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NATURAL HISTORY OBSERVATIONS ON THE POORLY-STUDIED QUEBRACHO CRESTED TINAMOU *Eudromia formosa* (AVES, TINAMIFORMES, TINAMIDAE)

*Observaciones sobre la historia natural de la pobremente conocida Martineta chaqueña
Eudromia formosa (Aves, Tinamiformes, Tinamidae)*

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Abstract. Field observations that add to our scant knowledge of the natural history of the Chaco endemic Quebracho Crested-Tinamou *Eudromia formosa* are provided, including the descriptions of a hitherto unreported call and distraction display. The first data on feeding are reported, as well as a record of a predation event by Geoffroy's cat *Leopardus geoffroyi*. Further evidence of aseasonal breeding in the Paraguayan Chaco is presented, and similarities in behaviour between this species and the more widespread Elegant Crested-Tinamou *Eudromia elegans* are suggested.

Key words. Chaco, distraction display, feeding, Paraguay, predation.

Resumen. Se conoce poco de la historia natural de la especie endémica al Chaco, la Martineta Chaqueña *Eudromia formosa* y aquí se proveen algunos datos novedosos sobre la alimentación, y de una vocalización y una despliegue de distracción no anteriormente descritas. También se documenta depredación por el félido *Leopardus geoffroyi*. Más evidencia sobre reproducción durante todo el año en el Chaco Paraguayo esta proveído y se discuten algunas similitudes en el comportamiento de esta especie con el de la Martineta Común *Eudromia elegans*.

Palabras clave. Chaco, despliegue de distracción, alimentación, Paraguay, depredación.

INTRODUCTION

Quebracho Crested Tinamou *Eudromia formosa* occurs in northwest Argentina, western Paraguay and extreme southeastern Bolivia (Davies, 2002; Fernández *et al.*, 2009). It is a Chaco endemic (Short, 1975) occurring in semi-open areas adjacent to dense, xerophytic, thorny forest with open or dense undergrowth (Smith *et al.*, 2013). The Paraguayan population has been separated as *E. f. mira* (Brodkorb, 1938; Short, 1975; Banks, 1977) on account of its browner plumage and broader but less well-defined shaft-streaks on the upperparts, but the species has subsequently been treated as monotypic in most modern works (Blake, 1977; Navas and Bó, 1981; Davies, 2002).

The natural history of the species is virtually unknown. Smith *et al.* (2013) provided data on global distribution, habitat preference, a single egg and vocalisations from Paraguay and Argentina, as well as summarizing the limited available data on breeding throughout the range. However no published data is apparently available on feeding, predators or displays (Davies, 2002). In this note I provide new natural history data from sporadic field observations of the species in the Paraguayan Chaco that add to our knowledge of the ecology of this under-studied species.

RESULTS

Feeding

A flock of three birds was observed for several minutes at around 0930 on a rainy morning (15 October 2013) at Ruta Trans Chaco km 569, Departamento Boquerón (21° 46' 59.3" S, 60° 55' 47.4" W). This usually arid area had seen approximately 5

days of near constant storms and heavy rainfall. Cloud cover was heavy, but rain was light and the birds were visibly sodden on the dorsum. They were observed to pick at the asphalt road surface in a manner more usually observed during the first hours of daylight and late afternoon (Smith *et al.*, 2013) and were unconcerned by the presence of the vehicle and observers. It was not possible to determine whether the birds were taking foodstuffs or grit from the road surface. One individual was also observed to peck several times and seemingly eat the tips of fresh green leaves of the plant *Capparis flexuosa* (Capparaceae).

Predation

At dusk on 18 September 2013 at km 623 of the Ruta Trans Chaco (21° 29' 13.8" S, 61° 20' 12.7" W), Departamento Boquerón, a Geoffroy's cat *Leopardus geoffroyi* (Mammalia: Felidae) was observed on an open roadside holding a medium-sized *Eudromia* chick in its mouth. One adult bird (presumably male?) was present and, despite the presence of observers watching less than 10 m away from the raised road surface, it approached the motionless cat by walking in a slow, deliberate and erect manner.

Distraction display

Upon reaching an estimated distance of 5 m from the cat, the adult bird rapidly turned away from it and performed a previously undescribed distraction display. This involved a stooping stance with neck extended parallel to the floor, wings spread half-open at a 90° angle to the body and bowed (vaguely recalling the display posture adopted by the sunbittern *Eurypyga helias*) and the bird running in a rapid, erratic zig-zagging manner towards the nearby forest edge. The bird did not enter the forest, and the display elicited

no response from the cat, which then retreated into cover in the opposite direction from the bird.

