



Predation of *Archilestris capnoptera* (Wiedemann, 1828) (Diptera, Asilidae) by a Salticidae spider in campo rupestre associated with the Atlantic Forest, Brazil

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ABSTRACT

The family Asilidae (Diptera) comprises active predators with a wide distribution across Brazilian terrestrial ecosystems. Despite their predatory behavior, asilids may also serve as prey, although documented records of such interactions remain scarce. In this study, we report for the first time the predation of *Archilestris capnoptera* (Wiedemann, 1828) by a spider of the family Salticidae in a “campo rupestre” area associated with the Atlantic Forest biome. The event took place under conditions that suggest temporal and spatial overlap between the two predators, characterizing a case of intraguild predation. This record expands the knowledge on underreported trophic interactions among predatory arthropods and reinforces the importance of protected areas for the maintenance of complex ecological processes in highly biodiverse and threatened environments such as the “campo rupestre”.

KEYWORDS: Ecological interaction. Niche overlap. Robber flies.

Predação de *Archilestris capnoptera* (Wiedemann, 1828) (Diptera, Asilidae) por uma aranha Salticidae em campo rupestre associado à Mata Atlântica, Brasil

RESUMO

A família Asilidae (Diptera), conhecida como moscas-assassinas, são predadores ativos com ampla distribuição em ecossistemas terrestres brasileiros. Apesar disso, também podem atuar como presas, embora existam poucos registros documentando essa condição. Neste trabalho, reportamos pela primeira vez a predação de *Archilestris capnoptera* (Wiedemann, 1828) por uma aranha da família Salticidae, em campo rupestre associado ao bioma Mata Atlântica. O evento ocorreu sob condições que sugerem sobreposição temporal e espacial entre os dois predadores, configurando um caso de predação intraguilda. Este registro amplia o conhecimento sobre interações tróficas pouco documentadas entre artrópodes predadores e reforça a importância das Unidades de Conservação na manutenção de processos ecológicos complexos em ambientes biodiversos e ameaçados como o campo rupestre.

PALAVRAS-CHAVE: Interação ecológica. Sobreposição de nicho. Moscas assassinas.

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The family Asilidae Latreille, 1802, commonly known as robber flies, consists of dipteran predators of various invertebrates (Carrera, 1945; Londt, 2006; Souza *et al.*, 2018; Estrada; Ramírez-García; Pérez-Hernández, 2021), including spiders (Dennis; Lavigne; Dennis, 2012). However, spiders may also act as predators of asilids (Lavigne; Bullington; Stephens, 1993; Lavigne; Young; Glatz, 2009), although such records are rare and often underestimated. This underscores the need for studies that report such trophic relationships, as these dipterans play a relevant ecological role as population regulators across different terrestrial ecosystems (Londt, 2006). Furthermore, documenting such predator–predator interactions is ecologically significant because they may represent cases of intraguild predation, a process that can influence predator dynamics and the structure of food webs (Polis *et al.*, 1989).

In Brazil, 478 species of Asilidae are currently recognized, including *Archilestris capnoptera* (Wiedemann, 1828), recorded in the Central-West, Southeast, and South regions, occurring in biomes such as the Cerrado and the Atlantic Forest (Lamas; Camargo, 2025). Despite the broad distribution of the family, information on its occurrence and ecological interactions in the “campo rupestre” remains scarce. This phytophysiognomy, although covering approximately 1% of Brazil’s territory, harbors nearly 30% of the country’s flora (Fiaschi; Pirani, 2009) and is subject to increasing anthropogenic pressures, particularly mining (Morandi *et al.*, 2020). Recognized as a national hotspot of high ecological relevance (Fernandes *et al.*, 2020), the “campo rupestre” demands further ecological investigations, including documentation of trophic interactions, which are essential for understanding local community dynamics and supporting conservation strategies within Protected Areas (Salvio, 2017; Dias-Oliveira *et al.*, 2025).

Given this context, the objective of this study is to report the predation of *A. capnoptera* by a spider in a “campo rupestre” area associated with the Atlantic Forest, within the Pico do Itambé State Park. This conservation unit is considered a conservation priority for invertebrates in Minas Gerais (Drummond *et al.*, 2005), southeastern Brazil. The record was made opportunistically during an invertebrate survey on November 20, 2024, near Cachoeira da Água Santa in Pico do Itambé State Park, Minas Gerais, Brazil (18°26'22.7" S, 43°18'01.3" W). This park is notable for its environmental heterogeneity, featuring, “campo rupestre”, a phytophysiognomy of the Cerrado, and seasonal semideciduous forest, a phytophysiognomy of the Atlantic Forest, located within the Espinhaço Mountain Range region (Chaves; Andrade; Benitez, 2012).

