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Two New Species of *Brunneria* Saussure, 1869 (Mantodea: Coptopterygidae) with Novel Diagnostic Characters and a Key to the Species

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Abstract. Documentation of the first specimen-based records of Mantodea from Aruba is provided with description of two new species of *Brunneria*: *xerophila* **n. sp.** from Aruba and *prominens* **n. sp.** from northeastern Brazil. Additional material referable to *orinocensis* allows for a redescription of that species and the first description of its female. A revised dichotomous key for both sexes of *Brunneria* is provided, incorporating diagnostic characters previously overlooked or underutilized in species identification.

The Mantodea of the Caribbean basin remain unevenly documented, with several insular systems historically lacking any verified records due to under collecting. Among these, the island of Aruba has long stood as a conspicuous gap in regional Mantodea inventories and no specimen-based record of Mantodea had ever been formally documented from Aruba prior to Anderson (2025). In *Continuing the Chronicle of Caribbean Mantodea*, Anderson provided the first evidence of Mantodea from Aruba that were presented on the basis of independently submitted iNaturalist observations. These photographic records documented an undescribed species of *Brunneria* Saussure, 1869 that differed from other known congeners. However, because no voucher material existed at that time, the population was referred to informally as "*Brunneria* sp. xerophila," a provisional designation explicitly lacking nomenclatural standing. The 2025 publication therefore represented the first verified documentation of Mantodea from Aruba but it did not constitute a formal taxonomic act within *Brunneria*.

In late 2025, an expedition to Aruba was undertaken, resulting in the first targeted collection of Mantodea from the island. Among the material obtained were specimens of *Brunneria* that correspond morphologically to the population previously documented photographically. A conspecific pair was collected in Arikok National Park on 25 November 2025. These specimens were deposited in the collections of Naturalis Biodiversity Center, Leiden, thereby establishing the first museum-archived Mantodea from Aruba. The expedition was led by Luc Willemse, Guest Researcher/Visiting Staff Member at Naturalis, whose subsequent review of Anderson's 2025 Caribbean publication identified the correspondence between the newly collected material and the informally designated *Brunneria* population reported therein. Recognizing both the taxonomic significance and the historical continuity of the record, Willemse invited Anderson to formally describe the specimens that were collected during the Aruba expedition. This collaboration unites the original photographic documentation with newly acquired voucher material, transitioning the Aruba *Brunneria* from observational status to formally described taxon.

In order to properly diagnose the new Aruba species, it was first necessary to re-evaluate the diagnostic framework of the genus *Brunneria*. The existing literature provides only limited and often inconsistent character states for distinguishing species, and many of the traditional characters have proven unreliable when examined across a broader series of specimens. Consequently, the known species of *Brunneria* required re-assessment and the construction of new dichotomous keys based upon a revised set of diagnostic characters.

Historically, pigmentation of the forefemoral spines has frequently been used as a diagnostic feature within the genus. However, careful examination of a large series of specimens demonstrates that this character is highly inconsistent and difficult to interpret. Depending on the perspective at which the forefemoral spines are viewed, the degree of apparent maculation of the spines may vary substantially, often giving the impression of differing pigmentation patterns. Furthermore, the historical literature is frequently unclear regarding which specific rows of spines are being referenced or from which perspective they are being viewed. Discoidal spines, the large anteroventral femoral spines, the penultimate 1-3 anteroventral tibial spines, and the tibial spur may be blackened only at their apices on the posterior surface, while having blackened maculation at the base, at the tips, or partially along the midsection on the anterior surface. These apparent differences are compounded by the fact that the extent and pattern of darkening may differ between males and females of the same species. For these reasons, spinal pigmentation was determined to be an unreliable diagnostic character and was not used in the construction of the dichotomous keys presented herein.

Instead, morphometric characters associated with overall habitus proportions proved far more consistent and diagnostically informative. Ratios derived from body length, pronotum length, prozona length, metazona length, forewing length, and related structures were found to provide reliable differentiation among species. In males, the architecture of metazonal denticulation emerged as a particularly important diagnostic character. The configuration, prominence, and spacing of these denticles proved to be species-defining features and, in some instances, exhibited sexual dimorphism. In females, additional characters were found to be equally informative. In particular, antennal morphology—largely overlooked in previous treatments of the genus—proved to be especially useful for species identification when considered alongside morphometric ratios.

