

BEHAVIOR AND REPRODUCTION OF THE BARE-FACED GROUND DOVE (*METRIOPELIA CECILIAE*) (AVES, COLUMBIDAE)

COMPORTAMIENTO Y REPRODUCCIÓN DE *METRIOPELIA CECILIAE* (AVES, COLUMBIDAE)

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Abstract: The most basic natural history information is mostly unknown for Bare-faced Ground Dove (*Metriopelia ceciliae*). With a flock of ground doves in a controlled setting it is possible to fill in some of these missing gaps until data collected in nature is available. Captive ground doves were studied from late March 2009 – mid May 2010. Although some behaviors known in wild birds also occurred in this study, some new behaviors are described, including general descriptions of vocalization and courtship, as well as a tail pendulating behavior that is possibly unique among Columbids. Successful fledging of young occurred in April – May, and failed attempts, despite fertile eggs, occurred February – March. Additional adult reproductive and squab development data are reported for the first time.

Key Words: *Metriopelia ceciliae*, development of young, reproduction, natural history

Resumen: La historia natural más básica es casi desconocida para *Metriopelia ceciliae*. Es posible completar algunos de esos aspectos faltantes con una bandada de palomas en situaciones controladas, hasta que los datos en la naturaleza sean disponibles. Palomas cautivas fueron estudiadas desde finales de marzo de 2009 – mediados de mayo de 2010. Aunque ciertos comportamientos conocidos en aves silvestres también ocurrieron en el presente estudio, algunas conductas nuevas son descritas, incluyendo descripciones generales de vocalizaciones y cortejo, como también el comportamiento pendulante de la cola que posiblemente sea único entre los Colúmbidos. Los volantones exitosos ocurrieron en abril – mayo, y los intentos fallidos, a pesar de los huevos fértiles, ocurrieron en febrero – marzo. Datos adicionales de desarrollo reproductivo y de los pichones son reportados por primera vez.

Palabras Claves: *Metriopelia ceciliae*, desarrollo de jóvenes, reproducción, historia natural

INTRODUCTION

The Bare-faced Ground Dove (*Metriopelia ceciliae*) ranges from the coastal deserts to the central Andes (northern Peru – northern Argentina) where it may range up to 4500 m (Gibbs *et al.*, 2001). Three subspecies are recognized: the nominate form (western Peru), *M. c. obsoleta* (northern and eastern Peru) and *M. c. zimmeri* (southern Peru, western Bolivia and northwestern Argentina) (Baptista *et al.*, 1997).

While distribution, taxonomy, habitat association and certain habits are well documented, the most basic information of behavior and reproduction are unknown (Baptista *et al.*, 1997;

Gibbs *et al.*, 2001). The purpose of this note is to provide information gleaned from a small flock ground doves kept in a controlled laboratory setting in Houston, Texas (USA) kept under as natural conditions as possible. This report provides a baseline of information to build upon until more data are available from birds in nature.

METHODS

A pair (one male and one female) of ground doves were identified to sex using an endoscope. This pair apparently was wild-caught and obtained from Mountain View Zoological Gardens (Virginia, USA) on 26 March 2009 when the facility closed. Based on coloring, the ground doves were presumed to be of the nominate form (Figure 1). Voucher specimens were deposited in the Vertebrate Zoology collections at the Houston Museum of Natural Science (HMNS) and standard measurements of various age classes are presented in Table 1.

The ground doves were initially kept in a large aviary with dimensions of 2.7 m wide, 7.7 m long and 2.7-2.0 m high (sloped roof) until September 2009 when the length was expanded to 10 m. The roof was translucent plexi-glass, east and west (long) walls were planking and mostly glass, respectively, with the short walls covered with 1.25 x 2.5 cm vinyl-coated welded wire, which was covered with plexi-glass during the coldest months (November – March). Additional heating during cold months was provided with two infra-red heat lamps (250 watt) spaced 3 m apart. The ground was comprised of leaf and mulch substrate, and the aviary contained many natural branch perches, several *Ficus benjamina* trees and a small patch of shell gingers (*Alpinia* sp.), among other plants. Other species of Columbids (three mated pairs and three additional males, representing six species total) also inhabited the aviary, with the ground doves being the smallest species.



Figure 1. Adult male Bare-faced Ground Dove (*Metriopelia ceciliae*)

The ground doves were fed Zupreem Cockatiel fruit-blend pellets, a generic wild-bird seed mix and Kaytee parakeet seed mix, although the latter was discontinued in March 2010. They fed both directly on the ground (Baptista *et al.*, 1997; Gibbs *et al.*, 2001) and from tall cylindrical hanging bird feeders modified with long twig perches under each seed port.

