

A new species of *Thallumetus* Simon, 1893, the first dictynid from Ascension Island (Araneae: Dictynidae)

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Abstract

A new dictynid species of the genus *Thallumetus* Simon, 1893 with a highly modified male palpal patella and tibia, combined with a unique shape to the epigyne, is described from Ascension Island in the South Atlantic Ocean: *Thallumetus ascensionensis* **sp. nov.** The new species represents the first report of the family Dictynidae from Ascension and also the first Old World record of *Thallumetus*. The northernmost and southernmost limits of the family are briefly discussed.

Keywords: morphology • taxonomy • United Kingdom Overseas Territories

Introduction

The family Dictynidae O. Pickard-Cambridge, 1871 currently comprises 474 species in 53 genera of small and often poorly-studied spiders, and can be found worldwide, ranging from Peary Land (80°38'N, Marusik, Böcher & Koponen 2006) in Greenland to Navarino Island (55°S) in southernmost Chile (Dupérré & Harms 2018). Hitherto, this family has not been recorded from Ascension Island, a remote island in the South Atlantic Ocean which forms part of the United Kingdom Overseas Territory of Saint Helena, Ascension and Tristan da Cunha. Recent samples of a dictynid species allied to the genus *Thallumetus* Simon, 1893 were found in a loan of Ascension's entire preserved spider collection to the senior author. This morphospecies matches no known congener and represents the first record of the family for the island. *Thallumetus*, which currently includes 10 species, has only previously been recorded from the New World (World Spider Catalog 2024).

In this work, we describe *Thallumetus ascensionensis* sp. nov. based on both sexes. This description also simultaneously provides the first record of the family Dictynidae from Ascension Island.

Material and methods

Specimens were examined under a Leica MZ12.5 stereomicroscope. Images were made by DS using a Canon EOS 6D Mark II attached to the same microscope, with images stacked using Helicon Focus software; or by YMM using an Olympus compound microscope with a mobile phone camera. Drawings were made by PPR and JCC. Abbreviations: Ad = sclerotized anterior area of ducts, Af = anguloventral part of femur, Ca = anterior arm of conductor, Cd = conductor, Cl = lamellar projection of conductor, Cp = posterior arm of conductor, Co = copulatory opening, Dl = dorsal laminar outgrowth of tibia, Dt proximal dorsal outgrowth of patella, Eb = embolus base; Ep = epigynal plate, EPa = external patellar apophysis, Fm = femur, IPa = internal patellar apophysis, Re = receptacles; Sd = sperm duct, TCDa = tibial conical dorsal apophysis, Va = ventral apophysis. Total lengths include the chelicerae but exclude the spinnerets and pedicel. All measurements in mm. Repository: Ascension Island Conservation Directorate collection, Georgetown, Ascension Island (ASC). 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.

Dictynidae O. Pickard-Cambridge, 1871

Thallumetus Simon, 1893

Thallumetus Simon, 1893: 434.

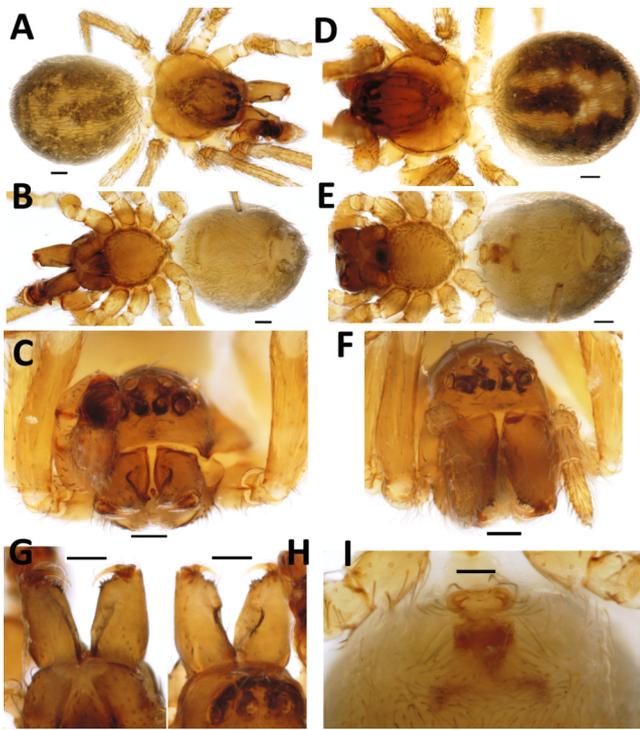


Fig. 1: *Thallumetus ascensionensis* sp. nov. holotype male and paratype female (ASC F17 3 VB). **A** male habitus, dorsal view; **B** same, ventral view; **C** male eyes and chelicerae, frontal view; **D** female habitus, dorsal view; **E** same, ventral view; **F** female eyes and chelicerae, frontal view; **G** male chelicerae, ventral view; **H** same, dorsal view; **I** undissected epigyne, ventral view. Scale bars = 0.1 mm.

