Revista Ibérica de Aracnología, nº **37** (31/12/2020): 259–261.
Grupo Ibérico de Aracnología (S.E.A.). ISSN: 1576 - 9518.

Harpactirella lightfooti (Araneae: Theraphosidae) as prey of *Latrodectus geometricus* (Araneae: Theridiidae) in South Africa

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Abstract: Predation of an adult male of the theraphosid *Harpactirella lightfooti* Purcell, 1902 by an adult female of the theridiid *Latrodectus geometricus* C. L. Koch, 1841 is reported from Western Cape, South Africa.
Key words: Araneae, Theraphosidae, Theridiidae, predation, South Africa.

***Harpactirella lightfooti* (Araneae: Theraphosidae) como presa de *Latrodectus geometricus* (Araneae: Theridiidae) en Sudáfrica**
Resumen: Se informa de la depredación de un macho adulto del terafósido *Harpactirella lightfooti* Purcell, 1902 por una hembra adulta del terídido *Latrodectus geometricus* C. L. Koch, 1841 en El Cabo Occidental, Sudáfrica.
Palabras clave: Araneae, Theraphosidae, Theridiidae, depredación, Sudáfrica.

The theraphosid spider *Harpactirella lightfooti* Purcell, 1902 is endemic to South Africa, originally described from four females and two apparent juveniles from Paarl, South Africa, then part of the Cape Colony. It was differentiated from other species of the genus by leg morphometrics (Purcell, 1902: 347). No work since has comprehensively dealt with this species. In contrast, the theridiid *Latrodectus geometricus* C. L. Koch, 1842 is a cosmopolitan species with an extensive taxonomic history (World Spider Catalog, 2020). The presence of the genus *Latrodectus* Walckenaer, 1805 in South Africa has been known for over a hundred years, with *L. geometricus* being recorded from what is now the Republic of South Africa from the early twentieth century onwards (Pickard-Cambridge, 1902; Smithers, 1944; Levi, 1959; Zumpt, 1968). Indeed, Pickard-Cambridge (1902) specifically cites the Cape Colony as a locality for *L. geometricus*.

In this work, we report the predation of an adult male of *H. lightfooti* by an adult female of *L. geometricus* in an urban setting in the Western Cape, Republic of South Africa and review prior literature on araneophagic predation of theraphosid spiders.

On the 24th May 2020, at approximately 13:15 South African Standard Time, the first author came across a large *L. geometricus* actively consuming a theraphosid spider in its web, situated under the rim of a bucket on the stoep (= verandah). The observation was made in the vicinity of Riebeeck Kasteel, Western Cape, Republic of South Africa (approximately -33.386302, 18.912366). Photographs of the event (Figs. 1–2) were placed onto the website "iNaturalist" where they were noticed by the second author who was able to identify the theraphosid as *H. lightfooti*, based on the absence of retrolateral cheliceral scopulae (*sensu* Gallon, 2002), colouration of the radial striae on the carapace, patterning of the dorsal opisthosoma, and the geographical location. The only other similarly sized theraphosid species in the area, belonging to the genus *Harpactira* Ausserer, 1871, are easily distinguished by the presence of scopulae on the retrolateral chelicerae (Gallon, 2002) and their much darker colouration. The specimen of *L. geometricus* is confirmed as an adult female based on the evident epigyne (see Fig. 2) and its size in comparison to the prey. The specimen of *H. lightfooti* is an adult male, which are common in the general area during the months of April and May, with another (or possibly the same) individual being observed by the first author several weeks prior to the presently reported observation (Fig. 3). It is also noteworthy that the theraphosid was itself predating a millipede, plausibly *Ommatoiulus moreleti* (Lucas, 1860), although we are unable to identify with certainty the taxonomic identity of the millipede based solely on the photographs. None of the specimens were collected, and identifications are based solely on the photographs presented herein.

L. geometricus can establish in a wide variety of habitats, makes an irregular shaped (but effective) web and catches a wide variety of prey (e.g. Rossi & Godoy, 2005; Taucare-Ríos & Canals, 2015). Male theraphosid spiders wander in search of mates (Baerg, 1928, 1958; Costa & Pérez-Miles, 2002) and this can often lead them to wander into human habitation. It is possible that the male *H. lightfooti* inadvertently became trapped in the web whilst wandering in search of a female or whilst moving shortly after it predated the millipede. Since the initial prey capture was not observed these possibilities can only be discussed speculatively. Intra-infraorder araneophagy is well documented in many families of araneomorph spiders, both in wild (e.g. Oliveira-Gonzaga, et al., 1998; Klook, 2001; Jackson *et al*., 2008; Romero & Flórez, 2014) and laboratory settings (Heuts & Brunt, 2005, 2009a, b). Such predation also occurs in human habitation, particularly in the case of cosmopolitan and synanthropic species (e.g. Sherwood, 2019). In contrast, inter-infraorder araneophagy is comparatively scarce. In the context of theraphosids, de Armas & Pérez-González (2019) report predation of recently emergent spiderlings of *Phormictopus cubensis* Chamberlin, 1917 by the pholcid *Physocyclus globosus* (Taczanowski, 1874) in human habitation in Cuba and Gabriel & Sherwood (2020) report the predation of a captive-reared spiderling of *Omothymus violaceopes* (Abraham, 1924) by *Pholcus phalangioides* (Fuesslin, 1775). However, these are, to our knowledge, the only detailed and fully illustrated observations thus far of predation of theraphosid spiders by comparatively smaller araneomorph taxa. Here, we seek to distinguish these two forms of araneophagy, both resultant from the basic behaviour for sustenance of the single individual, from the occasional intraspecific sexual cannibalism exhibited (usually, but not exclusively, post-coitus) in many female spiders of both of these infraorders (e.g. Jackson, 1980; Elgar & Nash, 1988; Elgar, 1991, Shillington & Verrell, 1997; Johnson, 2001; Segoli *et al*., 2008; Ferretti & Ferrero, 2008) which is resultant from mechanisms which further seek (in addition to the above behaviours) to ensure the production of new offspring. Occasionally, it also appears adult male araneomorphs will kill females post-coitus (Heuts & Brunt, 2008) the driving mechanisms of which are unclear but again, this appears to also be distinct from basic, sustenance-driven araneophagy.

Acknowledgements
We would like to thank two anonymous reviewers for their comments which helped improve the manuscript.



Fig. 1– 3: *Harpactirella lightfooti* . **1-2.** Adult male predated by adult female *Latrodectus geometricus*. **3.** Live adult male, habitus. Photos: Fiona Hellmann.

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