During the course of digitally reviewing type specimens and additional non-type museum material in order to properly diagnose the Aruba specimens, several further taxonomic insights emerged. Among these was the discovery of an undescribed species from northeastern Brazil that was previously overlooked within historical treatments of *Brunneria*. This species is herein formally described and named in addition to the Aruba taxon. The examination of additional museum material also revealed specimens that are conspecific with *Brunneria orinocensis* Agudelo & Chica, 2002. The availability of this additional material has made it possible to clarify the morphology of this poorly understood species and to provide a more complete redescription of it. These newly examined specimens have also made it possible to describe the female of *orinocensis* for the first time. Furthermore, comparison with this expanded material has clarified the identity of the previously reported Trinidad specimen that had earlier been interpreted as representing *orinocensis*. Reassessment of that material demonstrates that it instead represents *brasiliensis*, thereby resolving a longstanding misidentification associated with the Caribbean record of the genus.

Despite the clarifications presented herein, it is evident that the diversity of *Brunneria* remains incompletely understood. Several taxa currently assigned to broadly defined species complexes, including the *subaptera* complex briefly discussed in this study, almost certainly represent multiple undescribed forms. Resolving these relationships will require a comprehensive revision of the genus that integrates expanded morphological datasets, historical literature review, and molecular analyses. Such a revision would provide the systematic framework necessary to fully contextualize the new species described here

and to clarify the limits and relationships of other poorly understood taxa within the genus. The present paper does not attempt this revision but rather accomplishes several ancillary objectives. First, it provides the formal description of the Aruba *Brunneria*, thereby resolving the provisional status assigned in 2025 and establishing a validly named species based on deposited type material. Second, it documents the first voucher-confirmed records of Mantodea from Aruba. Third, it describes an additional new species from northeastern Brazil discovered during the course of museum-based comparative study. Fourth, it redescribes *orinocensis*, provides the first description of the female of that species, and clarifies the identity of previously misidentified Caribbean material. Fifth, it provides a usable dichotomous key for both sexes of *Brunneria* that incorporates more reliable characters that have been previously ignored or underutilized for species diagnosis. Collectively, these contributions convert a previously undocumented mantid fauna into a defined, specimen-supported component of Caribbean biodiversity while simultaneously refining the taxonomy of the genus. In doing so, this study exemplifies a modern taxonomic trajectory: initial detection through citizen science platforms, preliminary documentation in the literature, targeted field collection, museum curation, and formal systematic resolution.

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Brunneria Saussure, 1869

Description. Habitus very slender, elongated, rod-shaped, measuring from 60-100 mm. Body color generally green to brownish-green, occasionally tan. Head capsule broad, thin, somewhat shortened. Vertex smooth, arched, raised higher than compound eyes. Lower frons several times wider than high, very narrow with rounded superior margin, not marked. Basal third of antennae with segments variably thickened, subsequent segments narrowing in female, rather moniliform throughout in male. Compound eyes rounded, slightly protruding laterally. Ocelli salient in male, reduced in female. Pronotum very long and slender, carinate throughout, supracoxal dilation marked. Prozona margins parallel to converging, denticulate. Metazona 2.5-6.5 times longer than prozona, significantly longer than forecoxae, somewhat widening posteriorly, margins denticulate. Forecoxae very finely denticulate on both margins. Forefemora very slender, elongate, dorsal margin straight, bearing 3 discoidal, 4-5 posteroventral and 13-17 anteroventral spines; tibial spur groove placed in middle. Foretibiae with 9-12 posteroventral and 14-18 anteroventral spines. Mesothoracic and metathoracic legs very long, thin. Basitarsi of metathoracic legs measuring much longer than remaining tarsomeres combined. Male wings narrow, slightly shorter than abdomen, hyaline with green veins. Costal area of forewing subopaque. Hindwings hyaline. Female forewings vestigial, not surpassing distal margin of metanotum, costal area spanning one third that of discoidal area, opaque throughout. Hindwings entirely absent. Abdomen long, slender, cylindrical. Supra-anal plate triangular, longer than wide, keeled. Cerci very long, cylindrical.
Type Species: *Brunneria subaptera* Saussure, 1869
Species Checklist:
•*Brunneria borealis* Scudder, 1896
•*Brunneria brasiliensis* Saussure, 1870
•*Brunneria longa* Giglio-Tos, 1915b
•*Brunneria orinocensis* Agudelo & Chica, 2002
•*Brunneria prominens* **n. sp.**
•*Brunneria subaptera* Saussure, 1869
•*Brunneria xerophila* **n. sp.**

Key to *Brunneria* males:
1 Habitus larger: body length ≥69 mm ……. 3
1’ Habitus smaller: body length <69 mm ……..... 2

2 Denticulation of metazonal margins coarse, broad, blunted, widely spaced. Body length >64 mm, pronotum length >21 mm. Metazona length to prozona length 3.5-4.8. Distributed within the Orinoco Basin of northern South America ……..… *B. orinocensis*

