

## “WANTED DEAD OR ALIVE:” BLACK VULTURES (*CORAGYPS ATRATUS*) FEEDING ON A LIVE CAPYBARA (*HYDROCHOERUS HYDROCHAERIS*)

Marcos Antônio Melo<sup>1,2</sup> · Augusto F. Batisteli<sup>1,3</sup> · Rhainer Guillermo-Ferreira<sup>1,3</sup> · Augusto João Piratelli<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ecologia e Recursos Naturais, Universidade Federal de São Carlos - UFSCar, Rod. Washington Luís, km 235, 13565-905, São Carlos, SP, Brazil.

<sup>2</sup> Laboratório de Ecologia e Conservação, Departamento de Ciências Ambientais, CCTS, Universidade Federal de São Carlos - UFSCar, Rod. João Leme dos Santos, km 110, 18052-780, Sorocaba, SP, Brazil.

<sup>3</sup> Laboratório de Estudos Ecológicos em Etologia e Evolução, Departamento de Hidrobiologia, Universidade Federal de São Carlos - UFSCar, Rod. Washington Luís, km 235, 13565-905, São Carlos, SP, Brazil.

E-mail: Marcos Antônio Melo · mam\_melo@yahoo.com.br

**Abstract** · Although vultures are scavengers that feed mainly carcasses, they occasionally may feed on living tissue of vulnerable vertebrates. In South America, most records of vulture attacks on live animals refer to newborns of domestic mammals. Here, we describe the behavior of a group of Black Vultures (*Coragyps atratus*) feeding on a live capybara (*Hydrochoerus hydrochaeris*). The capybara had low mobility, high alopecia, and showed injuries in its dorsal region. The vultures insistently pursued the capybara and pecked directly on its injuries to feed on live tissue. The capybara tried to shake-off and bite the vultures and escaped from them by diving into the water. We suggest that the observed behaviors are compatible with an extreme case of semi-parasitic cleaning behavior by vultures on a live wild mammal.

**Resumo** · “Procurado vivo ou morto”: Urubus-de-cabeça-preta (*Coragyps atratus*) alimentando-se de capivara viva (*Hydrochoerus hydrochaeris*)

Os urubus são aves necrófagas que se alimentam principalmente de carcaças, mas ocasionalmente alimentam-se de tecidos vivos de vertebrados vulneráveis. Na América do Sul, a maioria dos ataques de urubus a animais vivos tem como vítimas mamíferos domésticos recém-nascidos. Neste trabalho descrevemos o comportamento de um grande grupo de Urubus-de-cabeça-preta (*Coragyps atratus*) que bicavam e alimentavam-se de tecidos vivos de uma capivara (*Hydrochoerus hydrochaeris*). A capivara apresentava mobilidade reduzida, com elevada alopecia e ferimentos na região dorsal de seu corpo. Os urubus perseguiram insistentemente a capivara e bicaram diretamente sobre suas feridas para alimentarem-se de tecido vivo. A capivara sacudiu-se e tentou morder os urubus e mergulhou em um reservatório para fugir das aves. Assim, concluímos que os comportamentos observados referem-se a um caso extremo de semiparasitismo entre um grupo de urubus e um mamífero herbívoro silvestre.

**Key words:** Brazil · Cleaning behavior · *Coragyps atratus* · Herbivorous mammal · *Hydrochoerus hydrochaeris* · Predation attempt · Scavenger · Semiparasitism

A cleaning symbiosis is a mutualistic relationship where cleaners remove parasites from clients or hosts (Côté 2000, Weeks 2000). During cleaning sessions clients usually adopt inviting postures to facilitate cleaning. Such cleaning symbioses are known for many bird species, which remove ectoparasites from large mammals (Sazima 2011, Sazima et al. 2012). However, a mutualistic cleaner bird that removes mucus, saliva, tears, ticks, and dead tissue may easily become semi-parasitic if it starts foraging on blood and flesh of the wounds of their clients (Weeks 2000, Fazio et al. 2012). The classic example is the interaction between oxpeckers (*Buphagus* spp.) and African ungulates (Weeks 2000). Similarly, scavenger-cleaning birds may be attracted by live large mammals to consume the flesh and blood of open wounds (Sazima et al. 2012), thus assuming a semi-parasitic relationship.

