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Parasitism record of Coryphospingus pileatus by Molothrus bonariensis (Birds, Passeriformes)

*Registro de parasitismo de **Coryphospingus pileatus** por **Molothrus bonariensis** (Aves, Passeriformes)*

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Abstract:

Molothrus bonariensis stands out as a generalist parasite with more than 200 recorded host birds. In the genus *Coryphospingus*, only *C. cucullatus* has been reported to be parasitized by shiny cowbird. This study sought to describe the behavior of *C. pileatus* in a nest observed in a residential area with a record of parasitism by *M. bonariensis*. The nest contained two eggs of *C. pileatus* and one egg of *M. bonariensis*. The Chopin chick was expelled from the nest on the second day, while the native chicks developed normally and left the nest seven days after our observations began. The study provides a new record of parasitism by *M. bonariensis* in the genus *Coryphospingus*, and the absence of antiparasitic measures suggests that *C. pileatus* is an accidental host of *M. bonariensis* and of low quality for parasitism.

Keywords:

Shiny Cowbird; Avian brood parasitism; Nest description.

Resumo:

Molothrus bonariensis é um parasita generalista com registro de mais de 200 aves hospedeiras. No gênero *Coryphospingus*, somente *C. cucullatus* foi reportada sendo parasitada pelo chopim. Este estudo buscou descrever o comportamento de *C. pileatus* em um ninho observado em área residencial, com registro de parasitismo por *M. bonariensis*. O ninho continha dois ovos de *C. pileatus* e um de *M. bonariensis*. O filhote de chopim foi expulso do ninho no segundo dia, enquanto os filhotes nativos se desenvolveram normalmente e deixaram o ninho sete dias decorridos do início das nossas observações. O estudo fornece um novo registro de parasitismo por *M. bonariensis* no gênero *Coryphospingus*, e a ausência de medidas antiparasitárias sugere que *C. pileatus* seja um hospedeiro acidental de *M. bonariensis* e de baixa qualidade para o parasitismo.

Palavras-chave:

Chopim; Parasitismo de aves; Descrição de ninho.

1 INTRODUCTION

Parasitic birds are so called because they lay their eggs in the nests of other birds, the hosts, that provide parental care (Fiorini *et al.,* 2019). The shiny cowbird *Molothrus bonariensis* (Gmelin 1789), belonging to the family Icteridae Vigors, 1825, subfamily Agelaiinae Swainson, 1832, is distributed throughout South America with records in several Brazilian states, including Piauí (Mermoz *et al.,* 2020). The shiny cowbird is considered a generalist parasite with more than 200 birds affected (Lowther, 2011), but may exist lineages with preferential behavior towards some hosts (De Márisco *et al.,* 2010). The reproductive success of *M. bonariensis* varies among host birds and depends on factors such as: a) host size relative to the parasite, b) antiparasitic behavior, and c) host quality (Mermoz *et al.,* 2020).

The genus *Coryphospingus* Cabanis, 1851, characterized by male individuals with a crown with a red pileus (Sick, 2001; Zima and Francisco, 2016), is rarely parasitized by *M. bonariensis*. This genus contains two species, *C. cucullatus* (Statius Müller 1776) and *C. pileatus* (Wied 1821), of which only the former has been reported as a host of the shine cowbird (Lowther, 2011).

The Pileated Finch, *C. pileatus*, has males with a black pileus base and red center and a grayish body coloration on the surface and lighter on the ventral region, and females with a grayish brown coloration on the upper part, whitish on the lower part, sides and pectoral region with gray streaks (Sick, 2001). They are small individuals, measuring approximately 13.5 cm in length and weighing between 12 and 18 g. In Brazil, they are distributed throughout the Northeast, Midwest and Southeast (Sick, 2001).

This study describes the reproductive behavior of *C. pileatus* in a nest observed in a residential area with a record of parasitism by *M. bonariensis*.

2 MATERIALS AND METHODS

2.1 Study area

The nest was built between the branches of an orange tree in an urban residential area, in the municipality of Floriano, State of Piauí (6°47’20”S, 43°00’36”W), at 1.54 m from the ground. It is characterized by a bowl-like shape, with compact walls and composed of branches and silicon fibers.