Table 1. Standard measurements of vouchered specimens of Bare-faced Ground Dove (*Metriopelia ceciliae*) in millimeters (mm) and grams (g).

Cat. #	Sex-Age class	Wing chord (mm)	Tail (mm)	Culmen (mm)	Tarsus (mm)	Weight (g)
HMNS VO 3125	Adult Female	95	74	13.5	13.9	53
HMNS VO 3002	Sub-Adult	88	75	--	12.9	--
HMNS VO 3123	Juvenile Male	85	77	13.6	--	35

Other individuals (S. Alvarez *pers. comm.*; J. Pire *in lit.*) indicated that this species would only reproduce in captivity in wooden nest boxes approximately 30 cm³. A variety of both wooden boxes and open cup nests of various sizes were provided, the latter being more typical of what most of the smaller species of Columbids use (D. Brooks, unpubl. data). The ground doves repeatedly nested 2.3 m off the ground in an open cup that was 10 cm high with a diameter of 7.5 cm at the base and opening to 10 cm at the top. Unlike most species of Columbids which line their nests with offered pine needles or very thin twiglets (D. Brooks, unpubl. data), the ground doves used an approximately 50:50 ratio of small, soft feathers to very soft, short dried grasses (Gibbs *et al.*, 2001).

RESULTS AND DISCUSSION

Behavior

Vocalizations and behavior have not been described previously, except for a loud clattering noise that is made when in the bird is in flight (Gibbs *et al.*, 2001; Schulenberg *et al.*, 2007), which is typical of most ground doves (Goodwin, 1983). During this study the ‘wing-whistling’ was actually produced any time the ground dove is in flight, even with short distances of only a few wing flaps. A vocalization is often emitted when a male lands close to a female, perhaps to initiate courtship. The sound is a descending series of approximately 5-9 rapid staccatoed ‘hoots’, similar in pattern to the ‘laughing’ vocalization in domesticated barbary doves (*Streptopelia risoria*) (Goodwin, 1983).

Another behavior discovered appears to be rather unique among Columbids and involves a slow pendulating motion of the tail, similar to that described for a motmot (Brooks, 2002). In this behavior, a perched ground dove slowly shifts the tail downward from a trailing position to a position straight down, completely perpendicular to the body, then it brings the tail back to the trailing position, sometimes repeatedly flitting the tail up and down several times. The exact function of this behavior is unknown; it could be a fixed action pattern initiated by a ground dove in a novel situation. It was often observed when a ground dove was released into a new aviary, or when approached by a new bird that did not previously cohabitate the aviary. It was not associated with any courtship sequence. Courtship was rarely observed, but involved the male bowing while simultaneously raising tail feathers and facing the female, similar to other species of Columbids (Goodwin, 1983).

Reproduction – Case 1

The aforementioned courtship was noted on 2 April 2009, preceding mating, nest-building, incubating, brooding and raising young. On 5 April, one ground dove was observed on the nest all day; this was assumed to be the male, as the male often incubates during the day in

Columbids (Goodwin, 1983). On the same day both ground doves were on the nest in the evening, but both were off at night. As the month of April continued, the ground doves gradually increased the amount of time spent on the nest until they were on it almost continuously. Based on the amount of time the nest was being brooded, it was estimated that egg laying occurred at the end of April. When an opportunity presented itself to check the nest without disturbing the parents on 1 May, two white eggs (Gibbs *et al.*, 2001) were discovered. Although the eggs were small, they were similar in size to those of many other species of doves (Goodwin, 1983), despite being nearly one-half the size of some of the other species (e.g., *Chalcophaps indica*, D. Brooks, pers. obs.). This suggests that relative to other species of Columbids, the eggs of this ground dove are proportionately large compared to the size of the adult female's body.