Here we provide the first documented report of an extreme case of semi-parasitic cleaning behavior on a capybara by a large group of Black Vultures (*Coragyps atratus*) in southeastern Brazil. The Black Vulture is a generalist and opportunist scavenger, feeding on carrion, organic waste, and fruits (Sick 1997, Houston 2018),

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**Figure 1.** A case of extreme semi-parasitic cleaning behavior by a large group of Black Vultures (*Coragyps atratus*) on an adult capybara (*Hydrochoerus hydrochaeris*) in the southeast of Brazil, 26 September 2017. (A) Black Vultures pecking and feeding on the open wounds of the capybara; (B) agonistic response of the capybara; (C) vultures insistently pursuing the capybara; (D) capybara escaping by swimming away. Photos by Marcos Melo.

but occasionally hunts on reptiles, birds, and wild and domestic mammals (Sick 1997, Salera-Junior et al. 2009). This species also feeds on parasites, blood, and flesh of the open wounds of large wild mammals (Tomazzoni et al. 2005, Sazima 2007, D'Angelo et al. 2016, Coulson et al. 2018).

On 26 September 2017, between 08:45–09:10 h we observed a group of 10 Black Vultures interacting with a solitary capybara on the sandbank of the Monjolinho reservoir, at the campus of the Federal University of São Carlos (21°59'10"S, 47°52'50"W), São Carlos, in the central region of the state of São Paulo, Brazil. We performed observations from a distance of 30–60 m using 10x50 mm binoculars, and documented them using a digital camera with a 100–400 mm camera lens.

The capybara had large open wounds spread all over the dorsal part of its body, probably caused by intraspecific contests. It had low mobility and high alopecia around the injuries. During the period of focal observations (3 min), the vultures pecked the capybara eight times and the capybara defended

itself by attacking them 21 times, turning quickly its head backward while walking slowly in response to vultures (Figure 1A–B). All pecking was performed directly on the open wounds of the capybara, when the vultures were observed swallowing what were possibly pieces of flesh and blood.

The vultures insistently pursued (Figure 1C) and even perched on the capybara three times, resulting in new agonistic reactions by the capybara. The capybara tried to dislodge the vultures using movements, such as body and head shaking and biting attempts. Finally, it escaped by diving into the water reservoir and swimming away (Figure 1D). After about 5 min in the water, the capybara swam towards a forest area at the reservoir margin, where it remained hidden. During further searches on the next three days, we did not find a similar event for additional observations. However, we observed cleaning behavior by Black Vultures on other capybaras, probably removing ticks or other ectoparasites.

To our knowledge, here we provide the first documented record of an extreme case of semiparasitism

by a large group (i.e., 10 individuals) of Black Vultures on a large wild mammal. Thus, this seems to be an extreme case of a habitual cleaning behavior. Semi-parasitism was previously recorded in Africa (Red-bellied Oxpeckers *Buphagus erythrorhynchus* on ungulate species) (Weeks 2000), Argentina (Kelp Gulls *Larus dominicanus* on southern right whales *Eubalaena australis*) (Fazio et al. 2012), and Brazil (Yellow-headed Caracaras *Milvago chimachima* and Black Vultures on capybaras) (Sazima et al. 2012, D'Angelo et al. 2016), but usually by only a few individuals. Flesh and blood from live hosts may easily emerge as an additional food resource for opportunistic scavenger species, such as Black Vultures (see Sazima et al. 2011), as previously reported by other scavenger-cleaner species (Weeks 2000, Fazio et al. 2012).

Black Vultures are opportunistic scavengers and occasionally prey on wild and domestic mammals. The majority of the predation cases were recorded in North America (Sprunt 1946, Lovell 1952, Lowney 1999, Avery & Cummings 2004), particularly on animals that were trapped, sick, injured, or anesthetized in captivity (Crider & McDaniel 1967, Mueller & Berger 1967, Glading & Glading 1970). In South America, newborn domestic animals account for most herbivorous mammals preyed by Black Vultures (Sick 1997), but there are also records of predation on newborn wild animals, such as South American sea lion (*Ottaria flavescens*, Pavés et al. 2008), waterbird nestlings, and hatching turtles (Sick 1997, Salera-Junior et al. 2009, Frixione 2010).

The vulnerability of the prey has been identified as a key factor to motivate the predatory behavior of vultures (Lowney 1999, Avery & Cummings 2004). Here, the vulnerability of the injured capybara, as well as quantity and size of the open wounds, attracted persistent attacks by a large group of vultures. During cleaning sessions, capybaras often expose their belly to be cleaned by birds (Sazima 2007). In contrast, we observed extreme agonistic reactions by the capybara when the group of vultures pecked its open wounds (Figure 1A-D). However, whether continuous harassment by vultures can lead to the death of weakened or injured animals is unclear.