2’ Denticulation of metazonal margins fine, narrow, acutely angled, densely arranged. Body length <62 mm, pronotum length <21 mm. Metazona length to prozona length 3.0. Precinctive to Aruba …… *B. xerophila*

3 Denticulation of metazonal margins salient, acutely angled; base of teeth body color or blackened. Prozona margins converging toward anterior …… 4

3’ Denticulation of metazonal margins low, rounded; base of teeth blackened. Prozona margins parallel toward anterior ……..…….. *B. subaptera*

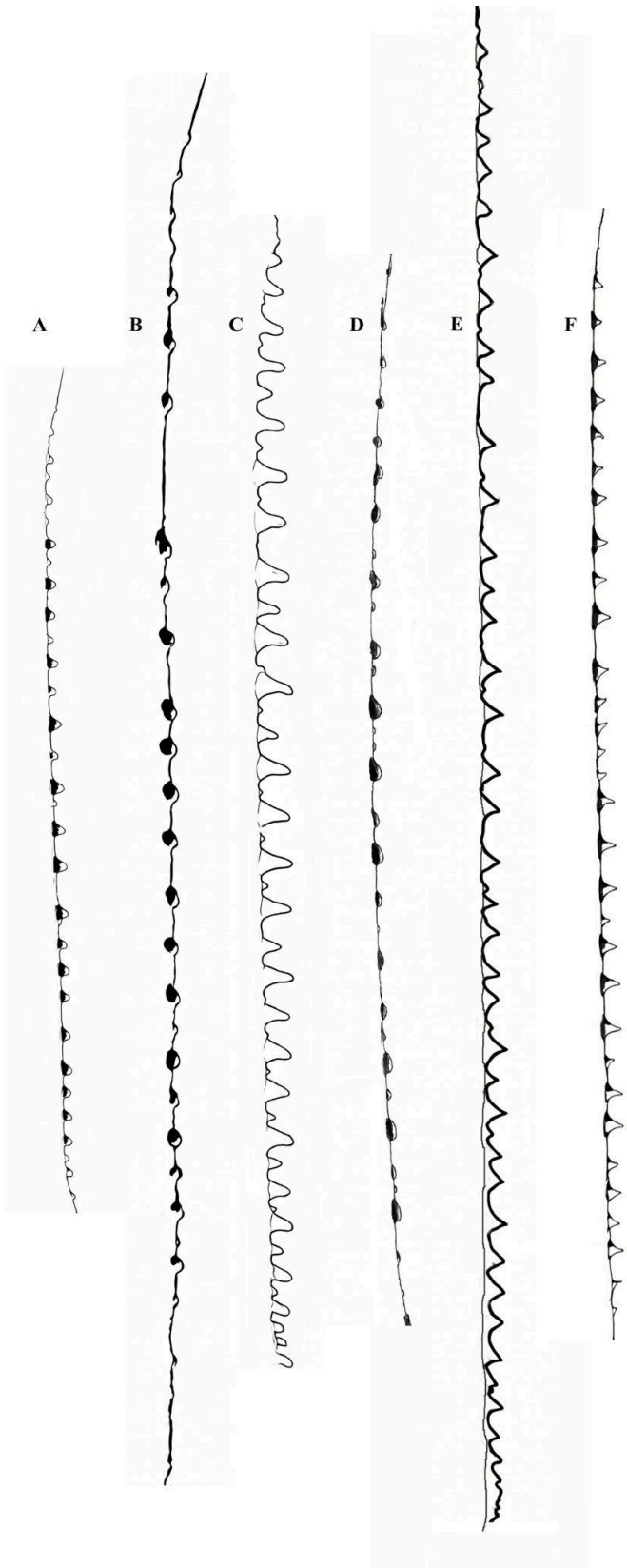
4 Body length <76 mm, pronotum length <26 mm. …….. 5

4’ Body length >94 mm, pronotum length >33 mm. ……...… *B. longa*

5 Denticulation of metazonal margins weakly projecting, uniform, broadly triangular; base of teeth blackened ……..... *B. brasiliensis*

5’ Denticulation of metazonal margins strongly projecting, irregular, narrowly triangular; base of teeth light brownish-green ……..……...……...… *B. prominens*

B. borealis parthenogenetic; males unknown.



Denticulation of male metazonal margin: A) *xerophila*, B) *subaptera*, C) *prominens*, D) *orinocensis*, E) *longa*, F) *brasiliensis*

Key to *Brunneria* females:

1 Habitus larger: body length >78 mm, pronotum length >28 mm ……..….. 2

1' Habitus smaller: body length <67 mm, pronotum length <26 mm ……...… *B. xerophila*

