



Fundación
Miguel Lillo
Tucumán
Argentina

doi

A new species of *Ummidia* Thorell, 1875, from Útila Island, Honduras (Araneae: Halonoproctidae)

Una nueva especie de *Ummidia* Thorell, 1875, de la isla Útila, Honduras (Araneae: Halonoproctidae)

Alex M. Cubas-Rodríguez^{1,2} , Tom W. Brown² , Danniella Sherwood^{3,4} * 

¹ Museo de Entomología, Escuela de Biología, Facultad de Ciencias, Universidad Nacional Autónoma de Honduras, Departamento Francisco Morazán, Tegucigalpa 11101, Honduras. <alexmcubas@gmail.com>

² Kanahau Útila Research & Conservation Facility, Isla de Útila, Islas de la Bahía, 34201, Honduras. <tom@kanahau.org>

³ Arachnology Research Association, 124 City Road, London, EC1V 2NX, United Kingdom

⁴ Fundación Ariguanabo, 4111, Calle 58, e/ ave. 41 y ave.43, San Antonio de los Baños, Provincia Artemisa c.p. 18100, Cuba.

* Corresponding author: <danni.sherwood@hotmail.com>

ABSTRACT

A new species of the charismatic mygalomorph genus *Ummidia* Thorell, 1875 is described from Útila Island, Honduras. *Ummidia sukuhpaya* **sp. nov.** represents the third species known from Honduras, and the first species known from Útila.

Keywords: Arachnid, bay islands, Caribbean, Central America, endemic, neotropical.

RESUMEN

Se describe una nueva especie del carismático género migalomorfo *Ummidia* Thorell, 1875 en la isla de Útila, Honduras. *Ummidia sukuhpaya* **sp. nov.** representa la tercera especie conocida de Honduras y la primera especie conocida de Útila.

Palabras clave: Arácnido, Caribe, Centroamérica, endémico, Islas de la Bahía, neotropical.

► Ref. bibliográfica: Cubas-Rodríguez, A. M.; Brown, T. W.; Sherwood, D. 2024. "A new species of *Ummidia* Thorell, 1875, from Útila Island, Honduras (Araneae: Halonoproctidae)". *Acta zoológica lilloana* 68 (2): 411-421. DOI: <https://doi.org/10.30550/j.azl/1990>

► Recibido: 9 de agosto 2024 – Aceptado: 26 de agosto 2024.



OPEN  ACCESS

► URL de la revista: <http://actazoolologica.lillo.org.ar>

► Esta obra está bajo una Licencia Creative Commons Atribución – No Comercial – Sin Obra Derivada 4.0 Internacional.

INTRODUCTION

Trapdoor spiders of the genus *Ummidia* Thorell 1875 are known to have a widespread and mostly tropical distribution. *Ummidia* contains 57 species, predominately occurring from the southern United States, south through Mexico, to the Caribbean, Central America and south to Venezuela (World Spider Catalog, 2024). However, further species are known from Central Asia (Tso et al., 2003; Zonstein, 2007), Afghanistan (Zonstein, 2014), Israel (Zonstein, 2018), and parts of Europe and western Mediterranean (Decae, 2010), inclusive of the Iberian Peninsula and Northern Africa (Opatova et al., 2017).

The true diversity of the genus is still likely to be underestimated (Bond and Coyle, 1995). However, a useful revision of New World species was published by Godwin and Bond (2021) which described more than thirty new species and redescribed many historical taxa. *Ummidia* is the type genus of the subfamily Ummidiinae Ortiz, 2005, and was transferred by Godwin, Opatova, Garrison, Hamilton, Bond (2018) from the family Ctenzidae Thorell, 1887 to Halonoproctidae Pocock 1901.

Despite trapdoor spiders being a charismatic mygalomorph group that have historically attracted attention when observed (Westwood, 1840), a low encounter rate (owing to their enigmatic behaviour of building their burrows with a door joined by a hinge) has resulted in relatively few specimens being collected or described per species (e.g. Gertsch, 1979; Norden, 2017).

The aerial dispersibility of ‘ballooning’ *Ummidia* spiderlings (Baerg, 1928; Coyle et al., 1985; Bond and Coyle, 1995; Eberhard, 2006; Fisher, Fisher, Skvarla, Dowling, 2014) has been suggested to play a key role in populations establishing at remote geographic locations (Decae, 2010). Nonetheless, the consensus remains that most mainland *Ummidia* present restricted distributions as well as high rates of endemism, and as such may be vulnerable to threats caused by local habitat destruction.

