

The first occurrence records of *Kukulcania hibernalis* (Hentz, 1842) from Ascension Island and Saint Barthélemy (Araneae: Filistatidae)

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Abstract. The Southern House Spider *Kukulcania hibernalis* (Hentz, 1842), native to coastal eastern Mexico and the eastern United States, is widely distributed in Central and South America, the Caribbean, and has been recorded from Liberia and the Canary Islands. Recent examination of material from Ascension Island and Saint Barthélemy newly confirm its presence as a non-native species on these islands. *Kukulcania hibernalis* is synanthropic, which has presumably allowed it to colonise many non-indigenous countries. In addition to reporting the new localities, we map the updated global distribution of *K. hibernalis*.

Keywords. Islands, invasions, mapping, arachnids, non-native.

INTRODUCTION

Kukulcania hibernalis (Hentz, 1842) was originally described from the United States by Hentz (1842) based on the male, and was placed in the genus *Filistata* Latreille, 1810. In the same work, Hentz (1842) described *Filistata capitata* Hentz, 1842 from the female only, also from the United States, not recognising it was the undescribed sex of *F. hibernalis*. The description of additional (now synonymous) taxa continued thereafter from across the New World (Lucas 1857, Blackwall 1867, Holmberg 1876, Alayón García 1972), and once from an uncertain locality, but thought to be of South American origin (Koch 1842). All were synonymised with *K. hibernalis* over a period of several decades (see World

Spider Catalog 2023). Magalhaes & Ramírez (2019) postulated that its true indigenous range is the east coast of Mexico along the Gulf of Mexico and the eastern United States. The rest of the New World and all Old World records were of introduced populations. Hitherto, it has been recorded only twice outside of the Americas, as *K. hibernalis* from Liberia (Magalhaes & Ramírez 2019) and originally as an endemic separate species from the Canary Islands (Wunderlich 1992) which was recently synonymised with *K. hibernalis* (Zonstein & Marusik 2019, World Spider Catalog, 2023).

In this work, we newly record *K. hibernalis* from Ascension Island and Saint Barthélemy and map its global distribution.

MATERIAL AND METHODS

Abbreviations: ASC = Ascension Island Conservation invertebrate collection, Georgetown, Ascension Island (currently on loan in its entirety to the senior author in London, it is intended in the future that the ASC invertebrate collection will be donated and moved to the Saint Helena National Trust, Jamestown, Saint Helena); imm. = immature. Data on the distribution of *K. hibernalis* prior to this work is derived from Brescovit & Santos (2013), Brescovit, Sánchez-Ruiz & Alayón García (2016) and Magalhaes & Ramírez (2019) (see also acknowledgements). The map was made using SimpleMapp (Shorthouse, 2010). Approximate GPS coordinates for localities are given in square brackets. Identification of preserved material was made based on characters used at the species-level for *K. hibernalis* in Magalhaes & Ramírez (2019). The specimens

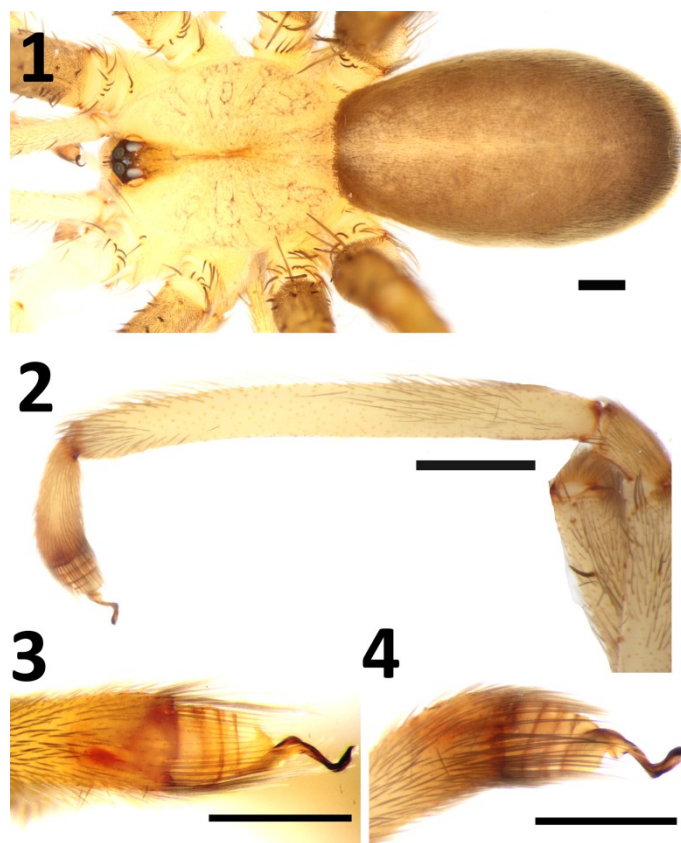
from Ascension studied were collected opportunistically, thus we cannot comment on how widespread this species may be on the island without further investigation. Similarly, further investigation would be required to establish how common it may be on Saint Barthélemy, as no targeted fieldwork has been conducted.

