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Black Vultures (*Coragyps atratus*) pick organic debris from the hair of a domestic dog in southeastern Brazil

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RESUMO: Urubus-de-cabeça-preta (*Coragyps atratus*) apanham partículas orgânicas na pelagem de um cão doméstico no sudeste brasileiro. Várias espécies de aves são conhecidas como limpadoras de outros vertebrados, alimentando-se de ectoparasitos, partículas orgânicas e tecido morto ou ferido de seus clientes. Os urubus (Cathartidae) são aves de comportamento alimentar versátil, havendo registro de urubus-de-cabeça-preta (*Coragyps atratus*) retirando partículas orgânicas e carrapatos de mamíferos herbívoros. Entretanto, não há registro de aves limpando clientes carnívoros. Registro aqui dois episódios de urubus-de-cabeça-preta retirando partículas orgânicas da pelagem de um cão doméstico no sudeste brasileiro Um perdigueiro descansando em praia apresentava a longa pelagem suja após espojar-se sobre material em decomposição. Após aproximarem-se do cão, os urubus puxavam a pelagem dos flancos, ancas e ponta da cauda, catando partículas orgânicas. Enquanto limpavam, as aves permaneciam agachadas e com asas abaixadas, reagindo prontamente aos movimentos do cão e afastando-se um pouco. Em ambos os episódios a limpeza cessou quando o cão se ergueu (num deles, perseguiu as aves brevemente). O forragear investigativo e versátil dos urubus e o hábito de espojar-se dos cães estão relacionados aos episódios de limpeza. Este é o primeiro registro de uma espécie de ave agindo como limpadora de mamífero carnívoro terrestre, ampliando ainda mais a conhecida versatilidade alimentar dos urubus.

PALAVRAS-CHAVE: Aves necrófagas, Cathartidae, forrageamento versátil, comportamento de limpeza, Canidae, espojar-se.

KEY-WORDS: Scavenger birds, Cathartidae, versatile foraging, cleaning behaviour, Canidae, rolling behavior.

Several bird species are recorded as cleaners of other vertebrates, feeding on external parasites, dead and wounded tissue, and organic debris picked on the body of their clients, which range from reptiles to mammals (*e.g.* Dixon 1944, Massei and Genow 1955, Peres 1996, Grant 1999, Weeks 2000, Sazima 2007a, 2008, and references therein). However, to the best of my knowledge, no bird species is recorded to clean a terrestrial carnivorous client.

