

NATURAL HISTORY NOTE

Predation attempt on Brazilian Free-tailed Bat *Tadarida brasiliensis* (Chiroptera, Molossidae) by Pale-breasted Thrush *Turdus leucomelas* (Aves, Turdidae)

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ABSTRACT

This report describes a novel instance of a Pale-breasted Thrush (*Turdus leucomelas*) trying to prey on a Brazilian Free-tailed Bat (*Tadarida brasiliensis*) in an urban area of Brazil. The thrush displayed predatory behavior by striking and transporting the bat to its nest, likely for feeding its nestling. This observation suggests that, during the breeding season, the Pale-breasted Thrush may incorporate small vertebrates into its diet to meet nutritional demands. The findings contribute to understanding the ecological interactions between Neotropical birds and bats, highlighting the potential impact of urban environments on bat vulnerability to avian predation.

Although predator-prey interactions are well-documented across many animal species, our understanding of predator diversity and the impacts of predation on the populations of certain taxa remains limited. Predation on bats by birds is primarily attributed to birds of prey, such as hawks, eagles, and owls (García et al. 2005, Motta-Junior 2006, Mikula et al. 2013, Brighton et al. 2021), and it can significantly influence the demographics and behavior of natural bat populations (Lima & O'Keefe 2013, Mikula et al. 2016). In contrast, episodes of bats being preyed upon by other bird groups are often opportunistic, particularly during periods of food scarcity. While uncommon, such predation events typically involve larger-bodied birds with specialized hunting adaptations (Mikula et al. 2016, Brighton et al. 2021).

These ecological pressures, combined with resource scarcity, can drive unexpected behavioral adaptations in animals. As a major selective force, predation exerts influence at the individual, population, and community levels among prey species (Browning et al. 2021). Although predator-prey interactions are well-documented across many species, the diversity of predators and the effects of predation on bats remain poorly understood. Due to their life history, bats have traditionally been viewed as having relatively few natural predators, primarily limited to nocturnal animals, particularly owls (Lesiński et al. 2009, Roulin & Christe 2013, Bergstrom & Smith 2017).

Although bats are primarily nocturnal, there are documented cases of them being preyed upon by diurnal birds. Mikula et al. (2016) reviewed these occurrences and

found that most predatory events involve raptorial birds. Predatory attempts by non-raptors tend to be opportunistic, as these birds lack the morphological adaptations typical of raptors, such as sharp talons, and instead rely on their beaks to capture and subdue bats (Lefevre 2005, Camargo & Laps 2016). Non-raptorial birds also exhibit behavioral strategies to capture bats during their most vulnerable moments, such as when they are exposed at the entrance of their roosts or when they have fallen to the ground (Whittaker 1995, Camargo & Laps 2016).

The Pale-breasted Thrush, *Turdus leucomelas* Vieillot, 1818 (Aves, Passeriformes, Turdidae), is a Neotropical bird distributed from southern Colombia to northeastern Argentina, with isolated populations in Bolivia and Peru (BirdLife International 2024). It is a forest generalist that inhabits secondary forests, edges, clearings, woodlots, and closed savannas (Collar & Garcia 2020). The species also thrives in anthropogenic environments with some degree of vegetation cover, such as parks, gardens, orchards, plantations, and backyards (Gasperin & Pizo 2009). Pale-breasted Thrushes are omnivorous, primarily consuming fruits but also capturing and ingesting animal matter, particularly invertebrates (Pizo 2004, Gasperin & Pizo 2009, Collar & Garcia 2020). There are records of this species preying on small vertebrates, including lizards (da Silva et al. 2021), snakes (Sazima & D'Angelo 2011), and rodents (de Mafia et al. 2014). Despite its capacity to prey on larger vertebrates, there has been no scientific record of this species preying on bats until now. Here, we report an instance of a Pale-breasted Thrush preying on a bat in Brazil.

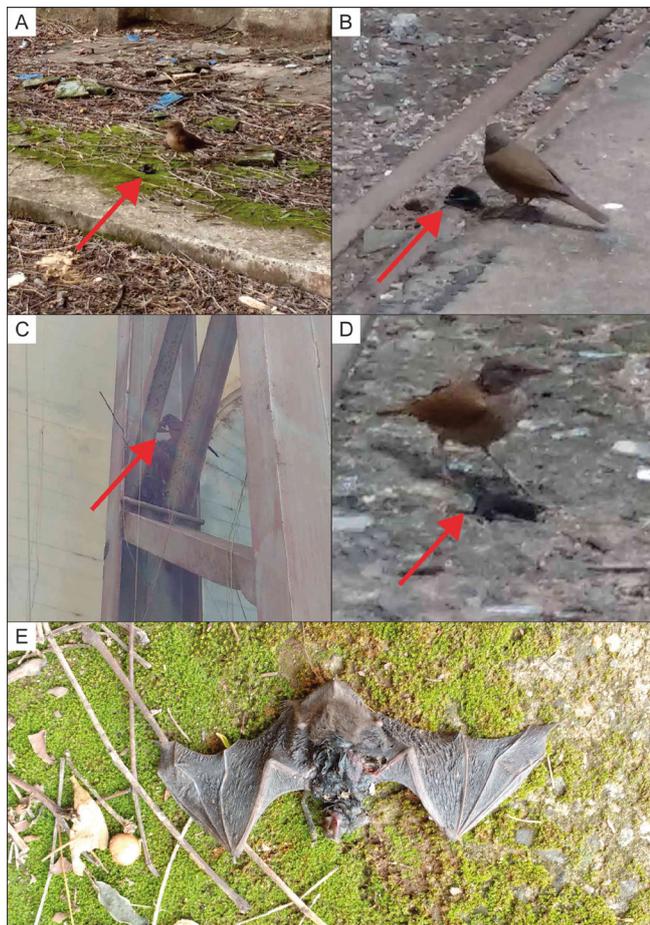


Fig. 1 - Predated Free-tailed bat *Tadarida brasiliensis* by Pale-breasted Thrush *Turdus leucomelas*.