Ummidia are distinguished from other trapdoor spiders by the possession of a deep saddle like depression on the dorsal surface of tibia III (Godwin and Bond, 2021) and a compact eye-group placed on and around a distinct ocular tubercle (Decae, 2010). A clear degree of sexual dimorphism is present in the subfamily Ummidiinae, as sex can be determined based on carapace texture. In females, the carapace appears smooth and shiny, as if polished, whereas in males the carapace surface is dull and typically rugose or granulated (Decae, 2010). Furthermore, males often have distinctive palpal bulb morphology which is informative for species delineation (Godwin and Bond, 2021).

Two species of *Ummidia* have hitherto been reported from Honduras: *U. hondurena* Godwin and Bond, 2021 and *U. yojoa* Godwin and Bond, 2021. The males of both species are known and are currently diagnosed from congeners based on a combination of two character states: (1) the number of spines on tibia I, and (2) the morphology of the palpal bulb (Godwin

and Bond, 2021). The female of *U. hondurena* is known, whereas that of *U. yojoa* remains undescribed (World Spider Catalog, 2024).

In this work, we describe a new *Ummidia* species from Útila Island, Honduras and additionally provide ecological data on this spider. The seemingly small range of this species, even on Útila itself, suggests *U. sukuhpaya* **sp. nov.** is a short-range endemic and may be of conservation concern.

MATERIAL AND METHODS

The samples were examined under a binocular microscope model Olympus SZ. Photographs of the specimens were taken using an Eakins microscope camera. Description style follows Sherwood, Ríos-Tamayo, Pett, Hinchliffe, 2023, modified here for halonoproctids. Typically leg spination is highly variable in mygalomorph taxa, sometimes even within specimens from the same egg sac (DS pers. obs.), however, in *Ummidia* it appears that leg spination is a stable character for species delineation (Godwin and Bond, 2021). Therefore, we consider this character in our diagnosis, in addition to the usual standard character of genitalia. Abbreviations: Structures – ALE = anterior lateral eyes, AME = anterior median eyes, d = dorsal, p = prolateral, PLE = posterior lateral eyes, PME = posterior median eyes, r = retrolateral, v = ventral. Other – leg. = legit. Leg formulae start with the longest leg to the shortest in order of decreasing size, e.g. 4,1,2,3. All measurements are in mm. The type material of *U. sukuhpaya* **sp. nov.** is deposited in the Arachnida collection of the Instituto Butantan, São Paulo, Brazil (IBSP). This paper was preregistered in zoobank, LSID: urn:lsid:zoobank.org:pub:691A8701-256A-474C-B0C5-8EB96A9DBC22.

TAXONOMY

Halonoproctidae Pocock, 1901

Ummidiinae Ortiz, 2005

Ummidia Thorell, 1875

Ummidia sukuhpaya **sp. nov.**

Type material.— Holotype ♂ (IBSP 345210), found in the vicinity of the Brandon Hill bat cave, region of Pumpkin Hill, Isla de Útila, Islas de la Bahía, 17 March 2018, leg. T.W. Brown; paratype ♀ (IBSP 345211) found in the vicinity of the bat cave, Pumpkin Hill, Isla de Útila, Islas de la Bahía, 17 March 2018, leg. A.M. Cubas-Rodríguez and T.W. Brown.

Diagnosis.— Males of *Ummidia sukuhpaya* **sp. nov.** most closely resemble *Ummidia hondurena* but differ by the presence of a single spine on the prolateral face of patella I (6 spines in *U. hondurena*), 17 spines on the retrolateral face of metatarsus I (9 spines in *U. hondurena*), 22 spines on the