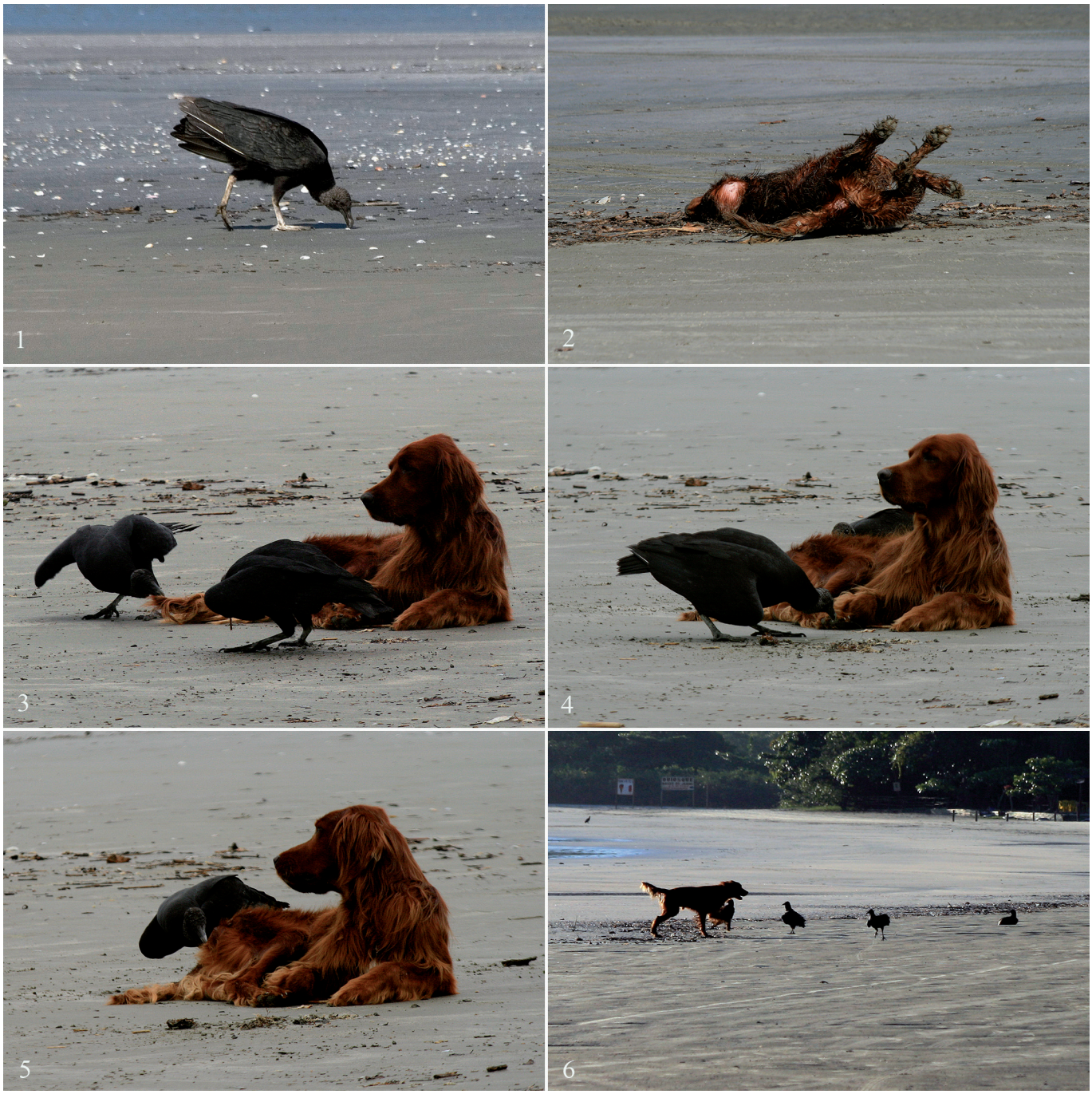
Vultures of the New World Cathartidae are among the most versatile scavenger birds (Houston 1994, Buckley 1999). The Black Vulture (*Coragyps atratus*) has a particularly wide diet and its food includes carrion, human organic refuse, carnivore feces, fruits, and small live animals (Haverschmidt 1947, Houston 1994, Sick 1997, Buckley 1999). Additionally, its ability to learn and adapt to new situations is remarkable (Witoslawski *et al.* 1963, Sazima 2007b). This vulture was recently recorded as cleaner of capybaras (*Hydrochoerus hydrochaeris*), large herbivorous mammal clients (Sazima 2007a).

Here I report on two episodes of Black Vultures picking organic particles from the hair of a domestic dog in coastal São Paulo, south-eastern Brazil. This is the first record of a bird species acting as cleaner of a terrestrial carnivorous mammal, and a second record of vultures cleaning a mammal. I comment on some behavioural features of the vulture and the dog that favour this relationship type, and postulate the steps that might have originated the association.

The behaviours of the vultures and the dog were recorded at the Praia do Estaleiro (23°21'18"S, 44°53'30"W), Ubatuba, São Paulo, southeastern Brazil. The beach is regularly combed by vultures that forage on small carcasses and organic debris washed ashore (Figure 1). The beach and the surroundings in which domestic dogs live are full of opportunities to roll on foul material, mostly on tidal debris (Figure 2) and carcasses. Observations were made on 25 May at mid-day and 19 June at mid-afternoon, 2009. The vultures and the dog were observed with naked eye and through a 70-300 mm photographic auto-focus camera lens at a distance of about 10-30 m. "Ad libitum" and "behaviour" sampling rules (Martin and Bateson 1986), both of which are adequate for opportunistic observations and rare behaviours, were used throughout. In addition to the observational records, I conducted simple experiments to test further (*see* Sazima 2007b) the inquisitive and opportunistic foraging of the vultures: in three occasions I approached a small group of three to five vultures and disposed a handful of small food pieces (cooked rice) on the sand about 10 m from the group. Digital photographs were taken as

vouchers, and further used for description and illustration of cleaning and other behaviours.

In one of the episodes an Irish setter dog resting on a sandy beach had its long hair spoiled with organic debris, due to its rolling on some foul material. Three vultures approached the dog and pulled the soiled hair on the dog's flanks, rump, and even the tail tip (Figures 3-5) to pick the debris. After pulling the hair, the vultures swallowed the debris they took, or rid the bill of some unwanted piece, either by scraping the bill with the foot or rubbing the bill on the sand. While cleaning, the birds displayed a crouched posture with lowered wings (Figures 3-5) and reacted promptly to any sudden movement of the dog, retreating a little. Most of the time one to two vultures cleaned the dog at a time. The dog allowed the hair pulling and was aware of the vultures' activity, its head pointed toward a pulling vulture most of the time (Figures 3-5). Cleaning ended when two vultures repeatedly pulled the hair on the same place of the dog's flank, after which the dog rose and chased the birds briefly and