RESULTS

Kukulcania hibernalis (Hentz, 1842)

(Figures 1–6)

Material examined. 1 ♂ (ASC), Elliots Path, Green Mountain National Park [-7.95, -14.34], Ascension Island, 10.VII.2019, coll. Diego Williams; 1 ♀, 1 imm. (ASC), Mars Bay [-7.99, -14.40], Ascension Island, 21.IX.2019, collector not stated.



Figures 1–4. *Kukulcania hibernalis* (Hentz, 1842) male from Ascension Island (deposited in ASC), 1 = dorsal habitus, 2 = palp, retrolateral view, 3 = close-up of palpal bulb, dorsal view, 4 = close-up of palpal bulb, prolateral view. Scale bars = 1mm. Photo credits: Danniella Sherwood.

Remarks. We provide the first published records of *Kukulcania hibernalis*, and by extension the family Filistatidae Simon, 1864, from Ascension Island initially based on a male originally collected on Elliotts Path, a long walking route on Green Mountain. This specimen was sent, with the rest of the ASC's spider collection, to the senior author for identification. This allowed for a physical examination of the specimen, which was confirmed as *K. hibernalis* based on morphology (Figs. 1–4). A further female and immature specimen from Mars Bay were also found in the collection and represent further records. Another male specimen was pinned, photographed and uploaded to iNaturalist by the collector (Williams, 2019) where it was noted to be *K. hibernalis* by filistatid specialist Ivan Magalhaes (Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”) and the senior author. Unfortunately, this specimen is not present in the contemporary ASC collection.

On 21st November 2011, the second author observed a specimen (Fig. 5) of *K. hibernalis* very close to the airport on the island of Saint Barthélemy (17.905537, -62.845616) and subsequently uploaded this record to iNaturalist in 2021 (Questel 2021). This record is herein formally published and constitutes the first report of *K. hibernalis* from Saint Barthélemy in the literature.

DISCUSSION

The distribution of *K. hibernalis* is strongly associated with the Americas (Fig. 6), inclusive not only of its natural range, but also for the majority of known introduced and self-sustaining populations (Magalhaes & Ramírez, 2019). The records from Ascension Island are the most remote locality to date for this species (Fig. 6). It is evident that it has established from the New World, probably as the result of air or shipping freight.

In the Caribbean, the record of *K. hibernalis* from Saint Barthélemy simply fills a small gap between other previously reported records, namely Cuba, the Dominican Republic, and Haiti (Ala-

yón Garcíá 2006, Armas *et al.* 2020, Los Santos, Armas & Teruel 2016).

The adaptable nature of *K. hibernalis* is most clear when South America is examined. Through introductions, this species occurs in a vast array of starkly different areas and across major biogeographical barriers such as the Andes and the Amazon River. The synanthropic nature of *K. hibernalis* inevitably contributed to its occurrence in many of these areas, but even when this is taken into account, it has been able to establish in/near human habitation in a variety of broadly different general habitats: lowland Amazonian rainforests to the Ecuadorian Andes and in the arid Chaco in Paraguay and Argentina. Thus, the data indicates this species can endure varied general environments from humid to arid, so long as it has access to artificial structures.

Non-native species are a timely issue and many examples for spiders exist (Nentwig *et al.* 2022). Whilst *K. hibernalis* is nearly exclusively synanthropic based on current data, its potential for impact on endemic species remains unexplored. This should be assessed, especially on Ascension Island and the Canary Islands, because small islands are especially susceptible to endemic-loss due to invasive species of both fauna and flora (e.g. Freitas *et al.* 2013, Crespo *et al.* 2013, Cardoso *et al.* 2017). Its spread must be carefully monitored, particularly when they are demonstrated to be able to colonise a large number of habitats, increasing the number of areas in which it can have impact.