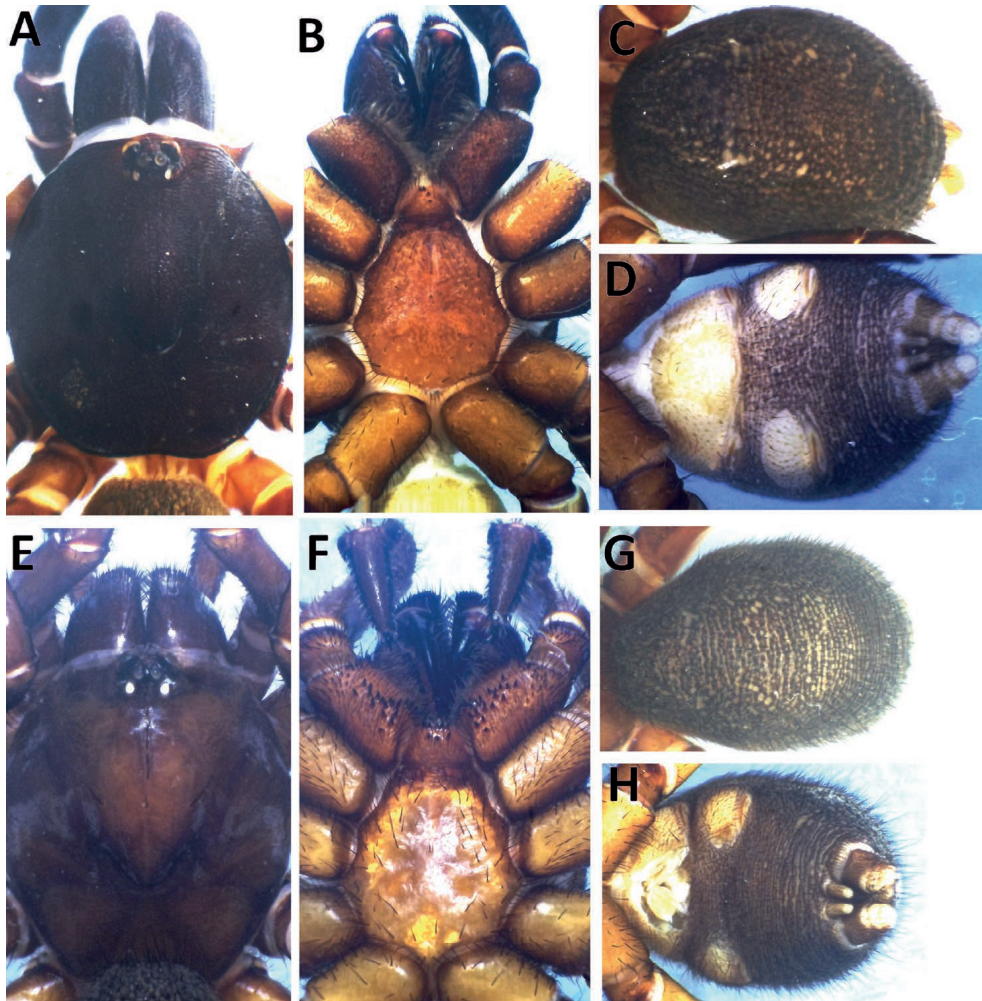


Figure 1. Carapace, abdomen, and labium, sternum and maxilla of holotype male (A–D) and paratype female (E–H) *Ummidia sukuhpaya* sp. nov. **A)** carapace, dorsal view. **B)** labium, sternum and maxilla, ventral view. **C)** Abdomen, dorsal view. **D)** Idem, ventral view. **E)** carapace, dorsal view. **F)** labium, sternum and maxilla, ventral view. **G)** Abdomen, dorsal view. **H)** Idem, ventral view.

prolateral face of tibia I (26 in *U. hondurena*), 31 spines on retrolateral face of tibia I (29 in *U. hondurena*), and by the pronounced retrolateral curvature of the apical half of the embolus when the palpal bulb is viewed ventrally (almost no curvature in *U. hondurena*). *Ummidia sukuhpaya* sp. nov. is differentiated from *Ummidia yojoa* by absence of a retrolateral tarsal brush on tarsus IV (present in *U. yojoa*), presence of spines on the prolateral face of tibia I (absent in *U. yojoa*) and presence of 17 spines on the retrolateral face of tibia I (3 in *U. yojoa*). Females can be distinguished from *U. hondurena* by the absence of a basal extension on the receptacle neck, directly below the respective lobe (present in *U. hondurena*). The female of *U. yojoa* is unknown and cannot be compared.

Etymology.— The specific epithet “sukuhpaya” is derived from the Pech language, where ‘sukuh’ means “catch the one who flees” and ‘paya’ refers to the first indigenous people of the Bay Islands, Honduras. This epithet

reflects the predatory nature of this trapdoor spider species, also honouring the cultural heritage of the Honduran Pech community, whose ancestral lands include the region where this species was found.

Description of holotype male.— Total length including chelicerae: 17.6. Carapace: length 7.9, width 6.4. Caput: highly raised. ALE > AME, AME > PLE, PLE > PME. Fovea: deep, procurved. Chelicera: length 3.3, width 1.7. Abdomen: length 7.4, width 4.9. Maxilla: 1.7 long, with 14/17 (left/right) maxillary cuspules. Labium: length 1.0, width 0.6, with 4 labial cuspules. Sternum: length 3.7, width 3.3, with two pairs of sigillae. Lengths of legs and palpal segments: see table 1. Tarsi I–IV with pseudoscopula present, sparsely distributed on tarsi III and IV, denser on tarsi I and II. Metatarsi without pseudoscopula. Spination: patellae I v2, r1, II v3, III r1, tibia I r22, p31, tibia II v15, r2, p11, II v3, r3, p15, IV v2, metatarsus I v2, r6, p16, II v17, r6, p7, III d8, v7, r3, p4, IV v19, r5, p7, tarsus I v2, r11, p10. II r10, p16. III: v7, p10, r18, IV p12. Femur III: aspinose, completely smooth. Palpal tibia: elongate and strongly incrassate, with an abundance of trichobothria (Fig. 2C). Palpal bulb with elongate and tapering embolus, curved upwards, longer than base of bulb (Figs. 2D–G). Colour (in alcohol): dorsal region and legs overall reddish-brown, abdomen dark brown (Figs. 1A–D).

