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Camera traps record reptile predation in central-western Brazil

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Camera traps have become established as one of the most important tools for indirect and non-invasive biodiversity monitoring and are particularly useful for studying species and behaviors that are difficult to observe (Burton et al., 2015, 2022). Although this method is traditionally employed for detecting small to large mammals, it also allows sampling of various other taxonomic groups, such as anurans and reptiles (Doan, 2025; Santana et al., 2023). However, detecting these animals is challenging due to their small size and ectothermic physiology, which may reduce thermal contrast with the environment (Yan et al., 2026).

Camera traps have also been increasingly used to document predators and predator-prey interactions in the wild (Smith et al., 2020). In this context, reptiles perform diverse trophic roles in tropical ecosystems, acting as both predators and prey (de Miranda, 2017). Reptiles are preyed upon by a taxonomically diverse range of predators, including birds, mammals, and invertebrates (e.g., Maritz and Maritz, 2020).

Many animals dig or occupy burrows, and these structures become key sites for refuge, as well as serving as points where predators can lurk, ambush prey, or store food (Blanco et al., 2020; Keuroghlian-Eaton et al., 2023). In this context, burrows dug by the *Priodontes maximus* (Kerr, 1792) are frequently used by several other species (Desbiez and Kluyber, 2013). Among the observed uses are 1) refuge from predators and extreme temperatures, 2) thermoregulation (with lower temperature inside the burrows), 3) sand bathing, 4) foraging in the sand mound, and even 5) prolonged shelter (Desbiez and Kluyber, 2013). Placing cameras in front of giant armadillo burrows can help detect different taxa, including anurans (Yan et al., 2026) and lizards (Santana et al., 2023).

Using camera-trap footage obtained during ongoing long-term monitoring programs of the *Priodontes maximus* in the Pantanal and Cerrado of Mato Grosso do Sul, we obtained unreported records of reptile predation in natural environments. Specifically, we documented the predation of *Ameiva ameiva* (Linnaeus, 1758) by *Leopardus pardalis* (Linnaeus, 1758); of *Apostolepis* sp. by *Turdus leucomelas* Vieillot, 1818 and *Philodryas nattereri* (Steindachner, 1870) by *Rupornis magnirostris* (Gmelin, 1788). These findings offer a new perspective on predator-prey interactions, confirm the potential of camera traps to record rare behaviours, and highlight the ecological role of giant armadillo burrows as sites of biological interactions.

Materials and Methods

We obtained the records from camera-trap monitoring conducted at two sites in the state of Mato Grosso do Sul. The first site is in the Pantanal of Nhecolândia (2010–2026), specifically at Fazenda Baía das Pedras, in the municipality of Aquidauana. The second is in the Cerrado (2022–2026), at Parque Natural Municipal do Pombo (PNMP), in the Municipality of Três Lagoas (Desbiez et al., 2020; Santana et al., 2023). The records presented in this study come from Reconyx HF2 Pro Covert camera traps, configured in rapid-fire mode, capturing one to five consecutive photos or a video clip per trigger without an interval between triggers. Additionally, the equipment was positioned facing the entrances of the *P. maximus* burrows. The records are from four sampling stations (Fig. 1), two in the Pantanal (19.2378°S, 55.7906°W, 126 m elevation; and 19.2108°S, 55.8519°W, 127 m elevation) and two in

