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NOTES ON THE NESTING OF CHOPI BLACKBIRDS (*GNORIMOPSAR CHOPI*) IN ARGENTINA AND PARAGUAY, WITH DATA ON COOPERATIVE BREEDING AND BROOD PARASITISM BY SCREAMING COWBIRDS (*MOLOTHRUS RUFOAXILLARIS*)

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Notas sobre la nidificación del Chopí (*Gnorimopsar chopi*) en Argentina y Paraguay, con datos de cría cooperativa y de parasitismo de cría por el Tordo Pico Corto (*Molothrus rufoaxillaris*).

Key words: Chopi Blackbirds, *Gnorimopsar chopi*, nesting, cooperative breeding, Screaming Cowbird, *Molothrus rufoaxillaris*.

The Chopi Blackbird (*Gnorimopsar chopi*) is an icterid endemic to South America (Jaramillo & Burke 1999) and a member of the South American quiscaline clade, a monophyletic group defined by DNA data (Johnson & Lanyon 1999, Cadena *et al.* 2004). This icterid is found from northeastern Brazil and southeastern Peru to northern Argentina and Uruguay (Jaramillo & Burke 1999). It is usually subdivided into three subspecies with considerable variation in body size (Jaramillo & Burke 1999), but only the nominate subspecies occurs in eastern Argentina and Paraguay. Few first hand reports on the natural history and breeding behavior of Chopi Blackbirds exist (Azara 1802, de la Peña 1987, Sick 1993, Fraga 1996, Di Giacomo 2005), and only two nests have been described from Paraguay (Dalglish 1899). I present here new information obtained from 12 nests observed in

northeastern Argentina (Corrientes and Misiones provinces) and Paraguay, between 1995 and 2007. My data show this icterid to be a cooperative breeder (Brown 1987), as individuals other than a single pair aid in chick care. Also, I add further information on its host-parasite interactions with Screaming Cowbirds (*Molothrus rufoaxillaris*) in Argentina and Paraguay (Sick 1985, Fraga 1996).

I obtained most of my information on Chopi Blackbirds while carrying field research on endangered grassland birds from eastern Argentina and Paraguay (Fraga 2005). Chopi Blackbirds were easy to detect by their loud songs and other vocalizations, and nested in the open habitats I surveyed. Observation times for each breeding pair or group ranged from 45 to 180 min, but subsequent visits to the nests were often impossible. Chopi Blackbirds are sexually monomorphic in plumage.

Body mass data from two male and two female specimens (American Museum of Natural History, New York) collected in Puerto Valle (Corrientes) give values of 73.8 and 74.1 g (mean 73.9 g) for males, and 68.5 and 70.8 g (mean 69.6 g) for females. Because of this small size dimorphism the sexes could not be separated in the field. As no individuals were banded, the group size I report for each nest was the maximum number of individuals simultaneously observed. The exposed location of most nest sites facilitated behavioral observations, supplemented with the help of tape recordings.

Chopi Blackbirds avoid dense unbroken forests, being found in large clearings, open woodland, savannas and palm groves. Although locally common, this icterid has a rather patchy distribution in Argentina, and is more evenly distributed in eastern Paraguay. Chopi Blackbirds foraged mostly on the ground, and were usually found in groups of 5–22 individuals. Chopi Blackbirds showed conspicuous sentinel behavior, with one or two individuals perching on lookouts (trees, poles or buildings) while the group foraged. As in Baywinged Cowbirds (*Agelaioides badius*) a descending high-pitched whistle was used as a hawk-alarm call by the sentinels (pers. observ.). Groups of Chopi Blackbirds were often seen mobbing and chasing avian predators, even during the non-breeding season.

Basic information on all the blackbird nests can be found in Appendix 1. My nest locations mostly agree with published reports (Azara 1802, Dalgleish 1899, de la Peña 1987, Sick 1993, Fraga 1996, Di Giacomo 2005), but the use of nests built by Rufous Horneros (*Furnarius rufus*) (three of the five nests found in Corrientes) had not been reported for Argentina. Chopi Blackbirds should be included among the few hole nesting icterids (Orians 1985).

Chopi Blackbirds sometimes breed in small colonies in palm groves (Di Giacomo

2005). None of my nests were in palm groves, and all were apparently solitary, with a minimal distance of 60 m between simultaneous nests (Appendix 1). Moreover, nests 1 and 9 were located in isolated trees in extensive pastures or agricultural fields.

I observed agonistic interactions between nesting pairs and other conspecifics at four of the nine nests found before egg hatching. The interactions involved some chasing and supplanting, with most individuals singing. My observations suggest that Chopi Blackbird nests were attended by single pairs during the earlier stages of the nesting cycle.

By contrast, group size in the three nests containing chicks ranged from five to six individuals. Group members often perched in the same branch and no intraspecific aggression was observed. At nest 10, only two individuals brought food simultaneously but, because of the small size of the delivered prey (green caterpillars), possibly the chicks were recently hatched. Other three individuals usually perched within 20 m of the nest without any visible antagonism, and on two occasions the five blackbirds attacked a Yellow-headed Caracara (*Milvago chimachima*) that flew above the nest tree.

The five individuals observed at nest 11 brought insects and spiders to the nest, and at least three removed fecal sacs. All scolded vigorously while I inspected the nest. The five individuals also chased and mobbed Crested Caracaras (*Caracara plancus*) and parasitic Screaming Cowbirds. At nest 12, at least four of the six individuals carried insects and spiders to the chicks, while others scolded me, or mobbed Crested Caracaras and Screaming Cowbirds.