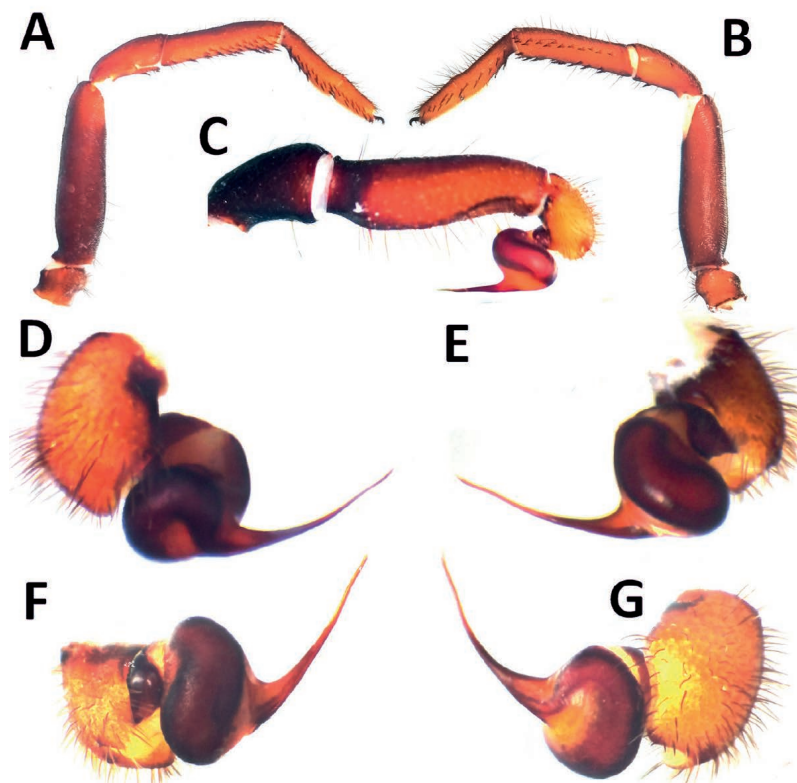


Figure 2. Leg I, palp, and palpal bulb of holotype male *Ummidia sukuhpaya* sp. nov. (IBSP 345210). **A)** Leg I, prolateral view. **B)** Idem, retrolateral view. **C)** Palp, retrolateral view. **D)** Palpal bulb, prolateral view. **E)** Idem, retrolateral view. **F)** Idem, dorsal view. **G)** Idem, ventral view.

Table 1. *Ummidia sukuhpaya* sp. nov. holotype male (IBSP 345210), podomere lengths.

	I	II	III	IV	Palp
Femur	5.8	5.4	4.9	6.2	4.2
Patella	3.1	2.6	2.0	2.8	1.7
Tibia	4.0	3.6	2.5	3.9	3.2
Metatarsus	2.4	2.1	1.9	3.7	–
Tarsus	1.4	1.5	1.6	1.9	1.2
Total	16.7	15.2	12.9	18.5	10.3

Table 2. *Ummidia sukuhpaya* sp. nov. paratype female (IBSP 345211), podomere lengths.

	I	II	III	IV	Palp
Femur	4.9	5.4	4.5	5.0	4.2
Patella	2.3	2.2	3.1	2.6	2.3
Tibia	1.8	2.3	2.4	2.5	2.1
Metatarsus	1.2	2.0	1.1	1.3	–
Tarsus	1.7	1.6	1.4	1.1	1.9
Total	11.9	13.5	12.5	12.4	10.5

Description of paratype female.— Total length including chelicerae: 20.4. Carapace: length 7.5, width 6.2. Caput: highly raised. ALE > AME, AME > PLE, PLE > PME. Fovea: deep, procurved. Chelicera: length 4.0, width 2.0. Abdomen: length 10.2, width 8.5. Maxilla: 1.9 long, with 36/44 (left/right) maxillary cuspules. Labium: length 0.9, width 0.7, with 8 labial cuspules. Sternum: length 4.5, width 3.4, with two pairs of sigillae. Lengths of legs and palpal segments: see table 2. Tarsi I–IV with pseudoscapula present, dense on I–II, sparsely distributed on III–IV. Metatarsi without pseudoscapula. Spination: patella III d4, tibia I r14, p17, II v7, r28, p22, III d7, v1, r2, p1, metatarsus v5, r23, p24, II v3, r17, p25, III v5, r4, IV v5, r2, tarsus I v5, r15, p5, II v3, r16, p15, III d9, v2, p2, IV d1, v3, r3. Spermathecae with two receptacles, each with a single lobe at apex, rounded, giving overall P-shape to receptacle, basal half of lobes sclerotised (Figs. 3B–D). Colour (in alcohol): as in male (Figs. 1E–H, 3A).