Type species: *Thallumetus salax* Simon, 1893 (see Simon, 1893: 434, pl. 9, fig. 7) from Venezuela, known from the original description of the male holotype only.

Diagnosis: *Thallumetus* can be distinguished easily from the known genera of Dictynidae based on the incrassate male palpal femur (i.e. thicker than bulb, v. not incrassate and thinner than bulb), strongly modified palpal patella and tibia, bearing several outgrowths (v. patella and tibia without such modifications), and the copulatory opening of the epigyne located close to the petioles and extending to the surface of the epigynal plate (v. copulatory openings located close to the epigastric furrow, and epigynal plate flat). Another character distinguishing *Thallumetus* is the epigyne being longer than wide (v. wider than long) and widely (c. 5 diameters) spaced receptacles (v. touching or spaced by about one diameter). It is further distinguished from females of related genera except *Archaeodictyna* Caporiacco, 1928 by the presence of a claw on the palpal tarsus of the female.

Remarks: This genus was never a subject of global or regional revisions, and details on the conformation of the male palps and female epigynes of most species remain unclear. It is worth noting that all species of the genus are relatively small; therefore, detailed morphology of the genitalia remains understudied. The type species is known only from the brief original description and one very schematic drawing of the male palp, which does not depict any patellar apophyses (present in all other species). However, it is very likely that Simon overlooked these apophyses due to their very small size and the lesser microscope quality of that time.

