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SHORT COMMUNICATION

First data of mobbing behavior between two raptor species in the Araucaria Plateau, southern Brazil

Primeiro registro de comportamento de tumulto entre duas espécies de rapinantes no Planalto das Araucárias, sul do Brasil

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Abstract

The interactive behaviors among birds are usually related to foraging and competition for resources. In some cases, birds can develop aggressive behaviors, such as mobbing behavior to reduce predation risk. This behavior is more common in smaller birds, thus this short communication describes this antagonistic conduct between two raptors. Seven displays of mobbing by the Yellow-headed Caracara over the Southern Caracara were recorded in the reproductive period of 2012. In this case, this aggressive behavior could be held as a preventive action against predation of nests and newborn chicks.

Keywords: Yellow-headed Caracara, *Milvago chimachima*, Southern Caracara, *Caracara plancus*, agonistic interaction, Falconidae.

Resumo

O comportamento social entre aves normalmente está relacionado ao forrageamento e à competição por recursos. Em alguns casos, algumas aves podem desenvolver comportamentos agressivos, como o comportamento de tumulto, para reduzir o risco de predação, o qual é mais comum em aves pequenas. O presente trabalho tem por objetivo descrever o comportamento de tumulto ocorrido entre duas espécies de aves predadoras. Na estação reprodutiva de 2012, foram visualizadas sete ocorrências de comportamento de tumulto do carrapateiro sobre o caracará. Nesse caso, acredita-se que o comportamento de tumulto possa funcionar como uma ação preventiva para inibir o ataque a ninhos ou a predação de filhotes recém-nascidos.

Palavras-chave: carrapateiro, *Milvago chimachima,* caracará, *Caracara plancus,* interação agonística, Falconidae.

The interactive behaviors among birds are usually related to foraging and competition for resources (Camacho *et al.,* 2012) and may also involve competition for territory or predation (Alkama *et al.,* 2005). In this case, some of the smaller birds developed mobbing behavior, instead of escaping from the predator (Coulson *et al.,* 2008). Mobbing is an adaptation that birds go through to reduce predation risk, where one or more birds gather around a predator, performing stereotyped movements and threatening vocalizations (Curio, 1978). This behavior is more common on smaller birds, but there are few registers of other birds, including raptors mobbing their predators. There are records of *Circus aeruginosus* (Linnaeus 1758)*, Circus approximans* (Peale 1848)*, Circus pygargus* (Linnaeus 1758) and *Bubo bubo* (Linnaeus 1758) mobbing other bigger raptors to avoid predation (Baker-Gabb, 1984; Arroyo *et al*., 2001; Sternalski and Bretagnolle, 2010; Lourenço *et al.,* 2011). Nevertheless,

there are no records of mobbing behavior between these two predatory birds: the Yellow-headed Caracara, *Milvago chimachima* (Vieillot 1816), and the Southern Caracara, *Caracara plancus* (Miller 1777), and, thus, this paper describes the mobbing behavior between both species for the first time. The observation took place in Bom Jesus, RS, Brazil (28°37'27.21"S 50º30'09.52"O), in an area of 1971.40 ha, located in the Araucaria Plateau, which is inserted into the Atlantic Forest biome. The study area is characterized by a particular phytophysiognomy, where fragments of mixed ombrophilous forest are associated with native fields (Bond-Buckup and Dreier, 2008; Boldrini, 2009). During the months of July to November 2012, we conducted field expeditions for three days each month, from 9 h to 17 h, totaling 144 hours of sampling. With the aid of 10 x 50 binoculars, the behavioral recordings were performed at distances ranging from 100 to 300 meters. All encounters were viewed by two observers at the same time.

Through focal sampling, a total of seven displays of mobbing were recorded among the Yellow-headed Caracara and the Southern Caracara. Five displays were observed with the Southern Caracara on the ground and two with individuals resting on *Pinus* sp.

Interactions have always begun with the arrival of the Southern Caracara in the observation area. Shortly after its landing, vocalizations of the Yellow-headed Caracara could be heard; the first moving toward the latter, protruding on the back of the animal in a close flyby. The Yellow-headed Caracara continued on performing its flight in lemniscate shape (horizontal figure-eight shape, or infinity symbol ∞) (Figure 1) always on the dorsal region of Southern Caracara. The Southern Caracara did not move during the mobbing, following the Yellow-headed Caracara only with the head, never losing track of the "aggressor". However, it showed no aggressive behavior or even vocalization in response.