Habitat.— The species occurs only in dry terrestrial habitats on Útila (AMC-R and TWB pers. obs.), with observations so far restricted to the northeastern region of the island near Pumpkin Hill. This area is notable as it encompasses the highest altitudinal gradient on Útila (maximum known altitude 74 metres above sea level), where the majority of Útila's hardwood forest is located. It appears likely the species is restricted to soil types that are not prone to seasonal flooding or regular disturbance. Therefore, it may be absent from the remaining portions of the island consisting of water-logged mangrove, neotropical savanna habitat, sandy coastline, and pastoral agricultural lands. We also uncovered evidence that this species may occur within the entrances of nearby caves, and likely can, within reason, adapt its burrow structure to include available construction substrates or attach onto flagstones (see below).

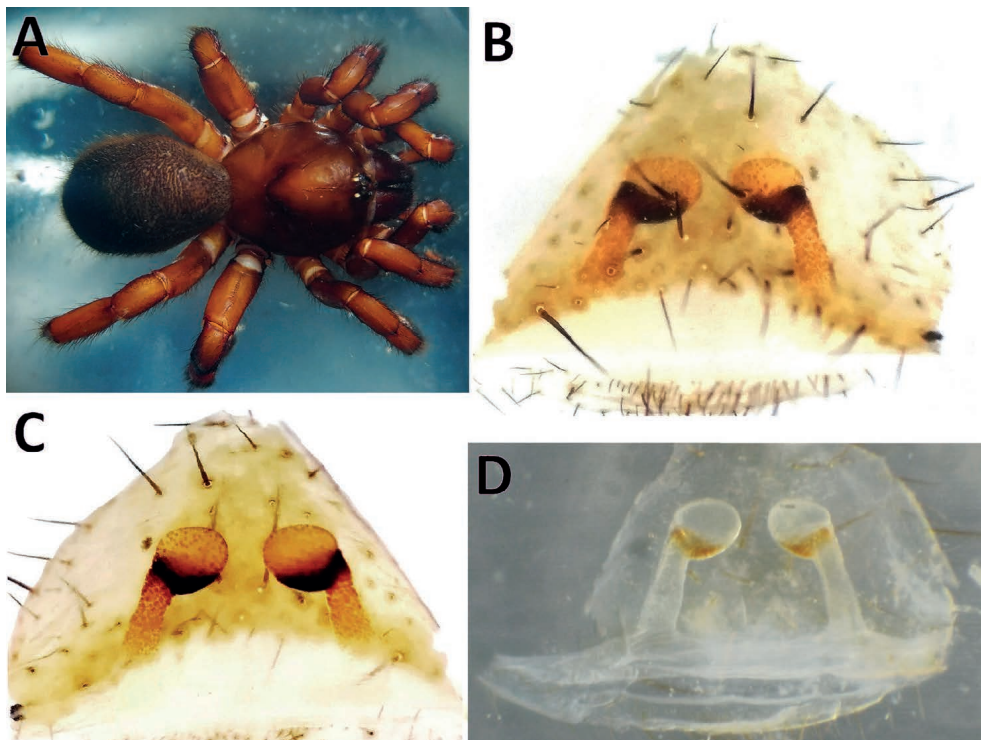


Figure 3. *Ummidia sukuhpaya* sp. nov. paratype female (IBSP 345211). **A)** Habitus, dorsal view. **B)** Spermathecae, ventral view (uncleared). **C)** Idem, dorsal view. **D)** Idem, cleared.

Natural history.— Males were found wandering in March (holotype) and April (non-types, uncollected, AMC-R and TWB pers. obs.). The burrow of the paratype female (Figs. 4A–B, D) was located on 10 April 2018 within a patch of broadleaf/palm forest at Pumpkin Hill and is characterized by dark, shaded, clayey soil surrounded by leaf litter (depth 20 mm). The burrow was found near the base of a large tree (Fig. 5). The burrow was dug at an angle of $<45^\circ$ and had a shallow length of 44 mm and an internal width of 14 mm. It was lined with dense white silk and closed at the entrance by a tightly fitting, oval, wafer-like, silk-hinged trapdoor; the door measured 14.1 mm high and 16.8 mm wide. Of note, the walls of the basal chamber are smoothly cemented with a paste presumably formed from mud, then coated with a layer of fine white silk; the silk in the basal quarter is sparsely coated compared to the densely laid silk at the trap entrance and on the tunnel roof. A second active female burrow was located on a cleared raised ledge next to a dirt road leading to Pumpkin Hill, however following an unexpected heavy rain overnight neither that individual nor the burrow could be described in further detail afterwards.

