

Avicularia rickwesti sp. nov., a remarkable new species of *Avicularia* (Theraphosidae: Aviculariinae) from Dominican Republic

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ABSTRACT. A remarkable new species of *Avicularia* Lamarck, 1818, *Avicularia rickwesti* sp. nov., is described from Dominican Republic. Female specimens of the new species are unusual by having two very short and broad spermathecae with distal half strongly sclerotized, a feature not found in any other aviculariine. Additionally, it has the leg coxae with spiniform setae, smaller on leg I and prolateral leg II, larger, black on retrolateral leg II, prolateral and retrolateral leg III and prolateral leg IV. Males are unknown. The new species is known only from two localities, in southwestern Dominican Republic. This is the first record for the subfamily on Hispaniola which is close to the northern boundary for the Aviculariinae distribution.

KEY WORDS. Caribbean; tarantula; taxonomy.

Avicularia Lamarck, 1818 comprises 51 species known from the Neotropics (PLATNICK 2012), of which 46 are from South America. A single species (*A. glauca* Simon, 1891) was described from Panama, in Central America, and four from the Caribbean: *A. caesia* C.L. Koch, 1842 and *A. laeta* (C.L. Koch, 1842) from Puerto Rico, *A. versicolor* (Walckenaer, 1837) from Guadeloupe and Martinique and *A. hirsuta* (Ausserer, 1875) from Cuba.

In recent field work in the Dominican Republic, the second author (JH) found some arboreal theraphosids resembling and having very similar behavior to *Avicularia* species. After a more detailed analysis and examination of the genitalia some remarkable features were found that are not present in representatives of any other *Avicularia* species. The new species is herein described and notes on its habitat are presented. The new species is known only from the type locality and one other locality nearby in southwestern Dominican Republic. This is the first record for the subfamily on Hispaniola and is also close to the northern boundary for the Aviculariinae distribution.

MATERIAL AND METHODS

All measurements are in millimeters and were obtained with a Mitutoyo digital caliper with an error of 0.005 mm, rounded up to two significant decimals. Leg and palp measurements were taken from the dorsal aspect of the left side (unless appendages were lost or obviously regenerated). A Leica LAS Montage and LAS 3D module mounted on a Leica M205C dissecting microscope were used for image capture of spider structures. Urticating hairs were examined with a Leica DM2500

compound microscope and images were captured with a Leica DFC450 digital camera. Abbreviations: (ALE) anterior lateral eyes, (AME) anterior median eyes, (ITC) inferior tarsal claw, (PLE) posterior lateral eyes, (PLS) posterior lateral spinnerets, (PME) posterior median eyes, (PMS) posterior median spinnerets, (STC) superior tarsal claws. Terminology of urticating hairs follows COOKE *et al.* (1972).

Specimens are deposited in the American Museum of Natural History, New York (AMNH) and Instituto Butantan, São Paulo (IBSP).

TAXONOMY

Avicularia rickwesti sp. nov.

Figs 2-19

Diagnosis. The female is distinguished from those of all other *Avicularia* species (Fig. 1) by the two very short and broad spermathecae, twice wider than longer, with distal half strongly sclerotized (Fig. 2). Additionally, it can be distinguished by the leg coxae with spiniform setae; small on leg I and prolateral leg II (Figs 3 and 4), large, black on retrolateral leg II, prolateral and retrolateral leg III and prolateral leg IV (Figs 5 and 6). Males are unknown.

Type material. Female holotype: DOMINICAN REPUBLIC, Pedernales Province: Parque Nacional Jaragua, track into park (unmarked) between Manuel Goa and Oviedo (17°48'41.5"N, 71°26'35.9"W, 83.3 m a.s.l.), 09 July 2004, J. Huff & E.S. Volschenk *leg.* (AMNH), collecting permit # 01496; Female

paratype: DOMINICAN REPUBLIC, *Independencia Province*: (Parque Nacional Sierra de Baoruco, Rabo de Gato, 18°18'39.1"N, 71°34'54.4"W, 408 m a.s.l.), 10 July 2004, J. Huff & E.S. Volschenk leg. (AMNH), collection permit # 01496.

Additional material examined. DOMINICAN REPUBLIC, *Independencia Province*: Puerto Escondito (Rabo de Gato, 18°18'6.83"N, 71°34'8.81"W, 417 m a.s.l.), 1 female, 24 February 2012, J. Huff & R. West leg. (AMNH). *Pedernales Province*: (Jaragua National Park, Los Tres Charcos, road to Fondo Paradi, 17°48'7.45"N, 71°26'5.41"W, 74 m a.s.l.), 4 females, 20 February 2012, J. Huff & R. West leg. (AMNH).