2 Body length <81 mm, pronotum length ≤30 mm. ……... 3

2' Body length >87 mm, pronotum length ≥31 mm. ……..….. 4

3 Basal third of antennae slightly thickened beyond second segment, then gradually narrowing. Head capsule spanning 1.8 times as wide as supracoxal dilation. Metazona length to prozona length 3.6 ……..….. *B. orinocensis*

3' Basal third of antennae abruptly and strongly thickened beyond second segment, then clearly narrowing. Head capsule spanning 1.5 times as wide as supracoxal dilation. Metazona length to prozona length 3.5 ……..….. *B. subaptera*

4 Basal third of antennae moderately to strongly thickened beyond second segment, then gradually narrowing. Metazona length to prozona length <3.7. Head capsule spanning ≤1.6 times as wide as supracoxal dilation ……..… 5

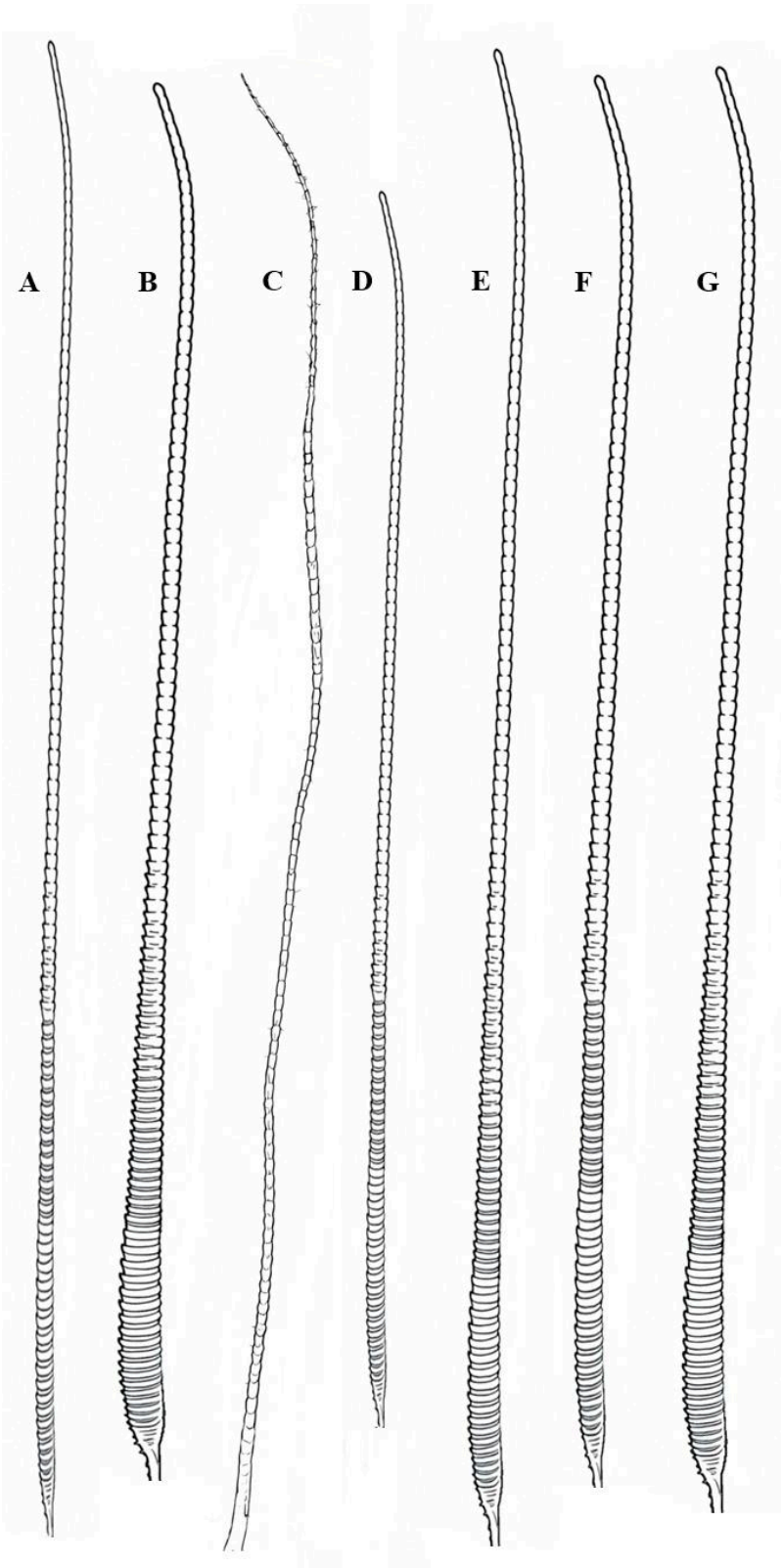
4' Basal third of antennae faintly thickened beyond second segment, then gradually narrowing. Metazona length to prozona length ≥3.8. Head capsule spanning 1.8 times as wide as supracoxal dilation ……..… *B. prominens*