In a previous study at the Iguazú Airport village, Misiones, Argentina (Fraga 1996), fledged Chopi Blackbird chicks were escorted by up to three adults, but I obtained no good evidence of helping behavior at this stage of the breeding cycle. Besides, this village popu-

lation was subject to a high incidence of Screaming Cowbird parasitism, and some parasite fledglings were fed by only one adult blackbird (Fraga 1996). During a later visit to this site (18 December 2000) I found a minimum of nine adult Chopi Blackbirds, but the only fledglings I saw were five Screaming Cowbirds, escorted by one or two adult blackbirds. The other adult Chopi Blackbirds in the area were seen attacking and chasing the young cowbirds three times, rather than feeding them. One parasite chick uttered repeated distress calls when pecked by an adult blackbird. This observation may be compared to the few reports of host discrimination or aggression against the parasitic chicks of honeyguides (Short & Horne 1985) and cuckoos (Langmore *et al.* 2003). Screaming Cowbird chicks do not mimic Chopi Blackbird chicks in plumage, and are conspicuously different in coloration (Fraga 1996, 1998). Chopi Blackbird fledglings have uniform blackish plumage and bare grayish facial areas, whereas Screaming Cowbird chicks closely resemble chicks of Baywinged Cowbirds (Fraga 1998). Two of the five Screaming Cowbird chicks attacked by Chopi Blackbirds had a few black blotches in the upperparts, the others apparently not (the molt sequence is described in Fraga 1998).

Details of the social organization of Chopi Blackbirds in the nonbreeding season (sentinel behaviour, group mobbing) closely resemble those of other cooperative breeding South American quiscalines (e.g., Orians *et al.* 1977, Fraga & Di Giacomo 2004). Begone egg hatching single Chopi Blackbird pairs attend nests, and show agonistic behavior against conspecifics. After egg hatching, however, other individuals (three to four) may perform as helpers, bringing food and defending nests and chicks against potential predators. Although my results are preliminary, a similar pattern occurs in cooperative breeding Baywinged Cowbirds in Argentina (Fraga

1972, Orians *et al.* 1977, Fraga 1991). Chopi Blackbirds also resembled Baywinged Cowbirds in nesting in cavities, palm trees and the covered nests built by other birds (Fraga 1988).

Most cooperative breeding icterids are members of the South American quiscaline clade, (Johnson & Lanyon 1999, Cadena *et al.* 2004, Fraga 2008). Chopi Blackbirds become another cooperative species in this remarkable group.

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APPENDIX 1. A list and brief description of the Chopi Blackbird nests reported in this paper.

A) Nests found from the nest building to the incubation stages.

Nest 1. Estancia Mora Cué, Corrientes, Argentina (28°22'S, 56°08'W), 2 November 1995. Observation time 45 min. Natural hole in dead, isolated *Eucalyptus* tree. Two individuals were carrying nest material into the hole.

Nest 2. Estancia Rincón de las Mercedes, Corrientes, Argentina (28°19'S, 55°46'W), 24 October 2000. Observation time 90 min. Located within an old nest of Rufous Horneros (*Furnarius rufus*). One blackbird repeatedly entering the nest and probably incubating.

Nest 3. Estancia La Hortensia, Corrientes, Argentina (28°26'S, 56°28'W), 20 November 2000. Observation time 120 min. Located within an old nest of Rufous Horneros (*Furnarius rufus*). Two individuals were carrying nest material, and copulation was observed.

Nests 4 and 5. Isla Yacyretá, departamento Itapúa, Paraguay (27°25'S, 56°26'W), 21 November 2001. Observation time 90 min. Built in the crowns of two spiny “mbocayá” palms (*Acrocomia totai*), about 60 m apart. Each nest occupied by single Chopi Blackbird pairs.

Nests 6 to 8. San Miguel Potrero, departamento Itapúa, Paraguay (27°04'S, 56°12'W), 22 and 23 November 2001. Observation time 120 min. Three nests were built in niches at the top of three electricity poles placed at intervals of 80 m along a power line. The cavities were shallow, and contained open-cup nests visible with binoculars. At least one nest was in the incubation stage, with one individual closely sitting. Screaming Cowbirds visited all the nests, chased by one or two blackbirds.

Nest 9. Tobunas, Misiones province, Argentina (26°28'S, 53°53'W), 25 and 26 October 2007. Observation time 120 min. Nest in woodpecker hole in a dead tree in a large agricultural clearing.

B) Nests found with chicks. Data on helping behavior is provided in the text.

Nest 10. Rincón de Santa María, Corrientes, Argentina (27°28'S, 56°34'W), 25 October 1999. Nest found in a natural hole in a dead tree. Observation time 60 min. Nest contents could not be examined, but adults were bringing food.

Nest 11. Rincón de San Mateo, Corrientes, Argentina (28°28'S, 55°27'W), 17 and 18 November 2000. Observation time 180 min. Nest built within an unfinished nest of Rufous Horneros, and containing three unfeathered Chopi Blackbird nestlings.

Nest 12. Estancia La Golondrina, departamento Presidente Hayes, Paraguay (24°59'S, 57°43'W), 25 November 2001. Observation time 120 min. Nest built within the crown of a “caranday” palm (*Copernicia alba*), and contained two or three well-feathered Chopi Blackbird chicks.