2.2 Sampling effort

Two SQ11 mini-DV cameras were used for observation, positioned on a branch above the nest about 40 cm and triggered manually, resetting after every 60 min of recording. Recording began on April 11th 2024, and continued until the chicks left the nest on April 18th 2024, for a total of 251 recordings and 19h 19m 10s of sampling time. Daily recordings of at least two hours were made for the morning and afternoon shifts. The recordings were made after the eggs had hatched, so it was not possible to determine the incubation period.

Each recording session lasted one hour and recorded the time and interval that adults spent in the nest, as well as the feeding frequency of *M. bonariensis* chicks relative to *C. pileatus* chicks.

3 RESULTS

3.1 Characterization of the nest

The nest contained two *C. pileatus* eggs with a uniform bluish-white color and one *M. bonariensis* egg with a reddish color and brown spots, slightly larger than the other eggs (Figure 1 A).

The native chicks had dark gray bodies and white feathers on the top of their heads. The parasitic chick had a reddish body color and few feathers on its body, which made it stand out in the nest (Figure 1 B). It is larger than the *C. pileatus* chicks, occupying half the nest and pushing the native chicks to the edge.

Figure 1 - *Coryphospingus pileatus* **nest parasitized by** *Molothrus bonariensis***. A: two eggs (bluish white) of** *C. pileatus* **and one egg (spotted red) of** *M. bonariensis***; B: two chicks of** *C. pileatus* **and one of** *M. bonariensis***; C:** *C. pileatus* **chicks one day before leaving the nest; D:** *C. pileatus* **female in the nest.**

The parasitic chick was pushed to the edge of the nest on the second day (12/04/2024) during the morning shift. It was then expelled from the nest due to a space dispute with the native chicks.

The fate of the *C. pileatus* chicks is unknown as they left the nest on 18/04/2024, seven days after the start of the recording.

3.2 Food frequency

The chicks fed exclusively on insects, mainly caterpillars (Lepidoptera) and crickets (Orthoptera). Until expulsion, the parasitic chick was fed twice by the adult male of *C. pileatus*, while the native chicks were fed three times by the female itself.

After the parasite expulsion, the natives were fed 105 times, approximately 13 times per day. The adults, male and female, fed them 35 and 68 times respectively.

4 DISCUSSION

In the genus Coryphospingus, the nests have compact and dense walls and may have fibers and cobwebs in the lining, as well as ornaments, as shown in *C. cucullatus* (Zima e Francisco, 2016). Similarly, as observed in this study, the nest of *C. pileatus* was built between the branches of an orange tree and was bowl-shaped, with compact walls and lined with siliconized fibers.

The species of the genus have uniformly colored eggs. *C. cucullatus* has white eggs without spots, with a clutch of two to three eggs (Zima and Francisco, 2016). In the observed nest of *C. pileatus*, the eggs were uniformly bluish-white, with a clutch of three eggs, one of which was a parasite. The chicks of *C. pileatus* have similar characteristics to *C. cucullatus*, with dark skin, a reddish mouth and gray plumage. *Molothrus bonariensis* is a parasitic bird that is characterized by the number of species it parasitizes (Lowther, 2011). The success of parasitism depends on factors related to the behavior of the parasite (e.g., piercing or removing the native egg), and the host species (e.g., size of the bird, rejection of the egg or acceptance of the parasitized offspring).

Studies show that *M. bonariensis* parasitism in small birds reduces the survival of native chicks with a greater impact compared to larger hosts (Fiorini, Tuero and Reboreda, 2009). The act of shiny cowbird piercing eggs may occur as a way to reduce competition for food among chicks (Fiorini, Tuero and Reboreda, 2009), but in birds smaller than *M. bonariensis* this behavior increases likelihood of nest abandonment, as demonstrated by parasitism in the black-backed water tyrant bird *Fluvicola albiventer* (Sovrano *et al.,* 2024). In the parasitism observed in the nest of *C. pileatus*, a smaller bird than *M. bonariensis*, the native eggs were not damaged or removed by the shiny cowbird female and the nest remained with two native eggs and one parasite.

Some host birds have developed strategies to avoid parasitism, such as *Rufous horneros*, which removes the parasitic egg from the nest by assessing the size difference between them (Tosi-Germán, Tassino and Reboreda, 2020). In our study, antiparasitic measures were not carried out by the adult *C. pileatus* that accepted parasitic nestling. Both females and males were involved in feeding the nestling, with the female taking a greater role. Both were also involved in cleaning the nest, in contrast to *C. cucullatus*, whose role was exclusively the female's (Zima and Francisco, 2016).