5 Basal third of antennae abruptly and strongly thickened beyond second segment, then gradually narrowing. Metazona length to prozona length ≤3.5. Head capsule spanning 1.4-1.5 times as wide as supracoxal dilation …… 6

5' Basal third of antennae moderately thickened beyond second segment, then gradually narrowing. Metazona length to prozona length >3.6. Head capsule spanning 1.6 times as wide as supracoxal dilation ……...…. *B. brasiliensis*

6 Metazona length to prozona length 3.5. Forewings pigmented greenish-tan throughout. Occurs in the southern United States ……...……..... *B. borealis*

6' Metazona length to prozona length 3.3. Forewings pigmented greenish-tan with basal third blackish. Occurs in Bolivia and western-central Brazil ……..…… *B. longa*



Female antennae: A) *xerophila*, B) *subaptera*, C) *prominens*, D) *orinocensis*, E) *longa*, F) *brasiliensis*, G) *borealis*

Brunneria borealis Scudder, 1896

Diagnosis. Female. Body length 89-110 mm. Pronotum length 31-39 mm. Basal third of antennae abruptly and strongly thickened beyond second segment, then clearly narrowing. Head capsule spanning 1.5 times as wide as supracoxal dilation. Prozona margins slightly converge toward anterior. Forewings pigmented greenish-tan throughout. Metazona length to prozona length 3.5. Pronotum length to body length 0.3-0.4.

Holotype: ♀ Holotype ANSP (Philadelphia)

Type Locality. "Texas"

Distribution. Southern United States

Measurements. (all measurements are in millimeters and rounded to nearest 0.5) *Female.* Body length 89-110; pronotum length 31-39; prothoracic coxa length 10-16; forewing length 6-13.

Brunneria brasiliensis Saussure, 1870

Diagnosis. Male. Body length 75 mm. Pronotum length 25 mm. Prozona margins converging toward anterior. Denticulation of metazonal margins weakly projecting, uniform, broadly triangular; base of teeth blackened. Metazona length to prozona length 4.0. Pronotum length to body length 0.3. Prothoracic coxa length to metazona length 0.6.

Female. Body length 88 mm. Pronotum length 35 mm. Basal third of antennae moderately thickened beyond second segment, then gradually narrowing. Head capsule spanning 1.6 times as wide as supracoxal dilation. Prozona margins gradually converge toward anterior. Forewings pigmented greenish-tan, apical third occasionally blackish. Metazona length to prozona length 3.7. First discoidal spine black. Second discoidal spine black. Pronotum length to body length 0.4. Prothoracic coxa length to metazona length 0.6.

Types: ♂ Holotype MHNG (Geneva), ♀ Allotype MHNG (Geneva), ♀ Syntype MNHN (Paris)

Type Locality. "Brazil"

Distribution. Southern Brazil: Rio Grande do Sul, Santa Catarina, Paraná

Measurements. *Male.* Body length 75; pronotum length 25; prozona length 5; metazona length 20; prothoracic coxa length 12.5; forewing length 36.5. *Female.* Body length 88; pronotum length 35; prozona length 7.5; metazona length 27.5; prothoracic coxa length 17; forewing length 8.

Brunneria longa Giglio-Tos, 1915

Diagnosis. Male. Body length 95 mm. Pronotum length 34 mm. Prozona margins converging toward anterior. Denticulation of metazonal margins salient, irregular, acutely angled; base of teeth body color. Metazona length to prozona length 3.9. First discoidal spine with black tip. Second discoidal spine with black tip and black in middle. Pronotum length to body length 0.4. Prothoracic coxa length to metazona length 0.6.

Female. Body length 95 mm. Pronotum length 34 mm. Basal third of antennae strongly thickened beyond second segment, then gradually narrowing. Head capsule spanning 1.4 times as wide as supracoxal dilation. Prozona margins gradually converge toward anterior. Forewings pigmented greenish-tan with basal third blackish. Metazona length to prozona length 3.3. First and second discoidal spines with black tips. Second discoidal spine with black tip and black in middle. Pronotum length to body length 0.4. Prothoracic coxa length to metazona length 0.7.