On 21 July 2018, a third, albeit abandoned and semi-degraded, burrow (Figs. 4B–C) was found approximately 10 metres inside Pumpkin Hill Cave, located adjacent to the Kanahau Útila Research and Conservation Facility. Within the burrow, exuvial remains of an adult female carapace (6 mm long) with chelicerae were present, along with a discarded, hatched egg sac (Fig. 4C), which contained remnant exuviae of immatures (see below).

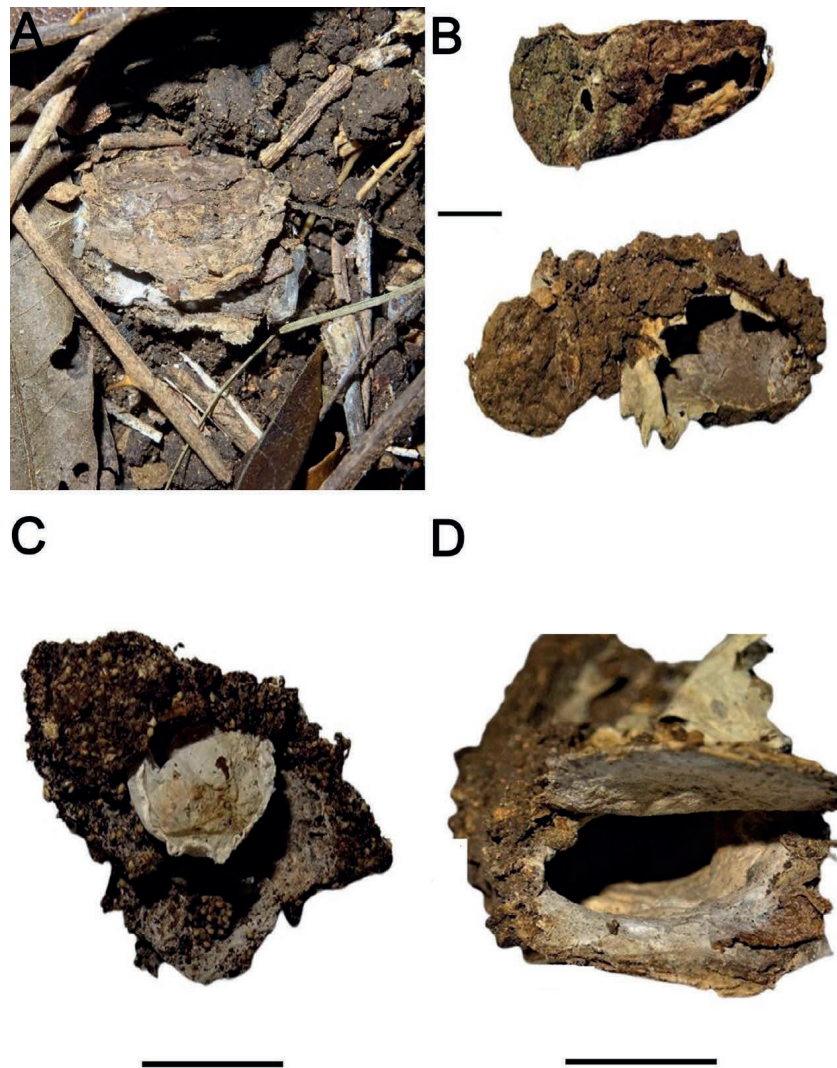


Figure 4. Burrow and egg sac structure of *Ummidia sukuhpaya* sp. nov. **A)** Burrow of paratype female, *in-situ* among the leaf-litter of hardwood forest. **B)** Cross-sections of two excavated burrows; top burrow: unoccupied, collected from within Pumpkin Hill Cave, found to contain part of exuvia of an adult female and a depleted egg sac; bottom burrow: that of the paratype female, note the smoothly cemented inner wall of the basal chamber. **C)** Close-up of aforementioned egg sac. **D)** Paratype female burrow, showing the silk-hinged trapdoor and entrance lined with dense white silk. Scale bars: 10mm (B–D).

The burrow was formed from loose detritus and guano-based material, discretely placed at an acute angle within a porous cave wall. Its trapdoor was flush with the rock surface and opened vertically. The excavated trap measured 35 mm deep, with a width of 13 mm. The entrance was sparsely lined with silk; The inner tunnel was composed mainly of smoothed mud and silk, widening to form a pocket at the base. The trapdoor cover was firm, wafer-shaped and oval, measuring 12.8 mm high, and 15.5 mm wide. No adults or juveniles have since been located in the cave (AMC-R and T. Brown, personal observation).

