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PLASTIC AND BLOOD: A FAKE FOOD FOR THE BLACK VULTURE (*Coragyps atratus*) IN THE URBAN ENVIRONMENT

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Abstract: The Black vulture (*Coragyps atratus*) is a neotropical necrophagous bird, recorded in city dumps and places with poor solid waste management. In this study we recorded, for the first time, eight individuals of Black vulture feeding on virgin plastic with blood on it. The event occurred on October 7, 2024 at 4:30 pm, in the city of Teixeira de Freitas-BA. The plastic bags consumed were transparent, of the LDPE (low density polyethylene) type, known as virgin plastic. It was recorded that the bags contained only the remains of blood and/or blood and spices, probably from marinated meat. It can be seen that this type of plastic with blood and/or blood and spices can easily be mistaken for a viscera, such as an intestine or animal skin. Future studies could focus on vultures and other Brazilian urban birds that accidentally consume plastic as fake food, to understand the real implications for their health and life expectancy.

Keywords: vultures, plastic as food, ecological trap, garbage.

Anthropogenic activities, especially urbanization, are having unprecedented effects on biodiversity (Oliveira and Santos 2021). Waste production is perhaps one of the biggest bottlenecks in human activities, and the high production of plastics is one of the greatest pressures on life and health, not only for humans themselves, but also for other living organisms (Tariq et al. 2022). Due to incessant urban expansion, various organisms are forced to adapt to man-made urban habitats, which we refer as urban species, including birds (Marzluff et al. 2001). However, the fact that they inhabit urban environments does not necessarily mean something positive; in fact, many studies had show that these birds have poor body condition and a smaller body size compared to birds that inhabit natural environments, in addition to presenting body anomalies and other physical effects (Meillère et al. 2015, Biard et al. 2017,

Jiménez-Peñuela et al. 2019, Corrêa et al. 2020, Neate-Gate 2023).

The attractions of the urban environment for birds and other organisms are the easy supply of food resources from anthropogenic origin, the relatively low number of predators, the supply of refuge, among others (Marzluff et al. 2001, Evans et al. 2010, Neate-Gate 2023). Nutritional analyses have shown the effect of anthropogenic foods on the responses of various birds to the urban environment (Otoni et al. 2009, Stofberg et al. 2019). Birds such as the common kiskadee (*Pitangus sulphuratus*), for example, even feed their chicks with anthropogenic food, which includes cooked rice and even dog food (Pereira and Melo 2012). This thinking is easier when we analyze omnivorous birds, with a less restricted diet, but what about specialist birds, such as vultures, which are neotropical necrophagous, responsible for disposing of dead animal carcasses in natural environments (Sigrist 2006).

Among the vulture species, the Black vulture (*Coragyps atratus*) is the most common in Brazil's urban areas, and can be seen gliding in the city sky, landing on buildings and scouring rubble dumps. There have some studies on their behavior (Silva and Carmo 2015), health profile (Carvalho et al. 2003, Perez et al. 2008, Barbara 2015), ecological interactions (Souto 2008, Silveira and Silva 2018), aspects of reproduction (Monsalvo et al. 2020), use of urban habitats (Novaes 2013), solid waste and risk of collision with aircraft (Novaes and Alvarez 2014, Novoselova 2016), among others. However, few studies have been carried out on aspects relating to the feeding activity of this species in the urban environment (Keppeler Jr. et al. 2020).

This short communication aims to record the direct consumption of plastic by the Black vulture in the city of Teixeira de Freitas-BA, Brazil. The event occurred on October 7, 2024 at 4:30 pm (Figure 1A). On that occasion, eight

individuals were recorded rummaging through plastic bags of garbage that had been left on the sidewalk in front of a restaurant in the central region of the city. Among the garbage bags, were a presence of transparent LDPE (low-density polyethylene) bags, known as virgin plastic. This type of plastic bag is generally used to package natural foods such as fruit and vegetables in the fridge, and meat in the freezer. The two bags in which the vultures directly consumed plastic were found to contain only the coloring of the organic material that had previously been there, one with only blood and the other with blood and spices, probably from marinated meat (Figure 1B). We saw direct consumption by the individuals by pecking and tearing at the bags, similar to behavior in the wild, in which the vulture supports the carcass with its claws and uses its adapted beak to break the viscera. From the picture, it is possible to observe that this type of plastic with blood and/or blood and spices can easily be mistaken for a viscera, such as an intestine, or even an animal skin or similar.



Figure 1: Individuals of Black vulture (*Coragyps atratus*) consuming plastic (A), one unit with blood and the other with blood and spices (B) recorded in the city of Teixeira de Freitas-BA, in October 2024.

Urban solid waste, especially household waste, attracts different types of animals and can be a problem from both a social and an environmental point of view. In the case of

Teixeira de Freitas, as in other Brazilian cities, the commitment to the correct management of domestic solid waste is fixed by law, but still incipient, requiring actions to raise awareness and mobilize the population to comply with the legislation (Neves and Santos 2023, BRASIL 2010). In this study, it is clear to see the potential damage that the waste torn up and consumed by the vultures may cause to the health of these animals and to the city, since the loose waste can reach the drainage network and subsequently the watercourses, causing flooding and contamination.

The accidental consumption of plastic by birds has been recorded mainly for seabirds, with few studies of other bird groups (Wang 2021, Tariq et al. 2022). There is no doubt about the behavioral plasticity of the Black vulture, which has been observed looting plastic bags from bathers (Sazima 2007, Cunha et al. 2010); however, in the present case, the species confused plastic with food. This raises an important alarm for the health of these animals, since obstruction and perforation of the stomach and intestines can occur, posing a risk to their lives (Basto et al 2019, Vanstreels 2023). In addition, digested plastic generates circulating microplastics that cause a false sense of satiety, which can lead to malnutrition and problems of absorbing nutrients, affecting various systems and damaging the development of nestlings (Susanti 2020, Essoufi et al. 2024).

It is widely known how plastic can adversely affect wildlife, people and ecosystems. A study carried out by Torres-Mura, Lemus and Hertel (2015) in the Atacama Desert with Turkey vultures (*Cathartes aura*) demonstrated the widespread presence of plastic in their diet by analyzing their regurgitation. Even though the vultures regurgitate the plastic, the material is not able to provide the slightest nutritional value, which can lead to dietary deficits and compromise the general state of health of

these birds. Despite the availability of food in garbage bags, the presence of plastic in the diet of the Black vulture, in our study, may be yet another reflection of the negative impacts of human action on the environment, affecting even species that, theoretically, would not feed on plastic waste in their natural habitat.

These consequences of plastic waste on the behavior and feeding ecology of birds clearly show the consequences of human lack of diligence in relation to the environment. Future studies could be directed at Brazilian continental urban birds that accidentally consume plastic, as recorded for the Black vulture. From a broad perspective, the phenomenon recorded here corroborates the fact that the urban environment is an ecological trap for birds and other animals (Zuñiga-Palacios et al. 2021). The urban environment seems to have some advantages, but we have seen that some urban elements are mistaken for food. Plastics are therefore a fake-food, at least for the Black vulture (*Coragyps atratus*).

DECLARATIONS

We, the authors of the manuscript entitled “Plastic and blood: a fake food for the Black vulture (*Coragyps atratus*) in the urban environment” declare that we have no financial, commercial, political, academic or personal conflicts of interest.

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ETHICAL APPROVAL

This study was carried out with flagrant observations of the bird's feeding behavior in the urban environment, and did not require the approval of an ethics committee.

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