The specimens were collected using forceps, preserved in 70% ethanol, and subsequently sent for identification. The Asilidae specimen was identified using the Papavero and Bernardi (1974) dichotomous key, and the spider family using the Brescovit, Rheims, and Bonaldo (2002). The material was deposited in the Social Wasps Biological Collection (CBVS) of the Instituto Federal do Sul de Minas (IFSULDEMINAS). The record took place in a riparian forest, within a “campo rupestre” area associated with the Atlantic Forest (Figure 1A), at 6:30 p.m., where a robber fly (*A. capnoptera*) was observed being preyed upon by a female spider of the family Salticidae Blackwall, 1841 on a leaf approximately 1.5 m above the ground (Figure 1B), near the water body.

The observed predation event likely resulted from temporal and spatial niche overlap between the two predators. Robber flies (Asilidae) are highly active visual predators with typically diurnal habits (Wardill *et al.*, 2017). They rely on their visual acuity to locate and capture prey in flight, frequently attacking insects and other arthropods, including other predators such as wasps, dragonflies, and spiders

(Ghahari *et al.*, 2007; Dennis; Lavigne; Dennis, 2012). Similarly, spiders of the family Salticidae, commonly known as jumping spiders, are also visually oriented, diurnal hunters that display active foraging behavior, including stalking and rapid attacks through directed jumps (Jackson; Pollard, 1996; Richman; Jackson, 1992).

Figure 1: “Campo rupestre” area associated with the Atlantic Forest (A), where the predation event occurred; *Archilestris capnoptera* being preyed upon by a spider of the family Salticidae (B).



Fonte: Dados da pesquisa, 2026.

Although the record occurred at dusk (6:30 p.m.), the predation may have taken place minutes earlier, still under light conditions sufficient for visual activity by both organisms. It is possible that the robber fly was already transitioning into a resting phase, with reduced activity, while the spider was still actively exploring the environment under twilight illumination. The ambush behavior, combined with the excellent vision of Salticidae spiders, may have favored a successful attack on a momentarily vulnerable prey. A similar behavior was observed by Lavigne (1972), who reported a Salticidae spider leaping onto an Asilidae while the fly was feeding on another prey item.

In addition to temporal overlap, there is evidence of spatial overlap. Asilids use vegetation edges and riparian forests as hunting and resting areas (Londt, 1994), habitats rich in trophic resources and structurally favorable for flight and prey pursuit (Shelly, 1987). *Archilestris capnoptera*, in particular, has been recorded preying on dragonflies in riparian forests (Souza *et al.*, 2018). Salticid spiders also prefer intermediate vegetation and leaves exposed to sunlight, which are commonly found in such environments (Jackson; Pollard, 1996). This overlap in microhabitat use reinforces the likelihood of frequent encounters between the two predators, with potential for direct interactions such as the one described here.

This event can be interpreted as a case of intraguild predation, in which predators sharing similar prey and ecological niches interact aggressively and directly (Polis *et al.*, 1989). Predation among active visual predators, such as Salticidae and Asilidae, illustrates how intraguild predation can act in regulating predator populations and influence the structure of trophic webs (Jacques, 2017). There are some records

of Salticidae preying on Asilidae, for example in Australia (Lavigne, 1972; Dennis; Lavigne, 1975; Lavigne; Bullington; Stephens, 1993) and the United States (Dennis; Lavigne; Bullington, 1986), but this is the first record in Brazil.

Although such observations are rare and punctual, they highlight the importance of naturalistic records for understanding poorly documented ecological interactions, especially in habitats such as riparian forests within “campo rupestre”, which remain under-sampled from behavioral and trophic perspectives. Furthermore, the fact that this record occurred within a Protected Area underscores the fundamental role of these conservation units not only in species protection but also in maintaining the integrity and functioning of ecological networks that sustain different biomes.

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CONFLICT OF INTEREST. Os autores declaram que não têm interesse comercial ou associativo que represente um conflito de interesses em relação ao manuscrito.

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