However, although the parents accepted the presence of the intruding chick, it was expelled from the nest due to the competition for space with the native chicks. Smaller hosts expend more energy to sustain a parasitized nest, which can lead to physiological stress and reduce the survival of native nestlings (Sovrano *et al.,* 2024). In this sense, it is likely that the expulsion of the *M. bonariensis* nestling favored the survival of the *C. pileatus* nestlings, but it was not possible to confirm this condition nor to state that the expulsion was intentional either because it was fewer in number or because of its size in relation to the nest.

In the genus *Coryphospingus*, only *C. cucullatus* has been recorded as parasitized by the shine cowbird (Lowther, 2011; Fraga, 2002), and the parasitism in the nest of *C. pileatus* brings a new record within the genus.

5 CONCLUSION

Antiparasitic measures evolved in the long process of the parasite-host relationships. The absence of these measures in *C. pileatus* may suggest that it is an accidental host of *M. bonariensis*. In addition, there was no successful parasitization of the nestling, suggesting that *C. pileatus* is a low-quality host, although further studies with this species are needed to evaluate it as a host for *M. bonariensis*.

REFERENCES

DE MÁRSICO, M. C.; MAHLER, B.; CHOMNALEZ, M.; DI GIACOMO, A. G.; REBOREDA, J. C. Host Use by Generalist and Specialist Brood-Parasitic Cowbirds at Population and Individual Levels. **Advances in the Study of Behavior**, v. 42, n. 2010, p. 83-121, 2010. DOI https://doi.org/10.1016/S0065-3454(10)42003-3.

FIORINI, V. D.; TUERO, D. T.; REBOREDA, J. C. Shiny cowbirds synchronize parasitism with host laying and puncture host eggs according to host characteristics. **Animal Behavior**, v. 77, n. 3; p. 561-568, 2009. DOI https://doi.org/10.1016/j.anbehav.2008.11.025.

FIORINI, V. D.; DE MÁRSICO, M. C.; URSINO, C. A.; REBOREDA, J. C. Obligate Brood Parasitism on Neotropical Birds. *In*: REBOREDA, J. C.; FIORINI, V. D.; TUERO, D. T. **Behavioral Ecology of Neotropical Birds**, 1. Ed. Springer, 2019, p. 103-131.

LOWTHER, P. **Brood Parasitism—Host Lists**. Available in: <https://www.fieldmuseum.org/blog/brood-parasitism-host-lists>. Accessed in: 19 Feb. 2025.

FRAGA, R. M. Notes on new or rarely reported Shiny Cowbird hosts from Argentina. **Journal of Field Ornithology**, v. 73, n. 2, p. 213-219, 2002. DOI https://doi.org/10.1648/0273-8570-73.2.213.

MERMOZ, M. E.; CRUZ, A.; CHACE, J. F.; REBOREDA, J. C. Shiny Cowbird (Molothrus bonariensis Gmelin, 1788). *In*: DOWNS; C. T.; HART, L. A. **Invasive Birds: Global Trends and Impacts**, CAB International, 2020, p. 97-104.

SICK H. **Hornitologia brasileira**. 3th edition. Nova Fronteira, Rio de Janeiro, 2001.

SOVRANO, L. V.; LEÓN, E. J.; LORENZÓN, R. E.; OLGUÍN, P. F.; BELTZER, A. H.; GIRAUDO, A. R. Impacts of brood parasitism by shiny cowbird *Molothrus bonariensis* on the breeding success of a small host, the black-backed water tyrant *Fluvicola albiventer*. **Current Zoology**, v. 70, n. 4, p. 539-547, 2024. DOI https://doi.org/10.1093/cz/zoad037.

TOSI-GERMÁN, R. A.; TASSINO, B.; REBOREDA, J. C. Female and male rufous horneros eject shiny cowbird eggs using a mental template of the size of their own eggs. **Behavioural** Processes, v. 178, n. 2020, p. 1-6, 2020. DOI https://doi.org/10.1016/j.beproc.2020.104152.

ZIMA, P. V. Q.; FRANCISCO, M. R. Reproductive behavior of the Red-crested Finch *Coryphospingus cucullatus* (Birds: Thraupidae) in southeastern Brazil. **Zoologia**, v. 33, n. 4, p. 1-6, 2016. DOI 10.1590/S1984-4689zool-20160071.