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## REFERENCES

- Avery, ML & JL Cummings (2004) Livestock depredations by Black Vultures and Golden Eagles. *Sheep & Goat Research Journal* 19: 58–63.
- Côté, IM (2000) Evolution and ecology of cleaning symbioses in the sea. *Oceanography and Marine Biology* 38: 311–355.
- Coulson, JO, E Roundeau & M Caravaca (2018) Yellow-headed Caracara and Black Vulture cleaning Baird's tapir. *Journal of Raptor Research* 52: 104–107.
- Crider, ED & JC McDaniel (1967) Alphachloralose used to capture Canada Geese. *Journal Wildlife Management* 31: 258–264.
- D'Angelo, GB, ME Nagai & I Sazima (2016) Relações alimentares de aves com capivaras (*Hydrochoerus hydrochaeris*) em parque urbano no Sudeste do Brasil. *Papéis Avulsos de Zoologia* 56: 3–43.
- Fazio, A, M Bertellotti & C Villanueva (2012) Kelp Gulls attack southern right whales: a conservation concern? *Marine Biology* 159: 1981–1990.
- Frixione, MG (2010) The Imperial Shag (*Phalacrocorax atriceps*) in the Nahuel Huapi lake (Northwestern Patagonia, Argentina): distribution, abundance, and potential threats from scavenging birds. *El Hornero* 25: 61–65.
- Glading, B & CH Glading (1970) An instance of a captive Turkey Vulture killing prey. *The Condor* 72: 244–245.
- Houston, D (2018) New World vultures (*Cathartidae*). In del Hoyo, J, A Elliott, J Sargatal, DA Christie & E de Juana (eds). *Handbook of the birds of the world alive*. Lynx Edicions, Barcelona, Spain. Available from <https://www.hbw.com/> [Accessed on 23 March 2018].
- Lovell, HB (1952) Black Vulture depredations at Kentucky woodlands. *The Auk* 64: 48–49.
- Lowney, MS (1999) Damage by Black and Turkey Vultures in Virginia, 1990–1996. *Wildlife Society Bulletin* 27: 715–719.
- Mueller, HC & DD Berger (1967) Turkey Vultures attack living prey. *The Auk* 94: 430–431.
- Pavés, HJ, RP Schlatter & CI Ezpinoza (2008) Scavenging and predation by Black Vultures *Coragyps atratus* at a South American sea lion breeding colony. *Vulture News* 58: 4–15.
- Salera-Junior G, A Malvasio & TCG Portelinha (2000) Avaliação da predação de *Podocnemis expansa* e *Podocnemis unifilis* (Testudines, Podocnemididae) no rio Javaés, Tocantins. *Acta Amazonica* 39: 207–214.
- Sazima, I (2007) Unexpected cleaners: Black Vultures (*Coragyps atratus*) remove debris, ticks, and peck at sores of capybaras (*Hydrochoerus hydrochaeris*), with an overview of tick-removing birds in Brazil. *Revista Brasileira Ornitologia* 15: 417–426.
- Sazima, I (2011) Cleaner birds: a worldwide overview. *Revista Brasileira de Ornitologia* 19: 32–47.
- Sazima, C, P Jordano, PR Guimaraes, SF Dos Reis & I Sazima (2012) Cleaning associations between birds and herbivorous mammals in Brazil: structure and complexity. *The Auk* 129: 36–43.
- Sick, H (1997) *Ornitologia Brasileira*, edição revista e ampliada por José Fernando Pacheco. Editora Nova Fronteira, Rio de Janeiro, Brazil.
- Sprunt, A (1946) Predation on living prey by the Black Vulture. *The Auk* 63: 260–261.
- Tomazzoni, AC, E Pedó & SM Hartz (2005) Feeding associations between capybaras *Hydrochoerus hydrochaeris* (Linnaeus) (Mammalia, Hydrochaeridae) and birds in the Lami Biological Reserve, Porto Alegre, Rio Grande do Sul, Brazil. *Revista Brasileira de Zoologia* 22: 713–716.
- Weeks, P (2000) Red-billed Oxpeckers: vampires or tickbirds? *Behavioral Ecology* 11: 154–160.

