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FIRST RECORD OF THE BROWN-HEADED COWBIRD PARASITIZING THE MANGROVE WARBLER IN BAJA CALIFORNIA SUR

GERARDO MARRÓN, Laboratorio de Aves, Departamento Académico de Ciencias Marinas y Costeras, Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur, Mexico, 23080; Programa de Conservación de Ecosistemas Terrestres, Pronatura Noroeste, A. C., Calle Diez, No. 60, Colonia Centro, C. P. 22800, Ensenada, Baja California; atakamara@gmail.com

ROBERTO CARMONA, Laboratorio de Aves, Departamento Académico de Ciencias Marinas y Costeras, Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur, 23080; Programa de Conservación de Aves, Pronatura Noroeste, A. C., Calle Diez, No. 60, Colonia Centro. C. P. 22800, Ensenada, Baja California; beauty@uabcs.mx

JORGE CRISTERNA and SERGIO ÁGUILA, Laboratorio de Aves, Departamento Académico de Ciencias Marinas y Costeras, Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur 23080

In this paper we present the first record of parasitism by the Brown-headed Cowbird (*Molothrus ater*) on the Mangrove Warbler (*Setophaga petechia castaneiceps*), a subspecies of the Yellow Warbler endemic to Baja California Sur (Lowther 2020).

According to Lowther et al. (2020), the Yellow Warbler has 37 subspecies constituting four groups: the *aestiva* group with six migratory subspecies that breed in North America, the *aureola* group with a single subspecies found in the Galapagos Islands and Cocos Island, the *petechia* group with 16 subspecies distributed from the Gulf of Mexico to the Caribbean in South America, and the *erithachorides* group of Mangrove Warblers with 11 subspecies found from the Gulf of Mexico to Venezuela in the east and from northwestern Mexico to Peru in the west, including the Baja California Peninsula.

Because of the recency of the Brown-headed Cowbird's colonization of Baja California Sur (Erickson et al. 2018), knowledge of this obligate brood parasite's interaction with the local avian community is practically nonexistent, beyond a few known host species, such as the Blue-gray (*Polioptila caerulea*) and California (*P. californica*) gnatcatchers and Hooded Oriole (*Icterus cucullatus*) (pers. obs.).

The distribution of the Brown-headed Cowbird before European settlement centered on the open grasslands of central North America, but with the clearing of the forests and spread of agriculture, its distribution expanded widely both east and west (Mayfield 1965, Lowther 2020).

In far western North America, this species was confirmed breeding along the Colorado River at Needles, California, in the 1860s (Cooper 1870), but before 1910 it was rare or absent on the coastal slope of California (Cooper 1870, Willett 1912, Laymon 1987). In the cape region of the Baja California peninsula, it was collected at Miraflores in 1859 by János Xántus, and reported from San José del Cabo and Santiago by Belding (1883) and Brewster (1902), but only as a wintering bird (Grinnell 1928). Except for one specimen from Isla Cerralvo collected 1 June 1962 (California Academy of Sciences 63353), by the 1970s the most southerly summer report on the peninsula was from San Fernando Velicatá (29.971° N, 115.237° W; Wilbur 1987), where Anthony (1885) did not record the cowbird from 1887 to 1894.

In June 1991 Howell and Webb (1992) found Brown-headed Cowbirds at a num-

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ber of localities in Baja California Sur, including San José del Cabo, but Howell et al. (2001) did not regard that information as certain evidence of breeding.

We recorded the parasitism on the Mangrove Warbler by the Brown-headed Cowbird in a mangrove swamp located to the west of “El Mogote” (24.171° N, 110.435° W). The swamp comprises Red Mangrove (*Rhizophora mangle*) and Black Mangrove (*Avicennia germinans*). The wetland has an area of 24.4 ha (Payan Alcacio 2013) and is one of the 16 mangrove swamps around the peninsular coast of the Bahía de La Paz (Mendoza-Salgado et al. 2011).

We visited the area on 1 August 2020 around 10:00 while scouting sites for future Mangrove Warbler monitoring. At the edge of a channel, we heard a call coming from Red Mangroves that sounded like a fledgling Brown-headed Cowbird. Over a period of 20 min the fledgling cowbird was fed by a male Mangrove Warbler on four occasions. The young bird waited for the adult to bring food the first three times, then followed the male warbler among the branches insistently, until the Mangrove Warbler went to another area of the wetland and the fledgling cowbird hid within the vegetation.

In southern Mexico on the Yucatan Peninsula, Salgado-Ortiz et al. (2008) reported parasitism of another subspecies of the Mangrove Warbler (*S. p. bryanti*) by the Bronzed Cowbird (*M. aeneus*), a species long resident in that area (Ellison and Lowther 2020).

Some populations of the Yellow Warbler (*S. p. aestiva* group) recently exposed to parasitism (as those in eastern North America) have developed some strategies to deal with Brown-headed Cowbird parasitism (Burgham and Picman 1989), such as aggression and persuasion calls toward parasitic females, ejection of the parasite egg, nest desertion, or egg burial (Clark and Robertson 1981, Hobson and Sealy 1989). The Mangrove Warblers, however, differ in ecological niche and reproductive biology, such as in their longer breeding season, smaller clutch size, and longer incubation and nestling periods (Salgado-Ortiz et al. 2008, Lowther et al. 2020), so it is unlikely that they will respond similarly, at least in the short term.

On the other hand, no matter how many strategies a host develops to counter parasitism, in the areas the Brown-headed Cowbird has recently invaded, the short time does not allow it to match the strategies that have emerged where the host has long experience with brood parasites. For example, while Salgado-Ortiz et al. (2008) found that the Bronzed Cowbird's parasitism of the Mangrove Warbler in Yucatan caused 8.5% of nesting failures, in eastern North America, Burgham and Picman (1989) found that the Brown-headed Cowbird's parasitism of the Yellow Warbler affected 41% of the nests.

The extent of mangroves in Mexico has decreased through loss to agriculture, livestock, and anthropogenic infrastructure (Valderrama et al. 2014), while the mangroves around the city of La Paz can be considered at risk due to factors such as pollution, logging, and modification of channels that carry water (Mendoza-Salgado et al. 2011). This reduction in habitat, compounded by other factors such as parasitism by the Brown-headed Cowbird, can pose a serious risk to the integrity of the warbler's population. The Mangrove Warbler could parallel the Least Bell's Vireo (*Vireo bellii pusillus*), a subspecies whose numbers decreased and whose distribution contracted dramatically because of habitat loss and parasitism by the Brown-headed Cowbird (Kus 1999, Kus et al. 2022).

Brown-headed Cowbird parasitism in Baja California Sur might have consequences not only for the Mangrove Warbler, but for other local, endemic species with current conservation problems, such as the Belding's Yellowthroat (*Geothlypis beldingi*, BirdLife International 2017) and the Baird's Junco (*Junco bairdi*, Mlodinow et al. 2021). Given this situation, a monitoring program to inform possible mitigation of the effects of the Brown-headed Cowbird on nesting birds in Baja California should be a priority.

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