Description. Female holotype. **Measurements**: carapace 14.8 long, 11.9 wide, chelicerae 5.6. Legs (femur, patella, tibia, metatarsus, tarsus, total): I: 9.7, 6.4, 7.1, 7.3, 4.5, 35.0. II: 9.4, 6.4, 6.5, 7.5, 4.0, 33.8. III: 8.3, 5.6, 6.1, 6.6, 3.5, 30.1. IV: 10.1, 6.3, 8.4, 8.1, 3.4, 36.3. Palp: 7.3, 4.5, 4.6, –, 4.7, 21.1. Midwidths (lateral): femora I-IV = 2.5, 2.5, 3.2, 2.9, palp = 2.0; patellae I-IV = 2.7, 2.5, 2.7, 2.9, palp = 2.3; tibiae I-IV = 2.4, 2.2, 2.4, 2.9, palp = 2.3; metatarsi I-IV = 1.9, 1.8, 1.7, 1.8; tarsi I-IV = 1.9, 1.8, 1.7, 1.8, palp = 2.0. Abdomen 14.3 long, 11.3 wide. Spinnerets: PMS, 1.4 long, 0.7 wide, 0.1 apart; PLS, 2.3 basal, 1.4 middle, 2.4 distal; midwidths 1.4, 1.1, 1.0, respectively (Fig. 9). **Carapace**: length to width 1.24. Fovea: 3.0 wide. Covered by abundant slender soft setae and a line of long bristles from behind the eye tubercle to the fovea (Fig. 7). **Eyes**: tubercle 0.9 high, 2.1 long, 2.9 wide. Clypeus absent. Anterior eye row procurved, posterior slightly recurved. Eye sizes and inter-distances: AME 0.72, ALE 0.62, PME 0.27, PLE 0.65, AME-AME 0.63, AME-ALE 0.43, AME-PME 0.30, ALE-ALE 1.97, ALE-PME 0.71, PME-PME 1.85, PME-PLE 0.05, PLE-PLE 2.38, ALE-PLE 0.52, AME-PLE 0.47. Ratio of eye group width to length 1.38 (Fig. 7). **Maxillae**: length to width: 1.55. Cuspules: between 100-200 spread over ventral inner heel. Labium: 1.6 long, 2.4 wide, with 85 cuspules spaced by one diameter from each other on the anterior half. Labio-sternal groove shallow, flat, sigilla not evident (Fig. 8). **Chelicerae**: basal segments with fourteen teeth, third, fourth and fifth the larger; a parallel basal row of four tiny on the retromargin. **Sternum**: 6.6 long, 4.8 wide. Posterior angle rounded, not separating coxae IV. Sigilla: anterior pair not visible, the other ellipsoidal, less than half diameter from margin; posterior more than two times the diameter of the middle (Fig. 8). **Legs**: leg formula: I = IV II III. Leg coxae with spiniform setae; small on leg I and prolateral leg II (Figs 3 and 4), large, black on retrolateral leg I, prolateral and retrolateral leg III and prolateral leg IV (Figs 5 and 6). Scopula: tarsi I-IV fully scopulate. Metatarsi I-II fully scopulate; III 4/5, IV 1/2 distal scopulate. IV divided by a three wide row of setae. Clavate trichobothria: on the distal 2/3 of tarsi I-IV. Spines absent on all legs and palps. Urticating hairs: type II (0.69 long, 0.015 wide) on the abdomen dorsum (Figs 10 and 11). **Genitalia**: paired very short and broad spermathecae with distal half strongly sclerotized (Fig. 2). **Color pattern**: carapace black covered with abundant pinkish setae. Coxae and trochanter dorsally cream. Femora dor-

sally black with abundant pinkish setae, patellae, tibiae, metatarsi and tarsi grayish. Patellae with two dorsal longitudinal white stripes. White rings on distal femora, tibiae and metatarsi. Chelicerae black with whitish hairs. Abdomen dorsally black with a light pattern. Coxae, labium, sternum, maxilla, abdomen and legs ventrally black (Figs 12-14).

Variation. The paratype, a smaller specimen, has a straight fovea and less developed spiniform setae on the coxae.

Remarks: A significant variation in the size of the female was observed (n = 7), carapaces varying in length from 7.1 to 14.8 (median = 10.0, standard deviation = 2.63), and width from 6.1 to 11.9 (median = 7.94, standard deviation = 2.30).