FIGURES 1-6: (1) A Black Vulture (*Coragyps atratus*) forages at the tide line, picking organic particles washed ashore; (2) a domestic dog rolls on organic debris accumulated at the tide line; (3) a vulture picks organic debris pulling the dog's tail tip, whereas the other crouches – note lowered wings of both birds; (4) a vulture inspects the dog's rump and another deals with a piece of debris; (5) a vulture picks debris from the dog's rump; (6) the dog runs playfully into a small group of vultures resting on the beach.

playfully, the latter taking off and landing near a small group of vultures that was resting and interacting on the beach. The whole cleaning episode lasted about 5 min. The second episode involved the same setter and was essentially similar to the one described above, but only two vultures cleaned the dog and the onset of the episode was not observed (thus, its duration could not be assessed beyond the final 90 sec). This episode ended with the dog rising abruptly and the birds retreating.

Both in May and June 2009 I recorded this setter playfully interacting with the vultures. In one of these interactions, the setter ran (barking all the way) about 10-15 m from the tide level directly to the middle of a group of four vultures sitting on the sand. When it reached the group, only one bird retreated from the dog's path, whereas two others merely stood up, and the third remained seated (Figure 6). The dog briefly joined the birds (which kept their position), wagging its tail and soon ran in another direction. Another dog was recorded to playfully interact with a small vulture group in July 2009.

In all experiments one to three vultures approached the handful of rice and deftly picked each grain with the bill tip and swallowed it. A vulture would feed on rice grains for 1-4 min, after which it either walked away or was expelled from the food source by another individual.

To the best of my knowledge, a bird acting as cleaner of a terrestrial carnivorous mammal is a novelty to be added to the reported relationships between cleaner birds and their clients. Additionally, this is the second record of Black Vulture acting as a cleaner (Sazima 2007a), which increases further the already known versatility of this cathartid species (*e.g.,* Jackson *et al.* 1978, Houston 1994, Buckley 1999, Sazima 2007b).

The versatile and inquisitive foraging of Black Vultures (Houston 1994, Buckley 1999, Sazima 2007a, b) and the rolling behaviour of dogs and other canids on carcasses and other foul organic material (Fogle 1992, Ewer 1998, this paper) are clearly related to the two cleaning episodes. The vultures are capable to pick food as small as fly maggots and organic particles about 5-10 mm in length and/or width (Houston 1994, IS *pers. obs.*). As the birds are used to comb the beach and take very small particles (this paper), picking organic debris from the hair of a resting mammal may be viewed as an outcome even if apparently unusual. Black Vultures have a keen vision and readily converge to food sources however small (Houston 1994, Sazima, 2007b, IS *pers. obs.*), which would allow them to spot organic particles on the dog's hair. This vulture learns quickly (Witoslawsky *et al.* 1963) and takes advantage of a very diverse array of situations and food types (Houston 1994, Buckley 1999, Sazima 2007a, b). Additionally, it often forages in familiar groups (Rabenold 1983, Buckley 1999), which facilitate learning of new feeding situations.

The crouching posture and the lowered wings indicate that the vultures were aware of a potential conflict between theirs picking debris from the dog's hair and the possibility of the dog chasing them, which actually happened once. However, the vultures would learn that the dog poses no real risk, and would become used to it on the beach as both involved parties seem habituated to each other (even if under different circumstances, *e.g.,* the dog playfully chasing the birds). The dog allowing the vultures to pull its hair may be related to the quick learning and disposition to play of dogs and other canids (Fogle 1992, Ewer 1998).

From the behavioural perspective, cleaning soiled hair of resting capybaras (Sazima 2007a) and resting domestic dogs (this paper) may be deemed as similar. A sequence of simple steps might have originated the behaviour of vultures picking organic debris on a dog: 1) the vultures would locate the resting dog on the beach; 2) they would spot the organic debris on the dog's hair; 3) the birds would approach the dog and pull its hair to remove, and feed on, the debris; 4) the dog would tolerate the hair pulling unless hurt or otherwise much disturbed. I postulated a roughly similar sequence for Black Vultures cleaning debris and picking ticks from resting capybaras (Sazima 2007a).

Additional observations may disclose whether Black Vultures picking organic debris on domestic dogs is a localised and perhaps very occasional behaviour (*see* comments in Sazima 2008), or a more widespread one that went unnoticed due to its transient and unpredictable nature and/or lack of attention by field biologists.

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