Holotype: ♂ Holotype ZMB (Berlin), ♀ Allotype ZMB (Berlin)

Type Locality. "Bolivia: Sara-Mato Grosso Province"

Distribution. Bolivia: Cochabamba, Santa Cruz, Tarija, El Beni and western–central Brazil: Mato Grosso, Rondônia, São Paulo

Measurements. *Male.* Body length 95; pronotum length 34; prozona length 7; metazona length 27; prothoracic coxa length 16.5; forewing length 46. *Female.* Body length 95; pronotum length 34; prozona length 8; metazona length 26; prothoracic coxa length 18; forewing length 8.

Brunneria orinocensis Agudelo & Chica, 2002

Redescription. *Habitus* very slender, elongated, rod-shaped. Body color light brown to greenish-brown.

Head capsule broad, thin, somewhat shortened. Vertex smooth, broadly arched, raised higher than dorsal surface of compound eyes. Lower frons several times wider than high, very narrow with rounded superior margin. Basal third of antennae slightly thickened beyond second segment, then gradually narrowing in female, moniliform throughout in male. Pigmentation of antennae light yellow to brownish-yellow. Compound eyes rounded, slightly protruding laterally, pigmented same as body color. Ocelli salient in male, reduced in female. Pigmentation of head capsule yellowish-brown to greenish-brown.

Pronotum very long and slender, saliently carinate throughout, supracoxal dilation marked. Prozona margins parallel toward anterior in male, slightly converging toward anterior in female, denticulate in both sexes, more prominently so in female. Metazona 3.5-4.8 times as long as prozona in male, 3.6 times as long as prozona in female. Metazona slightly widened posteriorly. Metazonal margins armed with broad, blunted, widely spaced teeth in male, denticulation more narrow and acutely angled in female; denticulation of male primarily with blackish bases, denticulation of female consistently monochromatic with body color. Pigmentation of pronotum light brown to brownish-green in male, greenish-brown in female. Prosternum blacked between bases of forecoxae.

Prothoracic legs. Forecoxae elongated, very finely denticulate on both margins, pigmented yellowish-brown to greenish-brown. Forefemora very slender, elongate, dorsal margin straight, bearing 3 discoidal, 5 posteroventral and 15-16 anteroventral spines; tibial spur groove placed in middle. Forefemora pigmented yellowish-brown to greenish-brown, occasionally contrasting to forecoxae coloration, with pale line on posterior surface near ventral margin and darker shading running length of limb. First discoidal spine with black tip and base in male. In female, first discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Second discoidal spine with black tip and base in male. In female, second discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Foretibiae with 9-10 posteroventral and 15-17 anteroventral spines. All anteroventral tibial spines pigmented same as body color at base with blackish tips on both posterior and anterior surface in male. In female, anteroventral tibial spines pigmented same as body color at base with blackish tips on posterior surface with penultimate 1-3 spines and tibial spur with base, tips, and portion of middle blackened on anterior surface.

Meso/metathoracic legs very long, slender, very finely denticulated throughout. Basitarsi of metathoracic legs measuring much longer than remaining tarsomeres combined. Coloration of legs monochromatic light green to brownish-green to match body color with tibiae transitioning to lighter shade than darker femora.

Wings. Male forewing abbreviated, reaching to abdominal tergite VII. Pigmentation of male forewings hyaline, tinted light brown to greenish with darker costal ridge. Costal area subopaque brown to brownish-green. Hindwings hyaline, tinted light brown along costal margin. Female forewings vestigial, reaching base of abdominal tergite I, heavily reticulated, costal area spanning one third that of discoidal area, opaque throughout. Pigmentation of female forewings shaded light brown with faintly darker reddish-brown basal third. Female hindwings absent.

Abdomen long, slender, cylindrical in both sexes. Male abdominal tergites colored light brown to yellowish. Female tergites colored light brownish-green. Male supra-anal plate subtriangular, spanning broader than long. Female supra-anal plate sublanceolate, extending longer than its basal width. Cerci elongated, flattened, gradually tapering.

Diagnosis. Male. Body length 65-68.5 mm. Pronotum length 24 mm. Prozona margins parallel toward anterior. Denticulation of metazonal margins coarse, broad, blunted, widely spaced; base of teeth blackened. Metazona length to prozona length 3.5-4.8. First discoidal spine with black tip and base. Second discoidal spine with black tip and base. Pronotum length to body length 0.3-0.4. Prothoracic coxa length to metazona length 0.5-0.6

Female. Body length 80.5 mm. Pronotum length 30 mm. Basal third of antennae slightly thickened beyond second segment, then gradually narrowing. Head capsule spanning 1.8 times as wide as

supracoxal dilation. Prozona margins slightly converge toward anterior. Forewings pigmented reddish-tan throughout. Metazona length to prozona length 3.6. First discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Second discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Pronotum length to body length 0.4. Prothoracic coxa length to metazona length 0.6

Types: ♂ Holotype ICN-MHN (Bogotá), immature paratype CMMHN (Manizales), immature paratype Agudelo Personal Collection

Type Locality. Orinoco River, Colombia

Distribution. Colombia: Vichada, Tolima, Huila and Venezuela

Measurements. *Male.* Body length 65-68.5; pronotum length 21.5-24; prozona length 4-5; metazona length 17.5-19; prothoracic coxa length 10; forewing length 25-36. *Female.* Body length 80.5; pronotum length 30; prozona length 6.5; metazona length 23.5; prothoracic coxa length 13.5; forewing length 6.5.