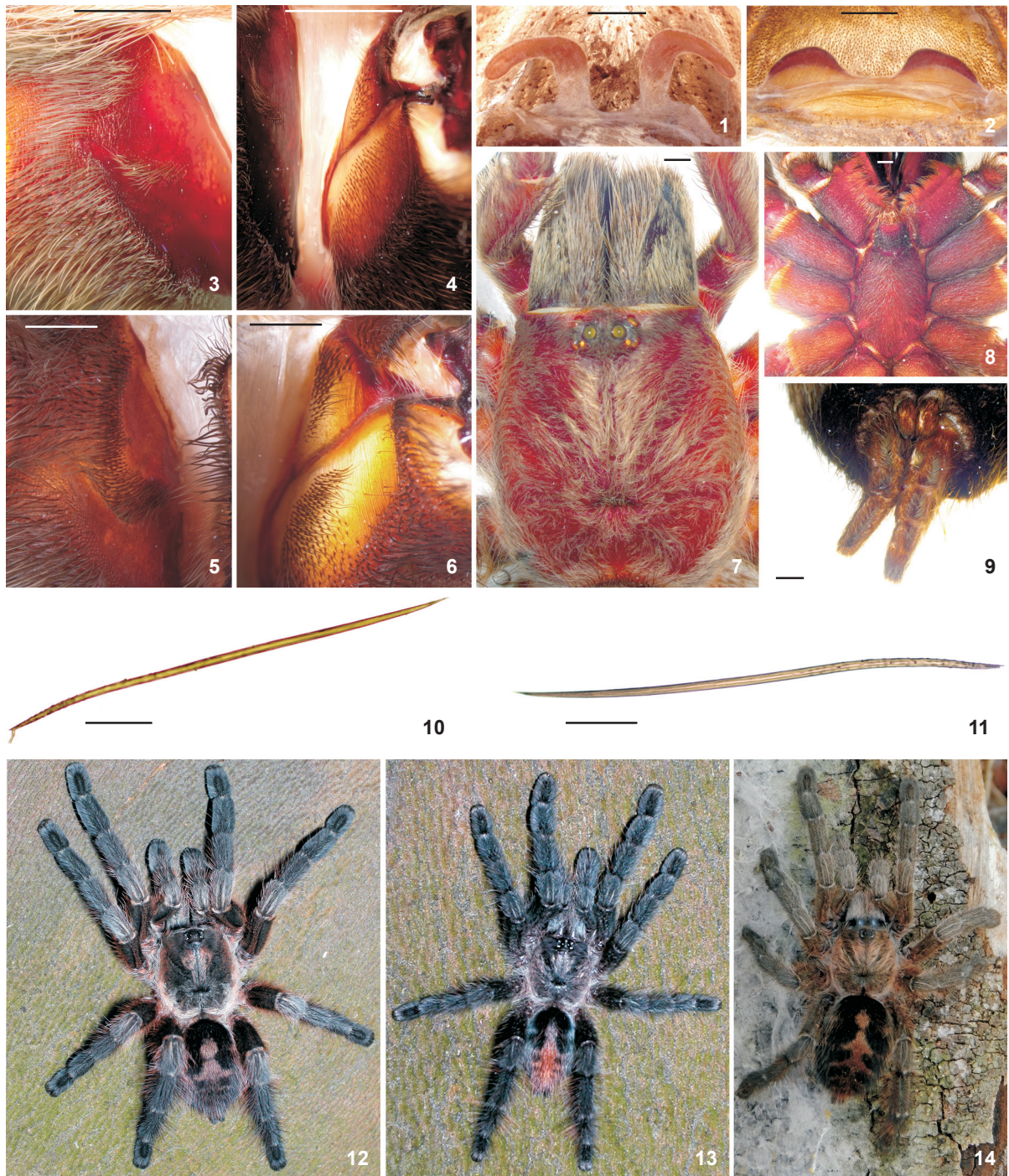
Distribution. Only known from type localities (Fig. 15).

Etymology. The specific name is a patronym in recognition of the contribution to taxonomy and biology of theraphosids done by Rick C. West.

