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SHORT COMMUNICATION

Report of three non-agonistic encounters of free-living giant anteaters (*Myrmecophaga tridactyla*)

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Abstract The giant anteater (*Myrmecophaga tridactyla*) is considered a solitary species except for the reproductive and parental care periods. Agonistic encounters among giant anteaters have been previously reported, describing conflicts and fights between individuals. However, non-agonistic encounters have not been reported in the scientific literature. Three instances of such encounters were recorded: two in which two females, carrying their cubs, were foraging together for periods of a few hours, and another where a female with her cub beside her was foraging alongside an adult of unknown sex. Details of these encounters are described in this note, contributing to knowledge of the natural history of the species.

Keywords: free-living anteaters, non-agonistic encounters, solitary species

Relato de três encontros não-agonísticos entre tamanduás-bandeira (*Myrmecophaga tridactyla*)

Resumo O tamanduá-bandeira (*Myrmecophaga tridactyla*) é considerado uma espécie de hábitos solitários, com exceção da época reprodutiva e do período de cuidado parental. Encontros agonísticos entre indivíduos da espécie foram relatados anteriormente, descrevendo conflitos e brigas entre eles. No entanto, encontros não agonísticos não foram relatados na literatura científica até o momento. Três situações foram registradas: duas onde duas fêmeas, carregando seus filhotes, foram vistas forrageando juntas por períodos de algumas horas, e outra, onde uma fêmea, com seu filhote ao lado, forrageou ao lado de um indivíduo adulto de sexo desconhecido. Detalhes desses encontros estão descritos nesta nota de campo, contribuindo para o conhecimento da história natural da espécie.

Palavras-chave: encontros não agonísticos, espécie solitária, tamanduás de vida livre

Species of animals differ in social complexity (Kappeler *et al.*, 2019) and exhibit different levels of social tolerance (Kleiman, 1994). Much of the life history of the giant anteater (*Myrmecophaga tridactyla*), an insectivorous mammal of the Order Pilosa, is based on the assumption that interactions between individuals are rare and occur only during the reproductive season, *e.g.*, adult males and females engaging in mating behaviors and females caring for their young (Nowak & Paradiso, 1983), or at other times of year when individuals engage in agonistic interactions for various reasons (Shaw *et al.*, 1987;

Figure 1. One adult female *M. tridactyla* with her cub (in the background) and one adult of unknown sex (foreground) observed in São Gotardo city, state of Minas Gerais, Brazil. Picture: Cyro Bernardes.

Rocha & Mourão, 2006; Kreutz *et al.*, 2009; Miranda Jr. & Bertassoni, 2014). So far, non-agonistic social interactions among free-living giant anteaters have not been reported in the literature.

In this field note, we report three direct observations of non-agonistic interactions between giant anteaters: two females and their respective cubs on two occasions, and one female with her cub and an adult of unknown sex. Sexual dimorphism in giant anteaters is not evident; in the cases where we determined that the adults were females, this was based on the fact that in this species parental care is exclusively provided by females.

The first observation was made during an inventory of herpetofauna by biologist Cyro Bernardes (pers. comm.) on 17 August 2016, at 17:30 hr in the Cerrado area of São Gotardo city, state of Minas Gerais (19°18'37.80"S, 46°02'49.13"W), near a dirt road between farms. Three individuals were observed: one adult female with her cub by her side and one unknown-sex adult. The three animals interacted non-aggressively, smelling one another and foraging together for about 90 min, from dusk to full dark. After this, the cub climbed on its mother's back (**Fig. 1**) and they slowly walked away from the other individual.

The second observation was made on 29 August 2016, at 17:00 hr, in an open field area of the South Pantanal at the Caiman Ecological Refuge, municipality of Miranda, state of Mato Grosso do Sul, central-western region of Brazil (19°57'17.52"S, 56°18'34.12"W). A tourist on a photographic safari at the refuge sent us a photo (**Fig. 2**) to find out if it depicted a common situation. The photo shows two adult female *M. tridactyla*, each with a cub on the back, foraging very close to one another (**Fig. 2**). According to the tourist, there was no direct or agonistic interaction between the two, instead they remained side by side (proximity ranged from approximately 0.5–5 m) for about 55 min, and then moved away.

The third observation was made by Fabiano Vargas, a field assistant of the Tamandua Institute, at Fazenda São José, in the municipality of Aquidauana, Mato Grosso do Sul state (20°05'44.22"S, 55°57'53.57"W) on 18 June 2017, at 09:00 hr. Much like the second observation just described, he observed two adult female *M. tridactyla*, each with a cub on its back, forage together (**Fig. 3**). The individuals sniffed and stayed close to one another for about 2 h, then slowly moved away.