Brunneria prominens **n. sp.**

zoobank.org:act:0F0879BB-AD3C-46A7-A64A-5635CB97B6EA

Type Material. ♂ Holotype (MNHN(EP) 2136): Brazil, Bahia, Nazaré, BA 245; 17 VI 1990; leg. Amedegnato & Poulain. ♀ Allotype (MNHN(EP) 2137): Brazil, Sergipe, Propriá/Canhoba, SE 202; 14 VI 1990; leg. Amedegnato & Poulain.

Description. *Habitus* very slender, elongated, rod-shaped. Body color predominantly light green with brownish highlights in male. Female body color greenish to light brown.

Head capsule broad, thin, somewhat shortened. Vertex smooth, broadly arched, raised higher than dorsal surface of compound eyes. Lower frons several times wider than high, very narrow with rounded superior margin. Basal third of antennae faintly thickened beyond second segment, then gradually narrowing in female, moniliform throughout in male. Pigmentation of antennae whitish throughout. Compound eyes rounded, slightly protruding laterally, pigmented same as body color. Ocelli salient in male, reduced in female.

Pronotum very long and slender, saliently carinated throughout, supracoxal dilation marked. Prozona margins converging toward anterior in male, parallel toward anterior in female, strongly denticulate in both sexes. Metazona 4.1 times as long as prozona in male, 3.9 times as long as prozona in female. Metazona slightly widened posteriorly. Metazonal margins armed with strongly projecting, irregular, narrowly triangular teeth in both sexes; denticulation whitish in both sexes with light brownish-green bases. Pigmentation of pronotum light brownish-green in male, monochromatic greenish in female. Prosternum blacked between base of forecoxae.

Prothoracic legs. Forecoxae elongated, very finely denticulate on both margins, pigmented monochromatic light green. Forefemora very slender, elongate, dorsal margin straight, bearing 3 discoidal, 5 posteroventral and 13-16 anteroventral spines; tibial spur groove placed in middle. Forefemora pigmented same as body color. First discoidal spine blackish in male; first discoidal spine with black tip on posterior surface, anterior surface with base, tip and portion of middle blackened on anterior surface in female. Second discoidal spine blackish in male; second discoidal spine with black tip on posterior surface, anterior surface with base, tip and portion of middle blackened on anterior surface in female. Foretibiae with 16-17 anteroventral spines. All spines pigmented same as body color at base with blackish tips on anterior surface. Tibial spur with base, tip, and portion of middle blackened on anterior surface; darkening being more pronounced in male.

Meso/metathoracic legs very long, slender, very finely denticulated throughout. Basitarsi of metathoracic legs measuring much longer than remaining tarsomeres combined. Coloration brownish-green in male, monochromatic light green in female.

Wings. Male forewing abbreviated, reaching to abdominal tergite VI. Pigmentation of forewings hyaline, tinted light greenish with reddish-brown costal ridge. Costal area subopaque reddish-green. Hindwings hyaline, tinted light greenish. Female forewings vestigial, reaching anterior third of metanotum, heavily reticulated, costal area spanning one third that of discoidal area, opaque throughout. Pigmentation of forewings reddish-brown. Female hindwings not developed.

Abdomen long, slender, cylindrical in both sexes. Male abdominal tergites monochromatic light greenish. Female tergites marked with darker green to brownish stripe down median of dorsal surface, bordered by yellowish-tan. Male supra-anal plate subtriangular. Female supra-anal plate sublanceolate. Cerci greatly elongated, slender, gradually tapering.

Etymology. The specific epithet *prominens* is a Latin present active participle (nominative singular, masculine/feminine/neuter) meaning "projecting," "jutting out," or "prominent." It is derived from the verb *prōminēre* ("to jut out, project, stand out, overhang"), a compound of the prefix *prō-* ("forward, forth, before") + *minēre* ("to project, jut out"; related to *mōns* "mountain, hill," from the Proto-Indo-European root *men-* "to project"). The name refers to the strongly projecting, prominent denticulations on the metazonal margins, the key diagnostic character of the species.