Undescribed contact/locator call

Following the departure of the cat the adult bird began to pace backwards and forwards along the forest edge, continuously retracing the area where the encounter had taken place and giving a strange, slightly liquid "pseeet" call; walking in a semi-erect posture with nodding head (see video FPAVE4052VI http://www.faunaparaguay.com/eudromia_formosa.html). This behavior began in half-light at approximately 1850 and continued on for at least a further 25 min by which time night had fallen and the bird could no longer be seen or heard

DISCUSSION

The feeding observations are consistent with what is known about the behavior of the more widespread Elegant Crested Tinamou *Eudromia elegans*, suggesting perhaps unsurprisingly some degree of similarity in the natural history of these two closely related species. The consumption of grit and plant matter is well known in *E. elegans* and water requirements may be fulfilled metabolically by the plant matter they consume in the arid habitats in which they occur (Bohl, 1970; Cabot, 1992). Similarly Bohl's (1970) description of the use of the bill by *elegans* to continually peck away at particles on the ground, as opposed to scratching with the feet, is also consistent with my observations of *E. formosa*. Such particles may be so small that it is not possible, even at close range, to see what, if anything, is consumed with each peck. A preference for feeding in the early morning

and late afternoon is also described for *E. elegans* (Bohl, 1970).

The presence of medium-sized chicks during September 2013 confirms that winter breeding can occur in this species. Assuming a similar incubation period and growth rate as for the related *E. elegans* (Davies, 2002), nesting thus presumably took place in July or August, supporting the assertion that breeding is aseasonal in response to environmental conditions in the Paraguayan Chaco as suggested by Smith *et al.* (2013).

That *E. formosa* should occasionally fall prey to *Leopardus geoffroyi* is perhaps to be expected based on the opportunistic feeding behavior of this abundant small cat (Manfredi *et al.*, 2004; Canepuccia *et al.*, 2007; Sousa and Bager, 2008). Several individuals of *L. geoffroyi* were observed on the same evening as this encounter, including a family group consisting of an adult and three kittens, indicating that the cats were also reproductively active at this time.

Bohl (1970) notes that adult *E. elegans* are "seldom" depredated, but lists potential predators as foxes, skunks, opossums, armadillos, hawks, falcons, owls and poisonous snakes such as *Crotalus* and *Bothrops*. We consider it unlikely that any of these are major predators of adult *E. formosa* in the Paraguayan Chaco but that foxes (*Lycalopex gymnocercus* and *Cerdocyon thous*), skunks (*Conepatus chinga*), opossums (*Didelphis albiventris*) and armadillos (*Chaetophractus villosus*, *Chaetophractus vellerosus* and *Dasypus novemcinctus*), which are abundant within the range of the species, are all potential nest predators. Puma *Puma concolor*, is frequent within the Paraguayan range of this species and presumably likely to prey on adult birds, and other sympatric cats must also be considered potential predators of adults and juveniles.

Adults of this species show confiding behaviour and groups can be approached closely both in vehicles and on foot. Frequently their only defensive reaction is to continue with their activities whilst moving gradually closer to cover, entering cover more hurriedly if pressed. The species flushes only rarely, and then usually when surprised at close quarters eg. by a passing vehicle, raising first vertically upwards with considerable wing noise and then flying horizontally over the low forest canopy before settling out of sight. At Parque Nacional Teniente Enciso (21° 15' S, 61° 40' W) the species has been observed to regularly pass close to the accommodation buildings, despite the presence of humans and dogs.

The distraction display described here may be analogous to the "cripple display" of *E. elegans* alluded to by Bohl (1970) for adults flushed from young or from the nest. If this is indeed the case it seems likely that the adult performing this display during September 2013 was attempting to lead the predator away from additional juveniles that were concealed from view, and that an unidentified call given from the forest in response to the adult "pseeet" call was produced by unseen juvenile birds. That the presumed response to this "pseeet" call was vocal and did not result in the juveniles approaching the adult may suggest that its principal function is in the orientation of concealed offspring during times of threat. These vocalisations did not begin until the departure of the predator, so it may be that the adult vocalisations were a contact/locator call with the intention of locating the depredated chick. A similar, though slightly harsher call is used by *E. elegans* in such situations.

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