The outer coating of the egg sac collected from within the burrow (see above) was spun from fine white silk, that formed a large deflated globu-

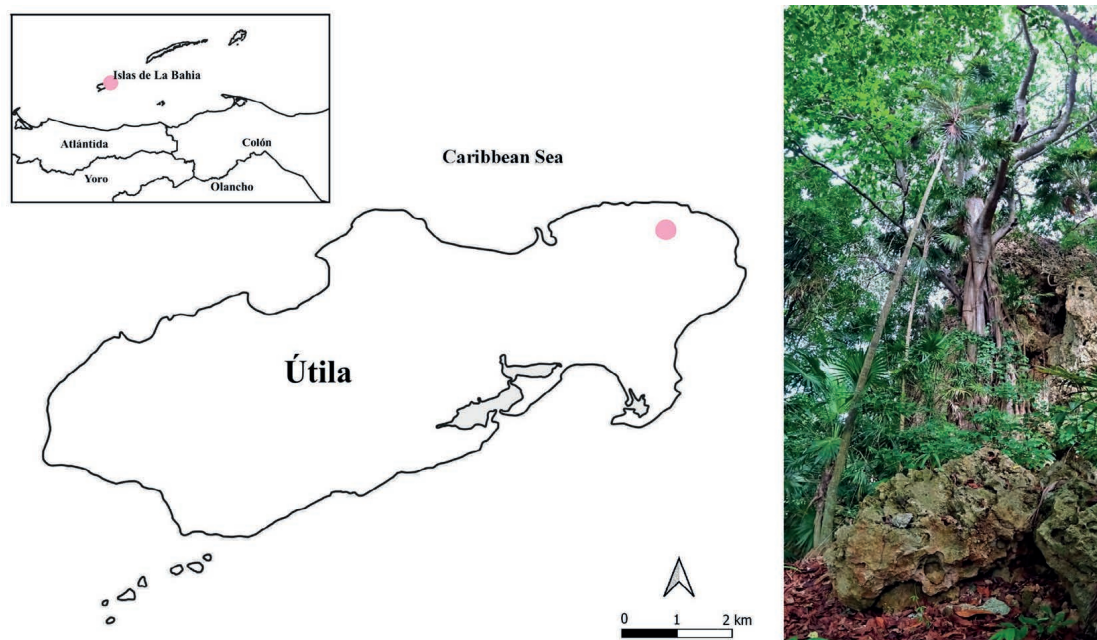


Figure 5. Distribution map (left) and habitat at type locality (right) of *Ummidia sukuhpaya* sp. nov.

lar-shaped pocket, 10mm in diameter. The outside layer was interwoven and camouflaged using a heavy dusting of fine detritus and seed-shaped particulates sourced from surrounding cave guano; the internal coating of this outer layer is clean and finely spun. The innermost layer of the egg sac (i.e. which originally contains the eggs) is also constructed from white silk, smooth and purse-like, with a clear seam round the edge, 8 mm in diameter overall. It now shows a semi-deflated form due to the presence of three small exit holes, clearly made by spiderlings upon their emergence. The exuviae of at least 50 spiderlings were present in the cavity between the inner and outer layers of the egg sac. The prior successful use of the burrow as a reproduction site may explain its subsequent abandonment.

Distribution.— Known only from the type locality, Útila Island, Honduras (Fig. 5).

Remarks.— *Ummidia sukuhpaya* sp. nov. represents the third species known from Honduras. The two species previously known from the country were described from the mainland, and despite being relatively closely distributed to each other, are vastly morphologically different (Godwin, Bond, 2021). The discovery of the new species described here also represents the first record of *Ummidia* from the Honduran Bay Islands group. Given the abundant short-range endemism found in other species of the genus (Godwin and Bond, 2021), we highly suspect *U. sukuhpaya* sp. nov. is endemic to Útila. Indeed, it appears to be even further restricted only to the higher elevations on Útila, where the hardwood forest occurs (see above). Substantial deforestation and development has occurred around the type

locality since its discovery in 2018. This species is thus likely to be of conservation concern, and further studies are required to understand what its conservation needs may be, and what measures it may require to sustain its population(s).

ACKNOWLEDGEMENTS

We warmly thank Antonio Brescovit (IBSP) for providing a repository for the type material. Two anonymous reviewers whose comments improved the manuscript are also thanked. AMC-R thanks the Vincent Roth Fund for Systematic Research for funding awarded to him by the American Arachnological Society in 2024, and IDEA WILD for donation of equipment.