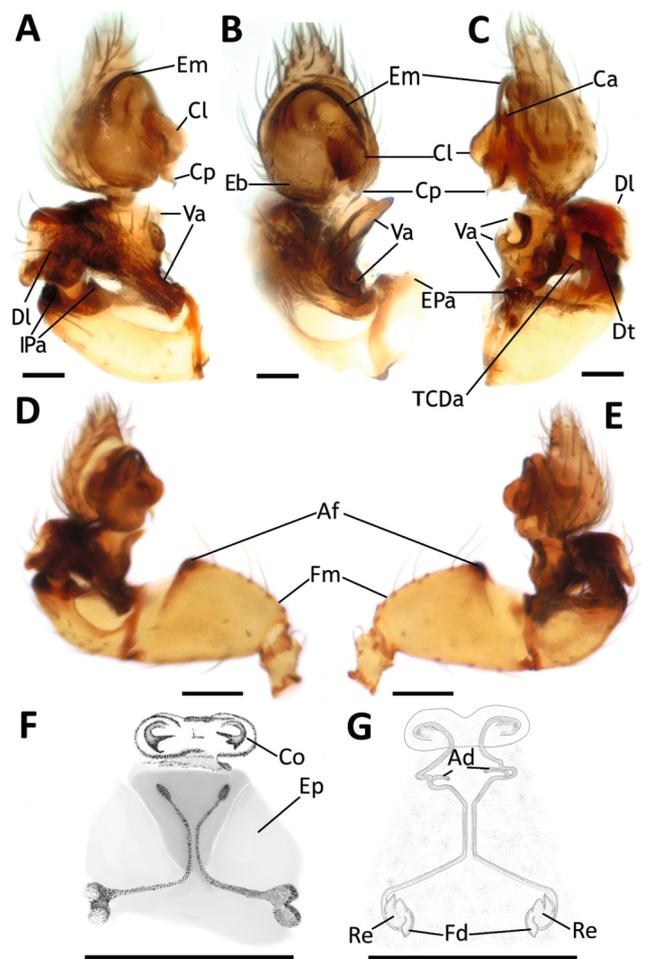


Fig. 2: *Thallumetus ascensionensis* sp. nov. holotype male and paratype female (ASC F17 3 VB), male palp (A–E), female genitalia (F–G). **A** palpal patella, tibia and cymbium, prolateral view; **B** same, ventral view; **C** same, retrolateral view; **D** whole palp, prolateral view; **E** same, retrolateral view; **F** illustration of epigyne, ventral view; **G** illustration of vulva, dorsal view. Scale bars = 0.2 mm (D–E), 0.1 mm (F–G), 0.05 mm (A–C). Abbreviations: Ad = sclerotized anterior area of ducts, Af = anguloventral part of femur, Ca = anterior arm of conductor, Cl = lamellar projection of conductor, Cp = posterior arm of conductor, Co = copulatory opening, DL = dorsal laminar outgrowth of tibia, Dt proximal dorsal outgrowth of patella, Eb = embolus base, Ep = epigynal plate, EPA = external patellar apophysis, Fm = femur, IPa = internal patellar apophysis, Re = receptacles, TCDa = tibial conical dorsal apophysis, Va = ventral tibial apophysis.

Species included: *T. acanthochirus* Simon, 1904 (♂♀, Chile), *T. ascensionensis* sp. nov. (♂♀, Ascension Island), *T. dulcineus* Gertsch, 1946 (♀, Panama), *T. latifemur* (Soares & Camargo, 1948) (♂♀, Brazil), *T. octomaculellus* (Gertsch & Davis, 1937) (♀, Mexico), *T. parvulus* Bryant, 1942 (♂♀, US Virgin Islands), *T. pineus* (Chamberlin & Ivie, 1944) (♂♀, United States), *T. pullus* Chickering, 1952 (♂♀, Panama), *T. pusillus* Chickering, 1950 (♂♀, Panama), *T. salax* Simon, 1893 (♂, Venezuela), *T. simoni* Gertsch, 1945 (♂, Guyana).

Thallumetus ascensionensis sp. nov. (Figs. 1–4)

Type material: Holotype ♂, paratype ♀ (ASC F17 3 VB), Ascension Island, -7.951166 -14.374621, superficial

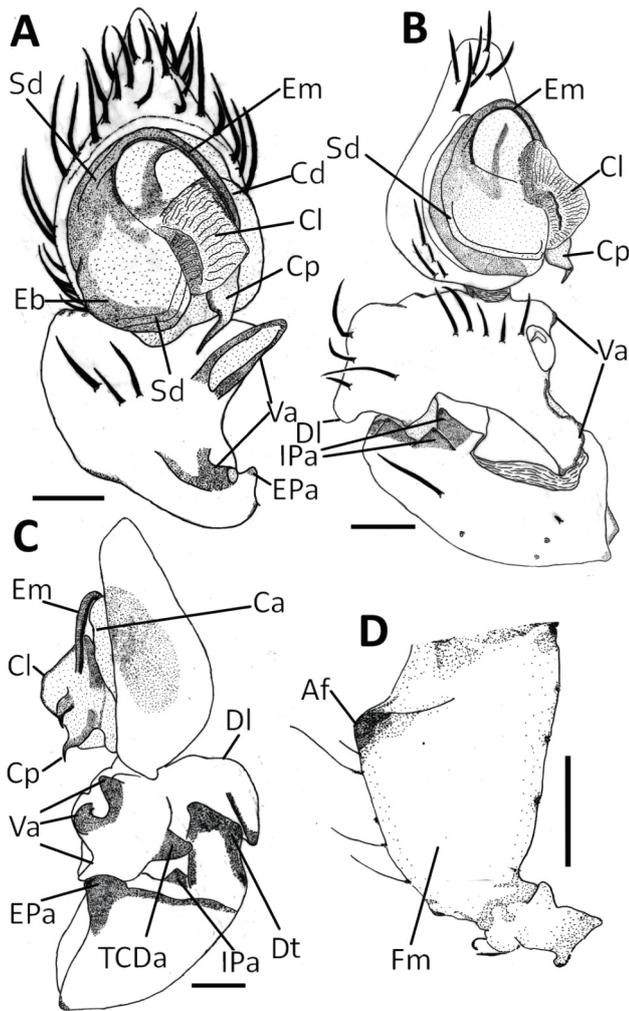


Fig. 3: *Thallumetus ascensionensis* sp. nov. holotype male (ASC F17 3 VB), palp. **A** ventral view; **B** prolateral view; **C** retrolateral view; **D** close-up of femur, retrolateral view. Scale bars = 0.05 mm. Abbreviations: Af = anguloventral part of femur, Ca = anterior arm of conductor, Cd = conductor, Cl = lamellar projection of conductor, Cp = posterior arm of conductor, DI = dorsal laminar outgrowth of tibia, Dt proximal dorsal outgrowth of patella, Eb = embolus base, EPa = external patellar apophysis, Fm = femur, IPa = internal patellar apophysis, Sd = sperm duct, TCDa = tibial conical dorsal apophysis, Va = ventral tibial apophysis.