The Brazilian free-tailed bat *Tadarida brasiliensis* (L. Geoffroy, 1824) (Mammalia, Chiroptera, Molossidae) is a small insectivorous bat widely distributed throughout North, Central, and South America, occurring across diverse phytophysionomies (Amaral et al. 2023). The species frequently occupies both natural and anthropogenic shelters, such as caves, roofs, ceilings, and crevices, and often forms large colonies ranging from hundreds to millions of individuals, with colony-specific differences in foraging and behavior (Li & Wilkins 2015). *Tadarida brasiliensis* exhibits pronounced synanthropic habits and a strictly insectivorous diet, feeding mainly on beetles, mosquitoes, true bugs, cockroaches, and moths (Fabian & Gregorin 2007). The synanthropic habits and fidelity to roosts of the species increase its exposure to parasites and potential predators (Mikula et al. 2016, Russo & Ancillotto, 2018). Therefore, these bats play an important ecological role as efficient predators of insects, particularly in human-modified landscapes.

The predation attempt was recorded on 23th November 2016, between 2:58 and 3:08 p.m., near the offices of the Municipal Secretariat of the Environment in Bauru, São Paulo, Brazil (22°19'32.58"S, 49° 4'58.46"W) by one of the authors (DCR) using a smartphone camera. Behind the Secretariat's facilities, there was a large, unoccupied warehouse known to shelter a bat roost. The warehouse consisted of a cement floor, lattice metal columns approximately 6 meters high, and an arched roof made of zinc sheets supported by lattice metal beams. Its total length was 60 meters. Inside, there was

no vegetation or plant cover of any kind. In the warehouse, DCR observed a Pale-breasted Thrush on the ground with an unidentified animal in its beak, approximately 5 meters away from the thrush (Fig. 1A and 1B). The thrush was repeatedly striking the animal against the ground, likely attempting to kill it, and maintained this behavior for approximately five minutes (from 2:58 to 15:03 pm). During this time, DCR was able to approach the thrush and identified the animal as a bat (Mammalia, Chiroptera, *Molossus* sp.).

Afterward, the bird carried the dead bat to its nest, which was located five meters high in a gap in a metal truss supporting the shed roof (Fig. 1C). The thrush carried the bat in its beak and deposited it inside the nest. DCR observed one nestling in the nest. The adult thrush continued to peck at the bat for about two minutes while the nestling vocalized and opened its beak, begging for food. After two minutes, the adult thrush discarded the bat by throwing it out of the nest, where it landed near the base of the pillar. The adult thrush returned several times to peck at the dead bat on the ground but left the area entirely after about a minute (Fig. 1D and 1E). Afterward, DCR photographed the dead bat, enabling the authors to later identify the specimen as *T. brasiliensis*.

Our report shows some insights about how bird predatory behavior could affect bat population in urban areas. Bats often choose anthropic structures, such as buildings, for roosting, which can increase their exposure to predators that dwell on urban environments (Lausen & Barclay 2006, Lesiński et al. 2009). Non-raptorial birds seem to take advantage of this exposure to ambush bats when they were exposed, both on non-Passerines (Holroyd & Beaubien 1983, Martínez-Coronel et al. 2009, Michaelsen et al. 2014) and Passerines (Young 1980, Estók et al. 2010, Mikula 2013, Michaelsen et al. 2014). These attempts are similar to observed in this report, where birds ambush bats in contexts of reduced mobility. Therefore, urban areas could act as 'ecological traps' (Schlaepfer et al. 2002), decreasing the chances of survival of bat populations due to excessive predation (Russo & Ancillotto 2015).

This interaction appears particularly advantageous for the Pale-breasted Thrush during the breeding season. Passerine birds are known to prey on small vertebrates, such as lizards and mammals, during this time, as these prey items provide higher levels of protein, calcium, and energy compared to fruits or invertebrates (Lopes et al. 2005). These nutritional benefits are essential for the proper growth and development of nestlings. In the case reported here, although the thrush was unable to consume the bat, its behavior strongly suggests an attempt to transport the bat (or its fragments) as food for its nestling. Our findings indicate that the Pale-breasted Thrush may incorporate vertebrates into its diet to fulfill its nutritional requirements during this critical period. The limited number of reports documenting this type of prey may result from a lack of natural history-oriented studies, especially those focusing on Passerine birds preying on bats. This observation is significant as it broadens our understanding of the ecological interactions between Neotropical vertebrates and contributes to a deeper knowledge of Passerine birds feeding behaviors.

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