.

## DISCUSSION

Reports of cowbird parasitism of Bachman's Sparrow nests are rare. Friedmann (1963) notes only three records of parasitism, one each from Kentucky, Missouri, and West Virginia. No cases of parasitism were reported in 34 Bachman's Sparrow nests in Alabama (Tucker et al. 2006) and 56 nests monitored during three studies in Georgia and South Carolina (reviewed by Kilgo and Moorman 2003). Perkins et al. (2003) did not report cowbird parasitism in any of the 40 nests of Bachman's Sparrow they monitored in central Florida. Congeneric Botteri's (*Aimophila botteri*), Rufous-crowned (*A. ruficeps*), and Cassin's sparrows (*A. cassinii*) are also infrequently parasitized (Webb and Bock 1993, Collins 1999, Dunning et al. 1999), while Five-striped (*A. quinquestriata*) and Rufous-winged sparrows (*A. carpalis*) have low to intermediate parasitism rates (Groschupf 1992, Lowther et al. 1999). Rufous-winged, Rufous-crowned, and Five-striped sparrows each have been reported to successfully raise a cowbird or have been seen feeding a cowbird fledgling (Ohmart 1969, Mills et al. 1980, Miles 1986). Our observations represent the first evidence of Bachman's Sparrow successfully fledging cowbird young. Furthermore, our records are the first to document successful hatching of cowbird eggs or nests found with cowbird nestlings. To our knowledge, this is also the first reported case of cowbird parasitism of Bachman's Sparrow in Florida.

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