deposits, 185 m, 28 February 2022, coll. A. Sharp; paratypes: 1♀ (ASC E15 2 VB), Ascension Island -7.932359 -14.384064, intermediate Zr/Nb mafic flows (Younger flows), 133 m, 07 January 2022, coll. A. Sharp; 2♂♂ (ASC NW500), Ascension Island, -7.945132 -14.356845, Goats Hole Ravine, guava, 500 m, 16 August 2022, coll. A. Sharp; 2♂♂, 1♀ (ASC G16 2 VB), Ascension Island, -7.939099 -14.365941, scoria cones, 315 m, 03 August 2022, coll. A. Sharp; 6 imm. (ASC G16 3 VB), Ascension Island, -7.941495 -14.368996, trachyte and rhyolite flows and domes, 246 m, 08 March 2022, coll. A. Sharp.

Diagnosis: Males of *T. ascensionensis* sp. nov. differ from those of the generotype by the wider femur length/width ratio (1.6 v. 2.0). From other species known from the male, *T. ascensionensis* sp. nov. differs by the presence of a laminar dorsal tibial outgrowth (DI) (v. absent). Females of *T. ascensionensis* sp. nov. differ from all known female con-

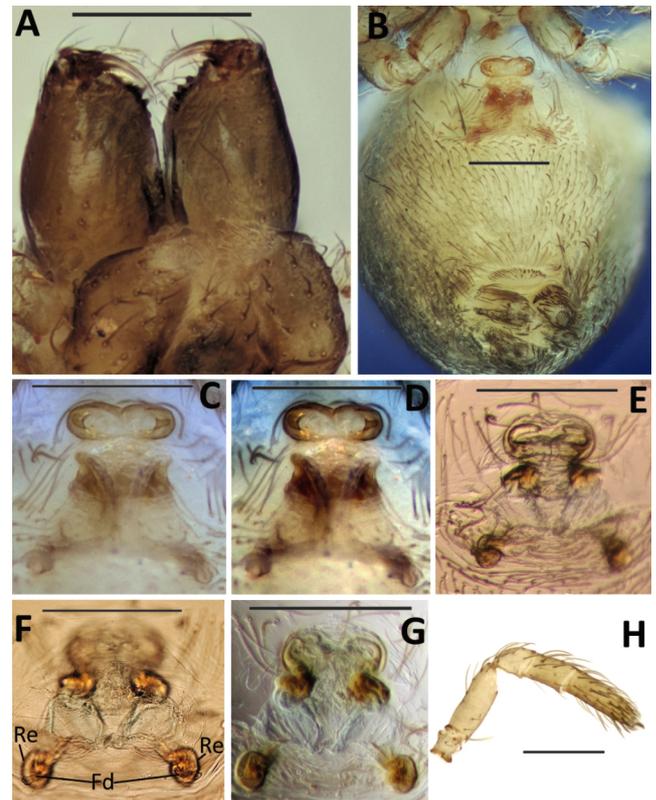


Fig. 4: *Thallumetus ascensionensis* sp. nov. characters of additional paratype female (ASC G16 2 VB). **A** chelicerae, ventral view; **B** opisthosoma, ventral view; **C** epigyne, ventral view, uncleared and undissected; **D** same, cleared and undissected; **E** same, cleared and dissected; **F** endogyne, dorsal view, cleared and illuminated with warm light; **G** same, illuminated with cold light; **H** palp, lateral view showing presence of a single tarsal claw. Scale bars = 0.2 mm (A–G), 1 mm (H).

geners by having transversally oriented copulatory openings (v. longitudinally orientated).

Etymology: The specific epithet refers to the island on which the material was collected.

