

# Predatory behaviors: *Pristimantis savagei* (Anura: Craugastoridae) as prey of *Trechalea* sp. spiders (Araneae: Trechaleidae) in a sector of the Piedemonte Llanero, Villavicencio, Colombia

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**Abstract.**—We recorded a predation event by an individual of *Trechalea* sp. on a *Pristimantis savagei* frog, in a zone of the Piedemonte Llanero, Colombia. This is the first record of the depredation of amphibians by arachnids in the Piedemonte Llanero.

**Keywords.** Amphibians, interaction networks, interspecific interaction, predator-prey, predatory behavior

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The Rain Frog, *Pristimantis savagei* (Anura: Craugastoridae), is a Colombian endemic species distributed from the sub-Andean forests to the sub-páramo of the eastern slopes of the Eastern Mountain Range, ranging from 600 to 3,000 m of elevation (Acosta-Galvis 2018). It is a nocturnal species that prefers rocks, shrubs, and tree leaf microhabitats, and in secondary forests it can be found near water bodies (Van Berkum 1982). There is currently little knowledge of the biotic interactions and natural history of this species, as well as its predators, habitat use, population density, and other aspects of basic biology.

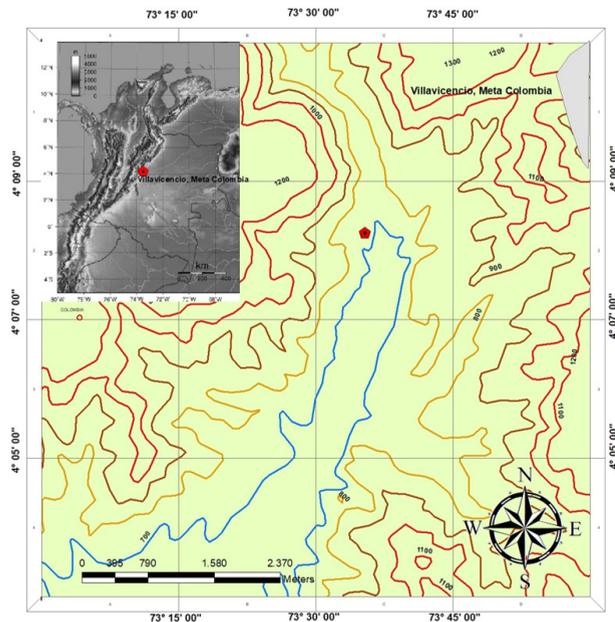
The arachnids of genus *Trechalea* (Thorell, 1869) (Arachnida: Trechaleidae) are aggressive predators of a large variety of prey, including both vertebrates and invertebrates, and they can be easily identified because they are relatively large spiders with a prosoma length of 6.1–11.0 mm (Carico 1993). They are mainly found on rocks, trunks, leaves, and on the ground near water bodies (Van Berkum 1982). They are also reported to favor specific foraging sites near water bodies, possibly due to the prey availability in these habitats (Van Berkum 1982; Adams 2000). As for the Rain Frog in the Neotropics, limited information is available regarding its foraging, types of prey, and general resource use (Whiles et al. 2006; Cortés-Gómez et al. 2015).

During recent nocturnal sampling for characterizing the amphibian fauna in a sector of the Piedemonte Llanero

in the Municipality of Villavicencio-Meta, Colombia (Fig. 1), which is characterized by having *Pourouma guianensis*, *Rinorea macrocarpa*, and *Cassia moschata* mixed forests (Rangel-Ch and Minorta-Cely 2014), we recorded a predation event in which an individual *Trechalea* sp. spider depredated a Rain Frog *Pristimantis savagei* (Fig. 2). The behavioral observation occurred on 20 March 2018 during the heaviest rain season of the year, after 2100 hours, near the stream of Caño Buque, in the village of El Carmen, municipality of Villavicencio, Meta, Colombia (4°8.641'N, 73°40.071'W, 737 m asl). The area of the finding was characterized as a gallery forest, slightly intervened with canopy cover that exceeded 60%, and the presence of a large amount of rocks, and a stream with a low flow.

Specifically, the predation event took place in the following sequence of events. The spider was situated on a rock at an approximate height of 150 cm, and less than 1 m from the water body (Fig. 3), with a passive foraging behavior (stillness). During the capture of the prey there were no major movements for more than 10 minutes, from either the spider or the frog. Despite being alive, the frog offered no resistance to predation, perhaps due to a substance injected by the arachnid. The secretion of digestive enzymes could be seen, which turned the frog into a “broth” (Fig. 4), as was also described by Toft (2013) as a feeding mechanism of these spiders.

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**Fig. 1.** Site of *Pristimantis savagei* predation by *Trechalea* sp., in a sector of Piedemonte Villavicencio-Meta, Colombia. The red dot indicates the exact site of discovery in the Caño Buque.

The findings of anuran depredation by spiders have been well documented in some neotropical regions (e.g., Toledo 2005; Pombal, 2007). The works by Costa-Pereira et al. (2010), found that for some spiders of families Psauridae and Trechaleidae, their diet included juvenile *Osteocephalus taurinus* frogs, and that depredation was attributed to the corporal size and abundance of this frog in the juvenile phase, which led to it being a major component of the diet of the spiders. Moura et al. (2011) recorded the depredation of *Dendropsophus melanargyreus* by the giant spider, *Ancyclometes rufus*, in zones near streams. Also, Kirchmeyer et al. (2017) recorded the depredation of the tree frog, *Scinax similis*, by a weaver spider, *Eriophora fuliginea*, where the prey was alive wrapped in the spiderweb. While these are just a few examples, many of these reports are similar to the event reported here for the Piedemonte Llanero, which could indicate a relatively common pattern in these biological interactions.

The importance of this finding lies in its addition to the known natural history of this predator and the interspecific interactions of the prey, and it contributes to the debate of new questions in the investigation of the trophic network dynamics in an established area. In addition to Trachaleidae, there are records of seven other families of Araneae as anuran predators, while most of the cases where recorded for the fisher spiders from the family Pisauridae (Toledo 2005). For the Trechaleidae family, very few cases have been reported on its hunting behavior (Höfer and Brescovit 2000), foraging modes, or predation rates, however the observation reported here adds the first detailed record for the Piedemonte region in Colombia, and brings to mind new investigations as documented by Barbo et al. (2009) for other latitudes.



**Fig. 2.** Record of predation of *Pristimantis savagei* by *Trechalea* sp., in a sector of Piedemonte, Villavicencio-Meta, Colombia.



**Fig. 3.** Warning stance of the spider *Trechalea* sp. The individual was on a rock at an approximate height of 150 cm, less than 1 m from the water source.



**Fig. 4.** *Trechalea* sp. individual secreting its digestive juices.

Other aspects of importance for the predatory event of *Trechalea* sp. on *Pristimantis savagei* are the anthropogenic stressors witnessed in the study area (habitat loss and fragmentation), because these have been reported to impact, in either a positive or negative way, the interspecific interactions and lead to imbalances in the natural system (Mahecha-J and Díaz-S 2015).

Finally, our results in this work provide a baseline in the formulation of new questions for investigation that can lead to a better understanding of the dynamics (on the interspecific level) of interaction networks in areas with high ecological and biological value, such as the Piedemonte Llanero of Colombia.

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