

## First record of Giant Cowbird *Molothrus oryzivorus* brood parasitism on the cooperative breeder Red-bellied Grackle *Hypopyrrhus pyrohypogaster*

Juliana Villa and Ramón David Ruiz-Correa

Received 3 December 2020; final revision accepted 5 May 2021

Cotinga 43 (2021): 81–85

published online 5 July 2021

Los parásitos de nido usan a otras especies de aves como hospederos para evadir el costo del cuidado parental de su progenie. El parásito invierte energía en estrategias para engañar al hospedero a través de adaptaciones, y el hospedero evita asumir el costo de criar huevos del parásito desarrollando estrategias de reconocimiento de parasitismo o contra-adaptaciones. Esta interacción comprende mecanismos generalistas o especialistas, dependiendo del grado de desarrollo de las adaptaciones y contra-adaptaciones entre parásito y hospedero. El Chamón Gigante *Molothrus oryzivorus* es un parásito especialista con 11 especies de hospederos reportados hasta la fecha. Presentamos evidencia de tres eventos de parasitismo por *M. oryzivorus* hacia el Cacique Candela *Hypopyrrhus pyrohypogaster*. Observamos adultos de *H. pyrohypogaster* alimentando a un volantón y dos polluelos de *M. oryzivorus*. La interacción parásito-hospedero que reportamos es de especial interés debido a que *H. pyrohypogaster* usa como estrategia de reproducción la cría cooperativa, un mecanismo que potencialmente beneficia a los parásitos, siendo entonces este tipo de hospedero un blanco de aves parásitas. Además, *H. pyrohypogaster* es un ave endémica de Colombia y amenazada de extinción. Por lo tanto, el estudio de parasitismo en esta especie tiene implicaciones tanto ecológicas y evolutivas, como de conservación.

Obligate avian brood parasites avoid the cost of rearing their own offspring by laying eggs in the nests of host bird species<sup>3</sup>. Parental care is costly, having high effects on the reproductive success and fitness of both host and parasite<sup>14</sup>. Host fitness depends on its capacity to detect parasite eggs, while parasite fitness depends on its capacity to cheat the host<sup>3,17,33</sup>. In evolutionary theory, this constant competition between host and parasite is an example of an ‘arms race’<sup>4</sup>. Counter-adaptations and adaptations by host and parasite, respectively, are involved in this co-evolutionary interaction<sup>17</sup>. For example, the evolution of egg recognition by hosts and egg mimicry by parasites is an ‘arms race’ output<sup>33,34</sup>. However, the evolution of cheating strategies by parasites varies between species<sup>24</sup>, with highly specific mechanisms in parasites that use one or few host species, in contrast to generalist parasites that can use hundreds of different host species<sup>31</sup>.

*Molothrus* is a genus of obligate brood parasites with both specialist and generalist species<sup>21,27</sup>. Giant Cowbird *M. oryzivorus* is a specialist parasite, with 11 host species reported to date<sup>3,21,22</sup> (Table 1). It has been observed parasitising nests of the Cassicinae subfamily of icterids, especially species of *Psarocolius*<sup>2,8,12,30</sup> and *Cacicus*<sup>8,19,20</sup>. It also parasitises members of the Icterinae subfamily, specifically Streak-backed *Icterus pustulatus* and Spot-breasted Orioles *I. pectoralis*<sup>23</sup>. Furthermore, there have been reports of parasitism of two corvid species: Turquoise *Cyanolyca turcosa* and Green Jays *Cyanocorax yncas*<sup>29,37</sup>. Like other brood

parasites, host selection by Giant Cowbird could be associated with life history traits of hosts and the benefit that these provide to the parasites, as illustrated by cooperative breeding hosts<sup>7,35</sup>.

Cooperative breeders and brood parasites have tightly correlated distribution patterns due to the potential advantages that cooperative breeders provide as hosts<sup>7</sup>. The former reproduce in groups comprising the parents and a number of helpers that contribute to offspring care<sup>35</sup>. Consequently, cooperative breeders are more highly prone to brood parasitism than non-cooperative bird species<sup>7,28</sup>, because the brood parasite progeny is more likely to fledge when a group of birds attends and defends the nest<sup>7,18,32</sup>.

One such cooperative breeder is Red-bellied Grackle *Hypopyrrhus pyrohypogaster*, a Colombian endemic that breeds in groups of 3–7 individuals and lays 2–4 eggs per clutch<sup>11,25</sup>. *H. pyrohypogaster* helpers incubate the eggs and provision the incubating adult, nestlings and fledglings<sup>25</sup>. This behaviour enhances breeding success, but can potentially ‘invite’ parasites to their nests. Here we describe the first parasitism events by *M. oryzivorus* on nests of *H. pyrohypogaster*, a host–parasite interaction with implications from both evolutionary and conservation perspectives.

### Methods

Field observations were made at La Agudelo creek, El Retiro municipality (06°3’33.90”N 75°30’18.92”W; 2,150 m) and Parque Ecológico