Description of holotype male: Total length 1.60. Carapace 0.55 long, 0.56 wide. Eyes: ALE 0.05, AME 0.04, PLE 0.06, PME 0.05, AME–AME 0.04, PME–PME 0.05, ALE–AME 0.02, PLE–PME 0.04. Chelicera 0.25 long, 0.14 wide, elongate, promargin with 4 teeth, medially with sclerotized, curved, grooves (Figs. 1C, G–H). Abdomen 0.80 long, 0.68 wide. Leg measurements: I 1.70 (0.51+0.18+0.47+0.31+0.23), II 1.41 (0.49+0.12+0.41+0.22+0.17), III 1.01 (0.25+0.12+0.24+0.23+0.17), IV 1.20 (0.29+0.16+0.29+0.28+0.18). Colour in alcohol overall orange-brown, cephalic area darker than rest of carapace, opisthosoma with faint black patterning (Fig. 1A–B). Palp (Figs. 2A–E, 3A–D) femur (Fm) strongly incrassate, length : width ratio 1.6, femur 3× wider than trochanter, ventro-subapically part with strongly sclerotized angled projection (Af); patella broad, almost 2× as wide as trochanter, as long as cymbium, strongly modified, dorsally with two triangular internal dorsal apophyses (Ipa), external dorsal apophysis (EPa) projecting ~½ length of ventral tibial apophysis (Va), retrolaterally with rectangular dorsal outgrowth (Dt). Tibia strongly modified, not cylindrical, with large dorsal laminar outgrowth (DI), dorso-retrolaterally with conical dorsal apoph-

ysis (TCDa); ventral tibial apophysis (Va) elongate in ventral view and subtriangular in retrolateral view; cymbium unmodified, longer than wide. Bulb as long as wide; posterior arm of conductor (Cp) sharply pointed; anterior arm of conductor (Ca) short, terminating at *c.* 2 o'clock position; mesal part of conductor (Cd) with lamellar projection (Cl); embolus base (Eb) large and wide, longer than half of bulb; sperm duct (Sd) course as in figures; embolus (Em) thick, filamentous, curved and tapered with unmodified tip, originating at *c.* 9 o'clock position and terminating at 3 o'clock position, basal half of apical third partially fused subcutaneously with bulb; length 0.75 (0.22+0.20+0.14+0.19).

Description of paratype female: Total length 1.57. Carapace 0.58 long, 0.56 wide. ALE 0.04, AME 0.03, PLE 0.05, PME 0.04, AME–AME 0.05, PME–PME 0.07, ALE–AME 0.02, PLE–PME 0.06. Chelicera 0.20 long, 0.12 wide, morphology as in male, except medial grooved sclerotization very weakly developed (Figs. 1F, 4A). Abdomen 0.89 long, 0.70 wide. Leg measurements: I 1.52 (0.40+0.19+0.38+0.32+0.23), II 1.26 (0.36+0.12+0.29+0.29+0.20), III 1.02 (0.32+0.09+0.26+0.20+0.15), IV 1.13 (0.33+0.09+0.25+0.30+0.16). Palp with distinct pectinate claw, prolaterally with several spine-like setae (Figs. 1F, 4H). Colour in alcohol as in male, except colouration of cephalic area darker and opisthosomal pattern darker and much more prominent (Fig. 1D–E). Epigyne (Figs. 2F, 4B–E) with plate (Ep) as long as wide; copulatory opening (Co) shifted anterior-most, very close to pedicel and extended over plane of cuticle, stronger sclerotized than other part of plate. Endogyne (Figs. 1I, 2G) with complex three-dimensional structure formed by ducts with heavily sclerotized anterior part (Ad), membranous medially, and small oval receptacles (Re) located posteriorly, spaced by about 6 diameters, fertilization ducts (Fd) situated internally, positioned posteriorly.

Variation: There is negligible (>0.2 mm) body size variation in the remaining paratypes. We present photographs of the epigyne and chelicerae of one of the other paratype females for further comparison (Fig. 4F–G). No significant differences were found in the morphology of paratype male palps.

Distribution: Known only from Ascension Island, South Atlantic Ocean.

Remarks: We placed *Thallumetus ascensionensis* sp. nov. based on the heavily modified male palpal femur, patella, and tibia. However, it is important to note that, whilst the more recently described species share these characters, the type species apparently has an unmodified patella, according to the figures of Simon (1893). However, it is likely that Simon simply overlooked the patellar apophyses. A detailed analysis of the type material is required, within the framework of a global revision, which is outside the scope of this work. Further photographs of another paratype female further exemplify female morphology (Fig. 4A–H). Whilst *T. ascensionensis* sp. nov. is clearly a new species, with both sexes notably distinct from known congeners, we doubt that it is indigenous to Ascension Island. Indeed, almost all spiders on the island are non-native (Ashmole & Ashmole 2000; Sherwood & Sharp 2023; Sherwood, Marusik & Sharp 2023) and we suspect that this species was introduced with air or shipping freight. Regardless, the presence of a

new species on such a remote island is, in any case, a significant contribution to our knowledge of Dictynidae on Atlantic islands.

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