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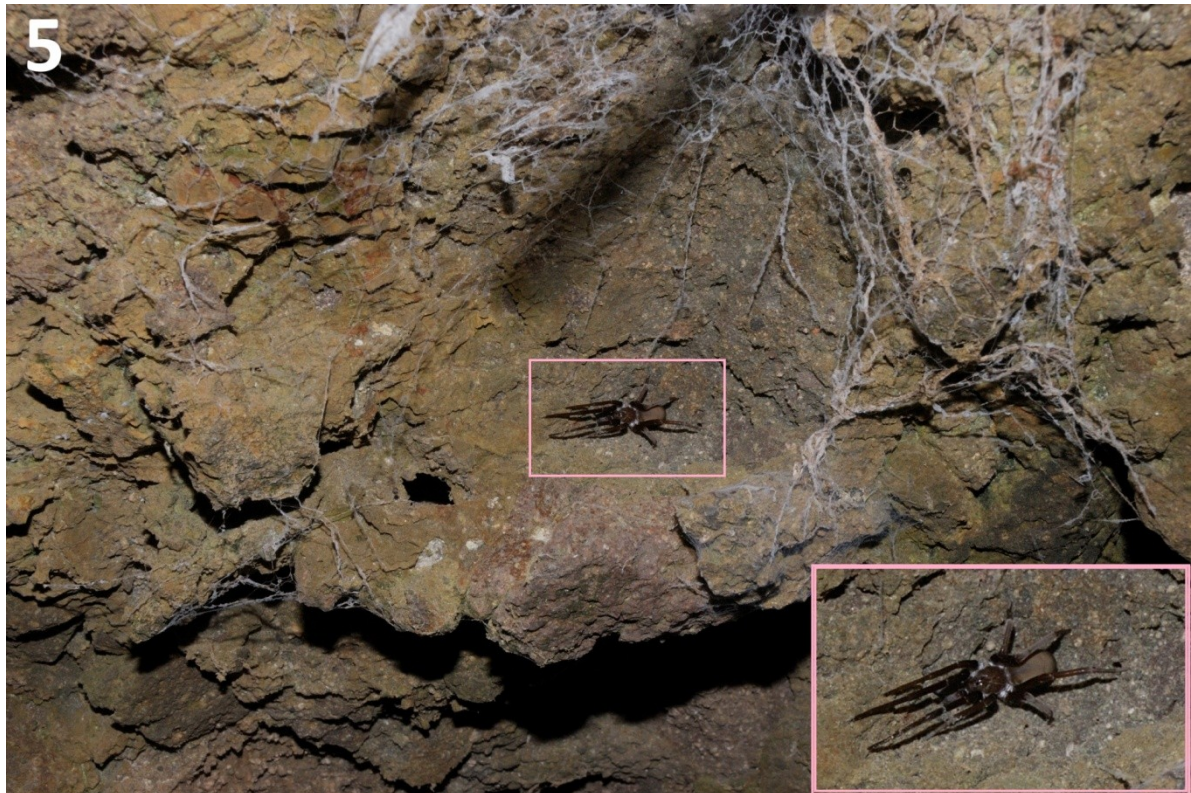


Figure 5. *Kukulcania hibernalis* (Hentz, 1842) female from Saint Barthélemy (inset: close-up of specimen).
Photo credits: Karl Questel.

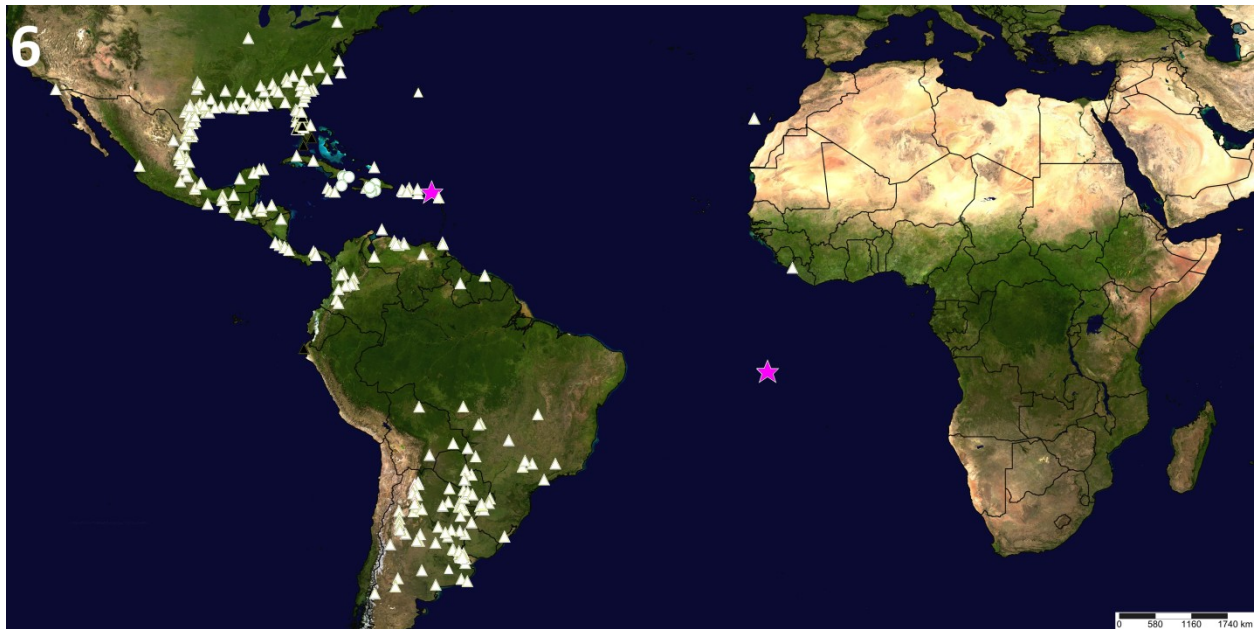


Figure 6. Global distribution of *Kukulcania hibernalis* (Hentz, 1842). White = previous literature records from Magalhaes & Ramirez (2019) (triangles), and Brescovit & Santos (2013) and Brescovit et al. (2016) (circles), pink stars = new records reported herein.

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