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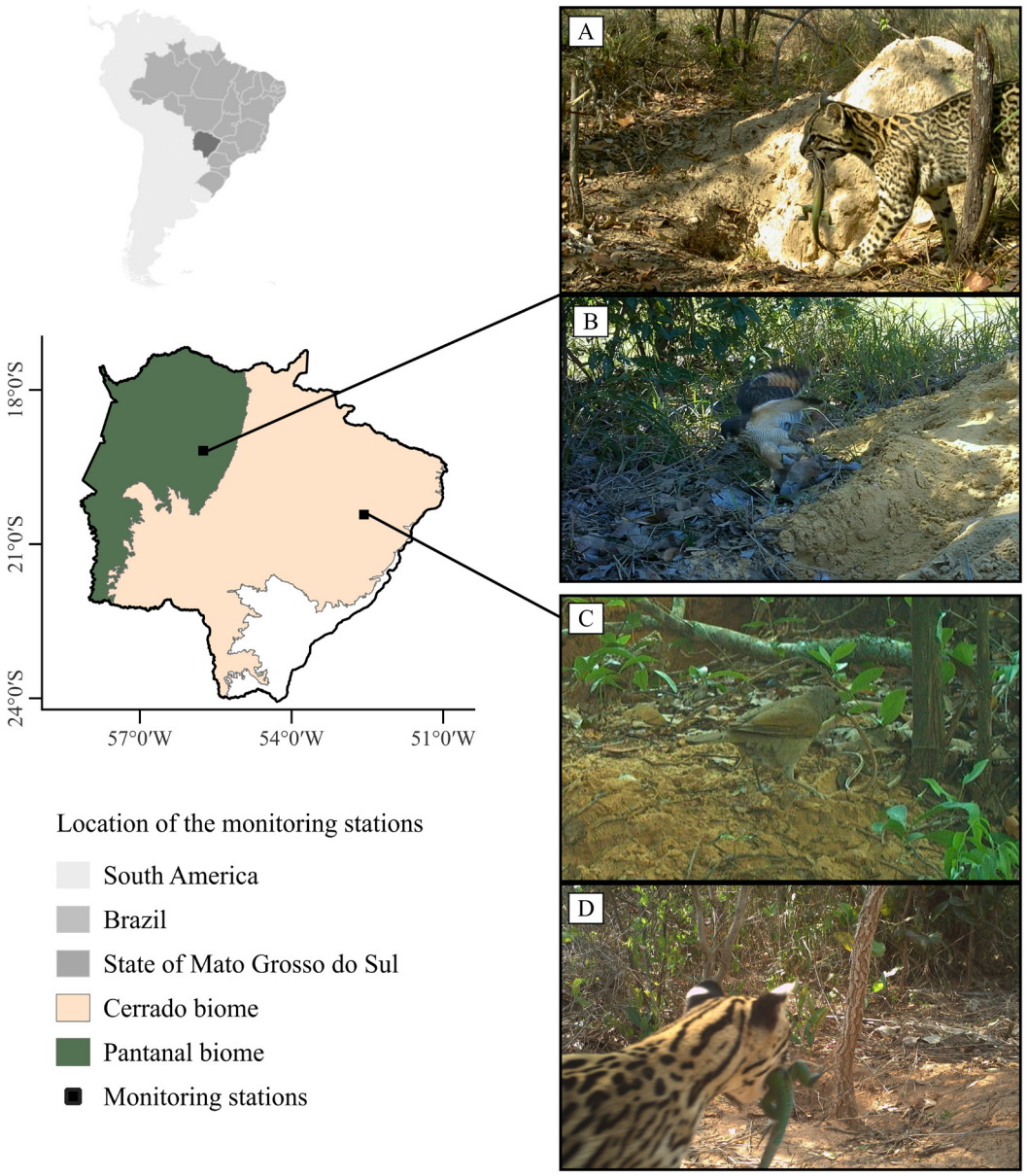

Figure 1. Geographic location of the camera trap monitoring stations at *P. maximus* burrows in the Pantanal and the Cerrado biomes, Mato Grosso do Sul, Brazil. (A) *L. pardalis* preying on an *A. ameiva* in the Pantanal. (B) *R. magnirostris* preying on a *P. nattereri* in a Pantanal area. (C) *Turdus leucomelas* preying on a snake of the genus *Apostolepis* in the Cerrado. (D) *L. pardalis* preying on an *A. ameiva* in a Cerrado area.

the Cerrado (20.3317°S, 52.6081°W, 421 m elevation; and 20.3572°S, 52.6733°W, 390 m elevation). Before the respective predation events, the stations had accumulated approximately 372 and 13 camera-days in the Pantanal and 295 and 74 camera-days in the Cerrado, respectively. Species were identified based on diagnostic morphological characteristics visible in the images. The identification of *Ameiva ameiva* followed Harvey et al. (2012), whereas snakes were identified using Entiauspe-Neto et al. (2021) and Nogueira et al. (2019). All identifications were subsequently confirmed by taxonomic specialists.

