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Uncovering titbits for the ladies: Dusky-legged Guan males stomp out food for their females

Ivan Sazima^{1,2,3}

¹ Museu de Zoologia, C.P. 6109, Universidade Estadual de Campinas, CEP 13083-970, Campinas, SP, Brazil.

² Projeto Dacnis, Estrada do Rio Escuro 4754, Sertão das Cotias, CEP 11680-000, Ubatuba, SP, Brazil.

³ Corresponding author: isazima@gmail.com

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ABSTRACT: Guans (Cracidae) are vegetarians that feed mostly on fruits but also consume leaves, flowers, and occasionally invertebrates. They forage mostly by picking food while perched or walking on the ground. I describe here Dusky-legged Guan (*Penelope obscura*) males that stomp to uncover food in piles of plant litter on the ground. Besides feeding on uncovered titbits, the males feed their mated females that join them on the piles, both by placing food directly in bill or stomping out food that the closely following females pick. Stomping on litter piles to uncover food seems an uncommon and previously unrecorded foraging behaviour. Additionally, uncovering food for following females may be regarded as a type of courtship feeding.

KEY-WORDS: *Penelope obscura*, foraging behaviour, courtship feeding, male-female relationships, Atlantic rainforest, South-eastern Brazil.

INTRODUCTION

Guans (Cracidae) are Neotropical galliform birds that forage singly, in pairs, or small groups, mostly perched on vegetation, although some species or populations forage on the ground as well (del Hoyo 1994, Sick 1997, Zaca et al. 2006, Ottoni et al. 2009). Guans are vegetarians that feed on fruits (their staple diet), leaves, flowers, and occasionally invertebrates (del Hoyo 1994, Merler et al. 2001, Mikich 2002, Muñoz et al. 2007, Zaca et al. 2006, Parrini & Raposo 2008). While foraging on the ground, guans do not rake (scratch) the substrate with their feet as several other galliforms do, locating the food by sight instead (Sick 1997). However, some cracids occasionally scratch the ground to uncover food (del Hoyo 1994). A recent study indicates that the Dusky-legged Guan (*Penelope obscura*) feeds on human leftovers in sites close to, or within, urbanised areas (Ottoni et al. 2009).

I describe herein the foraging behaviour of Dusky-legged Guan males that stomp to uncover food hidden among piles of plant litter on the ground. Besides feeding on the uncovered titbits, the males feed their mated females that join them, both by placing food directly in bill or stomping out the food for the closely following females.

METHODS

The Dusky-legged Guan male-female foraging interactions were recorded at the edge of the montane Atlantic forest (22°25'54"S, 44°36'55"W, 1.143 m above sea level) in the Itatiaia range in South-eastern Brazil. This type of foraging behaviour was observed twice in September 2011, and once in September 2013. Throughout the observations, I used the “*ad libitum*” sampling method, which is adequate to record rare events (Altmann 1974). Digital photos of the guan foraging interactions are housed as vouchers in the Museu de Zoologia, Universidade Estadual de Campinas (ZUEC).

RESULTS

The ensuing description is based on the best-documented observation (15 September 2011 at mid-afternoon). A male Dusky-legged Guan was atop a pile of plant litter stomping on it with the right or the left feet (Figure 1a). This stomping caused the litter to move or slide and uncovered food such as fallen fruits, fresh plant fragments, and insects, which the bird located visually and picked with the bill. After about five min of such activity by the male, a female approached the pile and

began to pick food that she located visually, but displayed no stomping. Within the first minute of such foraging, the female raised the feathers of her crest and neck, stretched her dewlap, and closely approached the male (Figure 1b). The male fed her twice, placing food directly in her bill while she was crouched with neck extended upwards (Figure 1c). This direct feeding occurred shortly after she approached the male and close to the end of foraging on the litter pile. After the first direct feeding,

the female began to follow the stomping male, most of the time partially hidden under his tail (Figure 1d). At the onset of her following, the male occasionally picked a food piece and put it in front of the female or on her path (Figure 1e). Most of the time, however, the male stomped on the pile and the female picked the uncovered food right at his feet and under his vent and tail (Figures 1e-f). Eleven min elapsed from the male stomping on the pile and his leaving followed by the female (14:43-15:07 h).



FIGURE 1. A Dusky-legged Guan (*Penelope obscura*) male stomping out food and feeding his mated female. The male lifts his left leg while stomping on a pile of plant litter to uncover food (a); the female (on the left) joins the foraging male – note raised feathers on her head and neck (b); the male (on the left) feeds the female (yellow f), which is crouched with her neck extended upwards (c); the male continues to stomp on the pile uncovering food and sometimes picking and dropping it in front of the closely following female, partially hidden under his tail (d); the male stomps on the litter and the female picks food close to his feet (e); the male stomps on the edge of the pile, the female still following and picking food (f). The couple left shortly after.

DISCUSSION

Stomping on litter piles to uncover food seems an uncommon and previously unrecorded foraging behaviour for the Dusky-legged Guan, and other guans as well. Besides picking food while perched or on the ground, no other type of foraging behaviour seems reported for guans, although some cracids occasionally scratch the ground to uncover food (del Hoyo 1994, Sick 1997, Mikich 1996, Zaca *et al.* 2006, Ottoni *et al.* 2009). Stomping differs from scratching (raking), since when the bird stomps, it touches heavily the substrate with toes widely stretched and the legs do not move backwards. In contrast, most galliforms such as guineafowl and junglefowl scrape away the substrate such as leaf litter and soil to uncover or unearth food (*e.g.*, Martínez 1994, Arkive 2014a, b). Stomping seems to be performed only atop a pile of plant litter, and thus it would be rarely displayed. This apparently unusual behaviour may be a variation of scratching displayed by some cracid species (del Hoyo 1994, Sick 1997). Stomping or foot-paddling is part of the foraging repertoire of some gull species and causes earthworms to surface (Tinbergen 1962, Donnell 2008), a function superficially similar to that recorded here for the Dusky-legged Guan. Stomping behaviour by this guan may be restricted to few individuals, populations, or circumstances, as already commented for the foraging tactics of other bird species (*e.g.*, Sazima 2008, Sazima & Olmos 2009, D'Angelo & Sazima 2014).

Stomping to uncover food and the associated feeding of a following female appears to be a type of courtship feeding. In several bird species courtship includes the male offering food to the female (*e.g.*, Burton 1985, Sick 1997), and Cracinae have a ground display courtship, with males feeding females (Frank-Hoefflich *et al.* 2007). Most probably, a Dusky-legged Guan female approaching a stomping male and leaving with him after feeding for a while indicates a mated pair. I recorded a copulating pair on 17 October 2007 at the same site I observed the presumed courtship feeding. Additionally, I recorded two females with very young chicks on 22 and 23 November 2007, which agrees with an account on reproduction of the Dusky-legged Guan in South-eastern Brazil (Vasconcelos *et al.* 2006). Thus, at the study site breeding of this guan may occur as follows: courtship and mating in September-October, nesting in October-November, and rearing chicks in November-December.

I suggest here that stomping out food is an unusual type of foraging and when it is displayed in presence of a following female, this type of foraging may function as courtship behaviour. Additional studies focused on the natural history of the Dusky-legged Guan and other cracids (particularly Penelopinae) would test this assumption.

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