The general expectation in asocial, solitary species is that conspecifics are avoided (Barry & Crowell-Davis, 1999). For example, field studies of several solitary species (*e.g.*, cats [Leyhausen, 1965], weasels [Lockie, 1966]) emphasize the importance of aggression and other mechanisms promoting spacing between individuals. Giant anteaters exhibit several types of behavior consistent with expectations for a solitary species, all of which have been associated with presumed territoriality in this

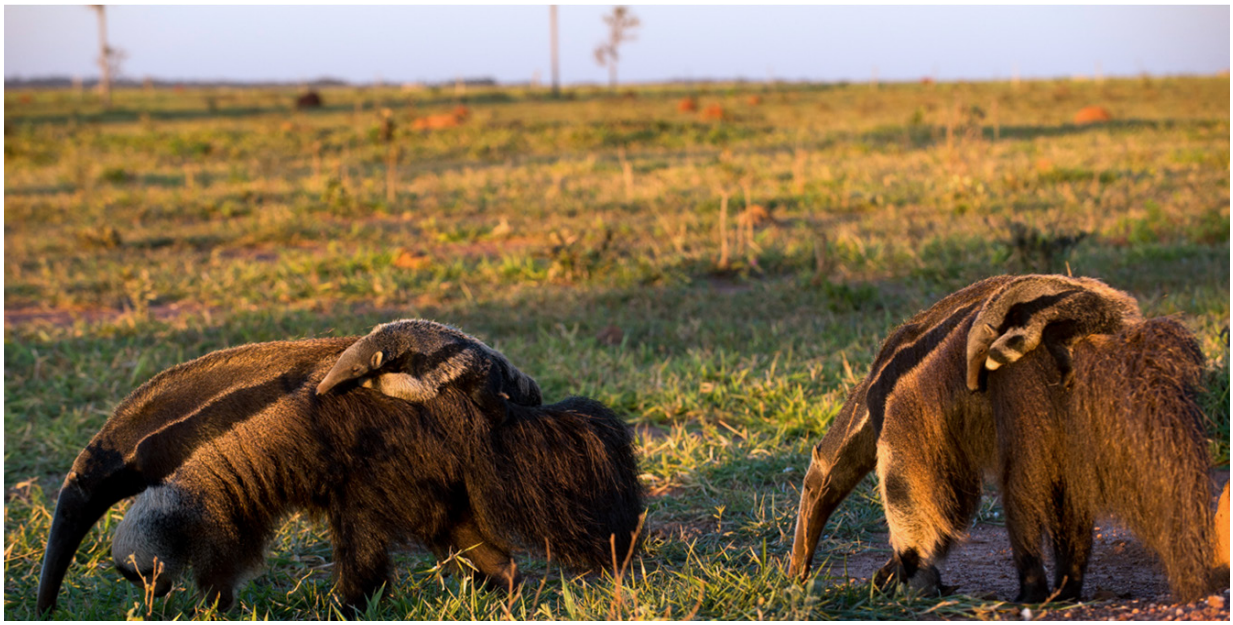

Figure 2. Two adult female *M. tridactyla*, each with a cub on its back, observed in Miranda city, state of Mato Grosso do Sul, central-western region of Brazil. Picture: tourist at Caiman Ecological Refuge.

species, such as agonistic encounters (Rocha & Mourão, 2006; Kreutz *et al.*, 2009; Miranda Jr. & Bertassoni, 2014), scratch marking (Braga *et al.*, 2010), and scent marking via urination, where the animal rubs its genitalia on a surface such as logs or rocks (F. Miranda, pers. obs.). However, classifying a species as solitary does not necessarily mean that the animals do not maintain non-hostile social interactions (Kappeler & van Schaik, 2002). In captivity, giant anteaters and lesser anteaters (*Tamandua tetradactyla*) are usually pair-housed, generally two females but sometimes a male and female (except

Figure 3. Two adult female *M. tridactyla* foraging together, each with a cub on its back, in Aquidauana city, state of Mato Grosso do Sul, central-western region of Brazil. Picture: Fabiano Vargas.

if the female is caring for a cub because males can kill the cub to try to copulate with the female). According to Catapani *et al.* (2018), keeping lesser anteaters pair-housed, even though they are a solitary species, promotes better animal welfare than the solitary condition.

The diet of giant anteaters in the wild is composed exclusively of social insects, such as ants and termites (Montgomery, 1985). Despite being abundant, this resource is also sparsely distributed. Perhaps the feeding ecology of giant anteaters is, as with solitary orangutans (Maple, 1980), the main factor influencing their social organization. The encounters reported here may have been facilitated because female home ranges can overlap (Shaw *et al.*, 1987; Bertassoni & Ribeiro, 2019), thus providing opportunities for individuals to interact. Moreover, environmental characteristics should be taken into account. All of these non-agonistic encounters were recorded during the dry season (June to August) when there is a diminished availability of resources, which may bring individuals closer together at places with more food, water, and resting areas.

What determines whether an encounter between adult giant anteaters will be agonistic or non-agonistic is still poorly understood. Due to their typical solitary nature, non-agonistic interactions and conspecific tolerance among giant anteaters are important topics for research. It would be interesting to determine if variation in the availability of resources and/or giant anteater density influences the frequency of tolerance or whether it can be better explained by factors such as reciprocity or kinship.

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