Results and Discussion

Throughout the monitoring period, both in the Pantanal and in the Cerrado, we observed four predation events: (1) in the Pantanal, an Ocelot (*Leopardus pardalis*) preying on an *Ameiva ameiva* on 1 October 2012, at 08:44 h (Fig. 1A); (2) in the Pantanal, a Roadside Hawk (*R. magnirostris*) preying on a Savanna Racer (*Philodryas nattereri*) on 5 May 2026, at 10:47 h (Fig. 1B, see Video 1); (3) at PNMP, a Pale-breasted Thrush (*Turdus leucomelas*) preying on a Black-tailed Blackheads (*Apostolepis* sp.) on 1 December 2025, at 17:09 h (Fig. 1C); (4) at PNMP, an Ocelot was recorded preying on an *Ameiva ameiva* on 5 October 2025, at 08:35 h (Fig. 1D).

These records reveal predator-prey interaction events in the immediate vicinity of *P. maximus* burrows. Two of these events consisted of predation on *A. ameiva* by *L. pardalis*, one in the Pantanal and one in the Cerrado; a third involved an *Apostolepis* sp. being preyed upon by *T. leucomelas* in the Cerrado; and the fourth involved *P. nattereri* being preyed upon by *R. magnirostris* in the Pantanal.. Although such interactions are seldom documented within a long-term monitoring study, these findings highlight the potential of camera traps focused on fossorial mammals for the incidental capture of relevant ecological interactions, especially in microhabitats such as *P. maximus* burrows (Blanco et al., 2020).

The predation of *A. ameiva* by *L. pardalis* is noteworthy. Although *L. pardalis* is a medium-sized felid with a diet known to include small mammals, birds, and reptiles, direct records of predation during the day are rare, since the species is predominantly nocturnal, but capable of adjusting its activity according to prey availability (Macas-Pogo et al., 2023; Oliveira et al., 2023; Hannibal et al., 2025). Furthermore, both events occurred at the entrances of *P. maximus* burrows, suggesting that these structures may serve as advantageous hunting sites for Ocelots (Flores and Hannibal, 2025). *Ameiva ameiva*, a diurnal and actively foraging teiid, may use these burrows for thermoregulation, escape, or foraging (Santana et al., 2023), which may increase its vulnerability to opportunistic predators such as *L. pardalis* (Hannibal et al., 2025). Although the predation of *P. nattereri* by *R. magnirostris* is a novel record documented by camera traps, snakes are frequently documented as part of their diet (Zocche et al., 2018; Gomes, 2022). The predation of an *Apostolepis* sp. by *T. leucomelas* represents an unusual interaction between a passerine and a small fossorial snake (Sazima and D'Angelo, 2011). Although *T. leucomelas* is omnivorous, feeding mainly fruits, arthropods and, occasionally, small vertebrates (Sazima and D'Angelo, 2011), there are few documented records of snake predation by this species (Sazima and D'Angelo, 2011; González-Bruzual and Marín, 2015). Snakes of the genus *Apostolepis*, in turn, are fossorial, have secretive habits, show diurnal and nocturnal activity, and occur frequently in sandy environments or with leaf litter (Fermiano et al., 2020; Entiauspe-Neto et al., 2021). When turning over leaf litter in search of food, *T. leucomelas* may locate these snakes (Sazima and D'Angelo, 2011). This record reveals a rare and poorly documented ecological interaction, expanding knowledge of the opportunistic diet of *T. leucomelas* and reinforcing the importance of using camera traps to detect stealthy behavioural events in natural environments (Caravaggi et al., 2017).

Finally, our findings demonstrate that *P. maximus* burrows act not only as refuges and ecosystem engineering structures, but also as sites of predator-prey interactions involving reptiles and different vertebrate guilds. These observations reinforce the value of long-term camera-trap monitoring for documenting rare ecological interactions incidentally. By documenting direct predation events on reptiles, this study contributes to a better understanding of tropical interactions in Neotropical ecosystems and underscores the potential of camera traps as a complementary tool for studying ecological interactions that are otherwise difficult to observe.

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Appendix

Video 1. *Rupornis magnirostris* preying *Philodryas nattereri*. Taken in the Pantanal Brazilian biome. Video available for viewing here.

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