Mobbing behavior continued for varying time, always between three and five minutes. It was interrupted only when the Southern Caracara took flight, being then pursued by the Yellow-headed Caracara. At this point, the only aggressive attitude was demonstrated by vocalization. After the departure of the Southern Caracara, the Yellow-headed Caracara kept on flying over in the area where the interaction was performed.

Mobbing has been widely discussed, and it has always been associated with an anti-predatory behavior (Curio *et al.,* 1978) in which a smaller bird mobs another bird considered as a probable predator (Curio, 1978; Marks *et al.,* 2011). This agonistic interaction is very evident against predators in species of the order Passeriformes and Psittaciformes (Sieving *et al.,* 2004; Kryštofková *et al.*, 2011), and in this sense the reporting of such agonistic behavior among birds of prey is interesting, since the Southern Caracara does not present a threat to individuals or young adults of Yellow-headed Caracara. It is believed that in such cases the mobbing may be mainly associated to two factors related to the ecology of these birds (Marks *et al.,* 2011). The first relates to predation of eggs, since there are reports that Southern Caracara can attack the nest of other birds – including some predators –, and prey their eggs (Travaini *et al.,* 2001; Vargas *et al.,* 2007). In this case, mobbing was being held as a preventive action against predation of nests and newborn chicks (Travaini *et al.,* 2001; Vargas *et al.,* 2007), since the Yellow-headed Caracaras were building their nests during the same period when mobbing behavior has been witnessed.

Another factor that is linked to mobbing, in this case, is the niche overlap between these two species, since both use similar resources, such as invertebrates found in agriculture fields and small snakes and lizards (Sick, 1997; Sazima, 2007). Beside, both species are benefited practically from the same environmental conditions using anthropic environment for feeding and natural fields with forest fragments to reproduce and also feeding (Sick, 1997; Sazima, 2007). These overlapping niches and habitats can cause an increase in competition for territory between these two species (Marti *et al.,* 2007).

During field sampling several species of birds of prey of the Orders Accipitriformes, Falconiformes, Strigiformes and Cathartiformes were surveyed, but the only agonistic interaction observed between predators occurred between Southern Caracara and Yellow-headed Caracara, as described above. No mobbing interaction was recorded among other species of raptors. Several sympatric species were

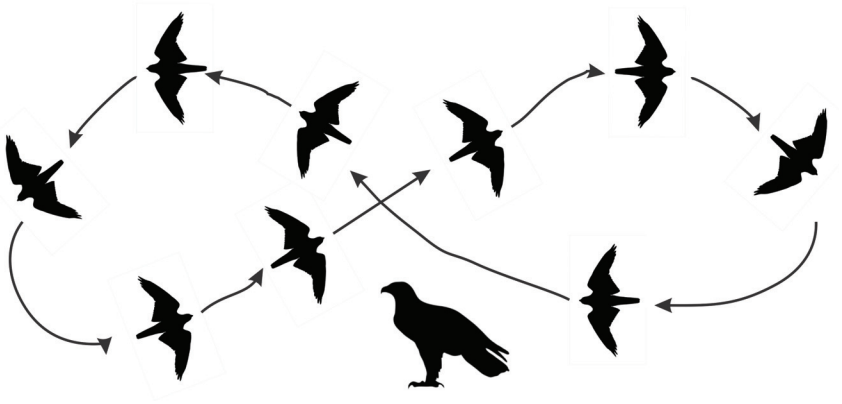

Figure 1. Movement of Yellow-headed Caracara over the Southern Caracara during mobbing.

observed, such as American Krestel (*Falco sparverius* (Linnaeus 1758) and Savanna Hawk (*Heterospizias meridionalis* (Latham 1790) that forage in the same place. We also observed Chimango Caracara (*Milvago chimango* (Vieillot 1816) and Yellow-headed Caracara, which use fence posts next to each other to rest, as well as the association between individuals of Black Vultures (*Coragyps atratus* (Bechstein 1793) and Southern Caracaras in predation of carcasses.

Thus, the mobbing event among these species is relevant to ecological studies of these taxa, since birds can acknowledge their predators (Cunha, 2012), and thereby reduce predation and increase reproductive success (Kryštofková *et al.*, 2011). Still, this two species occupy the same environment, and this fact may increase the negative interaction between the Southern Caracara and the Yellow-headed Caracara. Therefore, more efforts to examine the ecological relationships between these animals are needed, along with analyzes taking into account whether this behavior is related only to the feeding ecology of this species, or whether predation and overlapping niches and habitats can influence their behavior and consequently the dynamics of the species.

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