The nest was checked again on 12 May and still contained two eggs, but the flight distance (the span of space between the observer and nesting parent before it took to flight) decreased when I entered the aviary, suggesting the eggs would hatch soon. The parents were observed feeding squabs on 16 May. The eggs were presumed to begin hatching on 14 May, suggesting an incubation period of approximately two weeks, which is typical of many species of Columbids (Goodwin, 1983), especially the smaller species (Brooks, unpubl. data). The nest was checked again on 20 May and the squabs were already nearly half-grown. Although not measured, it appeared that the squabs grew at a rapid rate relative to other species of Columbids (Goodwin, 1983; Brooks, unpubl. data). On 27 May the cup nest was tipped sideways by male doves that were fighting, and the following day both squabs were seen together, with the slightly older squab perched with the parents at the base of an inclined log. This was the first time the parents were seen with the squabs in several days, and apparently both squabs were still being fed by the parents. On 29 May a rudimentary ground nest (a simple camouflaged depression) was found on the ground with both squabs in it against the plank wall. Apparently because the squabs were too young to fly back to the nest they fell from, the parents cached them in this rudimentary nest. The older squab fled the nest upon my discovery of it and quickly ran away, but ultimately went back to the ground nest after I left. On 1 June (~18 days old) the parents began carrying new nest material to the same cup nest. On 3 June (~20 days old) both squabs were pecking at the ground, learning how to feed on their own. The fledglings were flying strong on 30 June (~47 days old).

Failed attempts at Reproduction

From 6-17 November 2009 a pair of ground doves (the female was the older squab from Case 1) was nest-building. On 14 November the pair copulated, and began incubating two eggs on 18 November. The fact that female ground doves are capable of laying eggs at six months of age is notable. However, the pair was no longer incubating steadily on 21 November, either due to the young age (six months) of the female, or the cold weather the night of 20 November.

Although the pair was observed to copulate again on 26 November 2009 and sit on the nest two days later, no eggs resulted. A similar pattern was repeated with much sitting on the nest in mid January 2010, but again no eggs were laid.

In mid February 2010 the pair was again on a nest. On 21 February both ground doves were off the nest because a domestic cat (*Felis catus*) was walking on the translucent plexi-glass

roof panels (0.3 m over nest), trying to predate the inhabitants. Once the cat was chased away the ground doves returned to nesting. However, on 24 February the ground doves abandoned the nest permanently after the cat returned. Only a single infertile egg was discovered in the nest.

On 10 March 2010 the pair had a new nest, but either due to disturbance or a severely cold night on 21 March, the pair abandoned the nest. The nest contained two eggs with well-formed embryos that were approximately halfway developed.

Reproduction – Case 2

On 1 April 2010 the same pair was sitting on the nest. On 18 April the male was aggressively chasing the female, driving her to attend the nest. By 31 April the pair was spending more time off of the nest, suggesting that the nest contained a growing squab that was perhaps too large to be brooded. On 4 May a single squab (Figure 2), estimated to be approximately two weeks old, fell from nest prior to 07:00 hrs. While returning the squab to the nest the other egg in the nest was checked and infertile, so was removed from the nest. On 5 May the squab fell from the nest again after 15:00 hrs so it was again returned to the nest. While catching the squab it tried to run away, unlike the preceding morning. On 10 May the squab was on the ground again prior to 07:00 hrs; the squab (estimated to be approximately three weeks old) was now fully feathered and very capable of fleeing by quickly running away, so it was not replaced in the nest. By 12 May the fledgling was able to fly minimally, reaching perches 1.5 m off the ground.



Figure 2. A juvenile Bare-faced Ground Dove (*Metriopelia ceciliae*)

CONCLUSIONS

Many of the same behaviors observed in the wild were found concordantly in this study, including feeding on the ground, using similar nest material, and sounds produced during flight (Goodwin, 1983; Baptista *et al.*, 1997; Gibbs *et al.*, 2001; Schulenberg *et al.*, 2007). Additionally, this report provides new details of behavior previously unknown, including a

general description of the call, a tail pendulating behavior that is possibly unique among Columbids, and a brief description of the visual courtship display.

The breeding season is variable throughout the species range: in Peru west of the Andes it nests July – November, in the temperate northern Chilean Altiplano it has been recorded nesting in March, and in the southern Bolivian Andes April – July (Gibbs *et al.*, 2001). Thus, in the more temperate portion of its range it appears to nest from March – July. The ground doves studied in this report nested and successfully fledged young in April – May, with failed attempts despite fertile eggs in late winter/early spring (February – March). Additional failed attempts for various reasons occurred in November and January. The ground doves studied herein appear to mirror the populations in the southern Bolivian Andes in terms of reproductive chronology.

Approximate lengths of various aspects of the ground dove reproductive cycle are reported for the first time, as follows: courtship, mating, nest-building and egg-laying (1 month), copulation to egg-laying (2-4 days), incubation (2 weeks), and beginning to prospect for a new nest (once squabs fledge).

Approximate number of days for development of young ground doves are also reported for the first time, as follows: able to run quickly on the ground (2 weeks), fledge nest (2-3 weeks), pecking at the ground and learning how to feed (3 weeks), flying minimally (3 weeks), flying strong (1.5 months), and first egg laying (\geq 6 months).

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