

First Record of Autotomy in the Neotropical Scorpion *Ananteris cussinii* Borelli, 1910 in Trinidad, W.I.

Autotomy is the behaviour whereby an animal voluntarily sheds or discards one or more of its own appendages, usually as a self-defence mechanism, to elude a predator's grasp or to distract the predator and thereby allow escape. It is observed in a variety of invertebrate and vertebrate taxa (Fleming *et al.* 2007; Bateman and Fleming 2009), and in some instances the lost body part may be subsequently regenerated. Autotomy of a body part therefore serves as an effective anti-predator defence mechanism (Fleming *et al.* 2007). As it pertains to scorpions, autotomy has only been reported to occur in the neotropical buthid Genus *Ananteris* Thorell, 1981, where detachment of the metasoma meets the criteria for defensive autotomy (Wilkie 2001; Fleming *et al.* 2007), and as such, enables the prey to escape from predation (Arnold 1988; Fleming *et al.* 2007). This however, is not without consequence as Maginnis (2006) points out that autotomy may also be particularly detrimental in species where the autotomized limb functioned as predator defence because predators often prefer prey missing their defensive limbs due to these individuals being easier to handle during foraging. This therefore suggests that autotomized scorpions would be especially predisposed to attack as Brownell and Polis (2001) indicated that all scorpions use their stings as their major defence mechanism.

The evolutionary significance of this mechanism occurring exclusively in this genus currently comprising 79 known species remains unknown. This phenomenon was first reported by Mattoni *et al.* (2011) where the authors investigated 14 species of *Ananteris*. Subsequently, Lira *et al.* (2013), reported on metasomal autonomy occurring in *Ananteris mauryi* Lourenço, 1982, which was a first report for this species. The number of species of this genus capable of performing metasomal autotomy has therefore not been exhausted and this paper further adds to this, as it serves as a first report of metasomal autonomy occurring in yet another species, *Ananteris cussinii* Borelli 1910. This species, originally described from Cagua in Venezuela is the only member of the genus *Ananteris* present in Trinidad (Lourenço *et al.* 1999; Prendini, 2001).

The observation of autotomy in this species was made while conducting a nighttime field survey of scorpions in the Bush Bush Forest Reserve, Trinidad, W.I. (10° 22' N, 61° 02' W). Two adult *A. cussinii* specimens were observed with the posterior part of the metasoma (tail) missing, inclusive of the telson (stinger), with the point of breakage on the metasoma of both scorpions seemingly healed from injury. These observations, in addition to the observations of the behaviour of these scorpions in the

field, suggest that autotomy had previously occurred in both of these specimens. The first specimen was alert and responsive as it was observed scurrying through leaf litter in the pathway under ultraviolet light (wavelength 395 nm). Approximately 100 metres along the same pathway another specimen of *A. cussinii* was observed with its telson missing. This specimen was very active and the behaviour was similar to that of the first. An attempt was made to collect this specimen with the use of a forceps by gently clasping the most distal segment of the metasoma. As the scorpion was elevated, the metasomal segment that was clasped with the forceps detached from the remainder of the scorpion and both the scorpion and metasomal segment fell to the floor as a second autotomy of the metasoma was performed (fig. 1). The scorpion attempted to escape, while the metasomal segment that fell to the floor writhed consistently for approximately 15 seconds as this would undoubtedly serve as a distraction to a would-be predator as with shed appendages of other animals that perform autotomy. This observation therefore fits the



Fig. 1. *Ananteris cussinii* Borelli 1910, with autotomized metasoma after second autotomy was performed (carapace to start of metasoma, 8 mm in length).

criteria used by Mattoni *et al.* (2015) for autotomy in this genus. The specimen was deposited the Zoology Museum, UWI St Augustine, and is numbered UWIZM.2016.36.

It would be of interest to investigate why autotomy has evolved in this particular genus as opposed to others, especially in an area where several genera are known to coexist and are undoubtedly subjected to similar predation pressures, which according to Fleming *et al.* (2007), regularly favours the evolution of appendage detachment in prey.

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