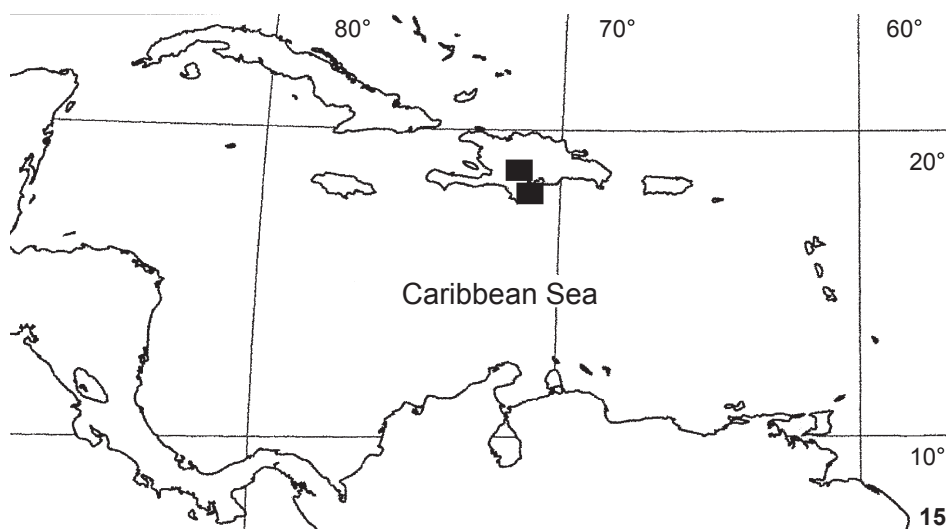
Natural history. The holotype was found in a sparse deciduous forest of *Acacia* sp. and thorny scrub, with many limestone boulders (Figs 16 and 19). It was collected in a narrow tree hole in a small tree with approximately a 10 cm diameter trunk. A silken tube extended about 15 cm outside of the tree hole (Figs 17 and 18). Spiderlings were found with the female and were approximately 2-3 months old (Fig. 13). The paratype was collected in a very different habitat. It was a broad-leaved forest with no/little under story. The trees were very tall and it appears that *A. rickwesti* sp. nov. is found high in the canopy. The specimen was found on a recently fallen tree. A small female (carapace 8.1 long, 6.1 wide) from Jaragua National Park, Los Tres Charcos, collected in 20 February 2012, had an egg sac 8.8 in diameter, with 15 eggs probably infertile and one spiderling.

DISCUSSION

Avicularia rickwesti sp. nov. is remarkable for its highly modified genitalia, a paired spermathecae twice wider than long and strongly sclerotized at their distal half (Fig. 2). All other aviculariine species have paired spermathecae longer than wider and weakly sclerotized (Fig. 1) (WEST *et al.* 2008, BERTANI 2012). The new species also has some spiniform setae on posterior leg coxae not found or weakly developed in other aviculariines (Figs 4 and 5). The abdomen has an oak leaf pattern (Figs 12-14) with resemblance in aviculariines only with *Ephobopus foliatus* West, Marshall, Fukushima & Bertani, 2008. All these apomorphic characteristics make *A. rickwesti* sp. nov. very distinct from other *Avicularia* species and its inclusion into this genus could be seen as inadequate at first glance. However, its inclusion in other aviculariine genera has no support, as the conjunct of characters completely aspinose legs, procurved first eye row (Fig. 7), digitiform distal article of the posterior lateral spinnerets (Fig. 9) and the presence of urticating hairs type II on abdomen dorsum (Figs 10 and 11) indicate the species should be included either into *Avicularia* or *Iridopelma* Pocock, 1901 genera. The inclusion in *Iridopelma* would be dubious since



Figures 1-14. (1-2) Spermathecae: (1) *Avicularia* sp., from Brazil, state of Pará, Rio Trombetas (IBSP 8579); (2) *Avicularia rickwesti* sp. nov. holotype; (3-14) *Avicularia rickwesti* sp. nov.: (3-6) holotype: (3) leg coxa I, retrolateral; (4) leg coxa II, prolateral; (5) leg coxa III, retrolateral; (6) leg coxa IV, prolateral, showing area with spiniform setae; (7) paratype: cephalothorax, dorsal; (8-11) holotype: (8) maxillae, labium and sternum; (9) spinnerets; (10-11) type II urticating hair: (10) with stalk; (11) released from stalk. (12-14) habitus: (12) female unusual dark form; (13) early antepenultimate immature; (14) female usual brown form "in situ". Photos: 12-13 Jeremy Huff, 14 Rick West. Scale bars: 1-9 = 1 mm, 10-11 = 0.1 mm.



Figures 15-19. *Avicularia rickwesti* sp. nov.: (15) records in Dominican Republic; (16-19) habitats in Dominican Republic: (16, 19) dry deciduous forest in Baoruco, s. Manuel Golla; (17) retreat, female; (18) retreat, Baoruco, s. Manuel Golla. Photos: 16, 18, Jeremy Huff; 17, 19, Rick West.

Iridopelma is endemic to Brazil (BERTANI 2012). Furthermore, some biological features indicate a close relationship with other *Avicularia* species. *Avicularia rickwesti* sp. nov. builds a similar retreat as other *Avicularia* species in tree trunks instead of retreats made of leaves connected with silk made by *Iridopelma* specimens (BERTANI 2012). The discovery of a male would aid in giving support or rejecting the inclusion of the species in *Avicularia*, but the male remains unknown after three trips to the topotypical region. Therefore, we prefer to describe the species with females only and wait for the discovery of a male to confirm the present classification.

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