REFERENCES

- Baerg, W.J. (1928). Some studies of a trapdoor spider (Araneae: Aviculariidae). *Entomological News*, 39, 1-4.
- Bond, J., Coyle, F.A. (1995). Observations on the natural history of an *Ummidia* trapdoor spider from Costa Rica (Araneae, Ctenizidae). *Journal of Arachnology*, 23, 157-164.
- Coyle, F.A. (1985). Ballooning behavior of *Ummidia* spiderlings (Araneae, Ctenizidae). *Journal of Arachnology*, 13, 137-138.
- Decae, A. E. (2010). The genus *Ummidia* Thorell 1875 in the western Mediterranean, a review (Araneae: Mygalomorphae: Ctenizidae). *Journal of Arachnology*, 38, 328-340.
- Eberhard, W. (2006). Dispersal by *Ummidia* spiderlings (Araneae, Ctenizidae): Ancient roots of aerial webs and orientation? *Journal of Arachnology*, 34, 254-257.
- Fisher, R., Fisher, D., Skvarla, M., Dowling, A. (2014). Pre-ballooning in *Ummidia* Thorell 1875 (Araneae: Ctenizidae) from the Interior Highlands, USA: second account from the region and review of mygalomorph ballooning. *Journal of Arachnology*, 42, 318-321.
- Gertsch, W. (1979). *American Spiders* (second edition). Van Nostrand Reinhold Co., New York, 274 pp.
- Godwin, R.L., Bond, J.E. (2021). Taxonomic revision of the New World members of the trapdoor spider genus *Ummidia* Thorell (Araneae, Mygalomorphae, Halonoproctidae). *ZooKeys*, 1027, 1-65.
- Godwin, R.L., Opatova, V., Garrison, N.L., Hamilton, C.A., Bond, J.E. (2018). Phylogeny of a cosmopolitan family of morphologically conserved trapdoor spiders (Mygalomorphae, Ctenizidae) using Anchored Hybrid Enrichment, with a description of the family, Halonoproctidae Pocock 1901. *Molecular Phylogenetics and Evolution*, 126, 303-313.
- Opatova, V., Bond, J., Arnedo, M. (2016). Uncovering the role of the Western Mediterranean tectonics in shaping the diversity and distribution

- of the trap-door spider genus *Ummidia* (Araneae, Ctenizidae). Journal of Biogeography, 43, 1955-1966.
- Ortiz, D. (2007). Ummidiinae, a new replacement name for Pachylomerinae Simon 1889 (Araneae: Ctenizidae). Boletín de la Sociedad Entomológica Aragonesa, 40, 395-396.
- Pocock, R.I. (1901). On some new trap-door spiders from China. Proceedings of the Zoological Society of London, 70, 207-215, pl. 21.
- Sherwood, D., Ríos-Tamayo, D., Pett, B. L., Hinchcliffe, M. J. (2023). On the specimens of *Actinopus* Perty, 1833 deposited in the Natural History Museum, London, with redescription, first description of missing sexes, and notes on other taxa (Araneae: Actinopodidae). ZooNova, 27, 1-31.
- Thorell, T. (1875). Descriptions of several European and North African spiders. Kongliga Svenska Vetenskaps-Akademiens Handlingar, 13, 1-203.
- Thorell, T. (1887). Viaggio di L. Fea in Birmania e regioni vicine. II. Primo saggio sui ragni birmani. Annali del Museo Civico di Storia Naturale di Genova, 25, 5-417.
- Tso, I-M., Haupt, J. and Zhu, M-S. (2003). The trapdoor spider family Ctenizidae (Arachnida : Araneae) from Taiwan. Raffles Bulletin of Zoology, Vol. 51, P. 25-33.
- Westwood, J. O. (1840). Observations on the species of spiders which inhabit cylindrical tubes covered by a movable trapdoor. Transactions of the Entomological Society of London, 3, 170-182.
- World Spider Catalog (2024). World Spider Catalog, version 24.5. Natural History Museum Bern, online at: <http://wsc.nmbe.ch>
- Zonstein, S. L. (2007). Description of the female of the Central Asian trap-door spider, *Ummidia gandjinoi* (Andreeva, 1968) (Aranei: Ctenizidae). Arthropoda Selecta, 16, 151-152.
- Zonstein, S. L. (2014). A new species of the trapdoor spider genus *Ummidia* Thorell, 1875 (Aranei: Ctenizidae) from Afghanistan. Arthropoda Selecta, 23, 269-271.
- Zonstein, S. L. (2018). Redescription of the lost and found male holotype of *Ummidia gandjinoi* (Andreeva, 1968) (Araneae: Ctenizidae). Israel Journal of Entomology, 48, 17-20.