Diagnosis. Male. Body length 75.5 mm. Pronotum length 25.5 mm. Prozona margins converging toward anterior. Denticulation of metazonal margins strongly projecting, irregular, narrowly triangular; base of teeth body color. Metazona length to prozona length 4.1. First discoidal spine blackish. Second discoidal spine blackish. Pronotum length to body length 0.3. Prothoracic coxa length to metazona length 0.6.

Female. Body length 90.5 mm. Pronotum length 36.5 mm. Basal third of antennae faintly thickened beyond second segment, then gradually narrowing. Head capsule spanning 1.8 times as wide as supracoxal dilation. Prozona margins parallel toward anterior. Forewings pigmented reddish-green throughout. Metazona length to prozona length 3.9. First discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Second discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Pronotum length to body length 0.4. Prothoracic coxa length to metazona length 0.6.

Type Locality. Nazaré, Bahia, Brazil

Distribution. Northeastern Brazil: Bahia, Sergipe, Alagoas, Pernambuco, Paraíba, Rio Grande do Norte, Ceará, and Piauí

Measurements. *Male.* Body length 75.5; pronotum length 25.5; prozona length 5; metazona length 20.5; prothoracic coxa length 12; forewing length 39. *Female.* Body length 90.5; pronotum length 36.5; prozona length 7.5; metazona length 29; prothoracic coxa length 16.5; forewing length 8.

Brunneria subaptera Saussure, 1869

Diagnosis. Male. Body length 69-85 mm. Pronotum length 22-32 mm. Prozona margins parallel toward anterior. Denticulation of metazonal margins low, uniform, rounded; base of teeth blackened. Metazona length to prozona length 2.4-6.3. First discoidal spine with black tip. Second discoidal spine with black tip. Pronotum length to body length 0.3-0.5. Prothoracic coxa length to metazona length 0.5-0.8.

Female. Body length 79 mm. Pronotum length 29 mm. Basal third of antennae abruptly and strongly thickened beyond second segment, then clearly narrowing. Head capsule spanning 1.5 times as wide as supracoxal dilation. Prozona margins parallel toward anterior. Forewings pigmented greenish-tan with basal third variably blackish. Metazona length to prozona length 3.5. First discoidal spine with black tip. Second discoidal spine with black tip. Pronotum length to body length 0.4. Prothoracic coxa length to metazona length 0.6.

Holotype: ♀ Holotype MHNG (Geneva)

Type Locality. "Argentina: Ager"

Distribution. Argentina, Uruguay, Paraguay, and Brazil: Minas Gerais, Mato Grosso do Sul, Goiás, Mato Grosso

Measurements. *Male.* Body length 69-85; pronotum length 22-32; prozona length 4-7; metazona length 17-25; prothoracic coxa length 12.5-14; forewing length 37-42. *Female.* Body length 79; pronotum length 29; prozona length 6.5; metazona length 22.5; prothoracic coxa length 14.5; forewing length 6.

Brunneria xerophila **n. sp.**

zoobank.org:act:3ADC5DA7-B9EF-4066-A90F-1FDC9226ABB6

Type Material. ♂ Holotype (RMNH.INS.1737935): Aruba Arikok National Park; Trail S of Jamanota road to Sero Largo; N 12.4871, W 69.9474 25 II 2025 loc 1; Aruba Expedition 2025, leg. L.Willemse, M.

Speelman, S. Ijland & V. Kalkman. ♀ Allotype (RMNH.INS.1737937): Aruba Rooi Canashito; N 12.51177, W 69.98892 27 II 2025 loc 2; Aruba Expedition 2025, leg. L.Willemse, M. Speelman, S. Ijland & V. Kalkman. ♂ Paratype (RMNH.INS.1737936): Aruba, hills NE of Rooi Taki; N 12.485103, W 69.95954; 23 II 2025 loc 4; Aruba Expedition 2025, leg. L.Willemse, M. Speelman, S. Ijland & V. Kalkman. ♀ Paratype (RMNH.INS.1737938): Aruba Rooi Canashito, around Sero Canashito; N 12.50940, W 69.99331 27 II 2025 loc 1; Aruba Expedition 2025, leg. L.Willemse, M. Speelman, S. Ijland & V. Kalkman.

Description. *Habitus* very slender, elongated, rod-shaped. Body color light green to tan.

Head capsule broad, thin, somewhat shortened. Vertex smooth, broadly arched, raised higher than dorsal surface of compound eyes. Lower frons several times wider than high, very narrow with rounded superior margin. Basal third of antennae slightly thickened beyond second segment, then gradually narrowing in female, moniliform throughout in male. Pigmentation of antennae yellowish-tan throughout. Compound eyes rounded, slightly protruding laterally, pigmented same as body color. Ocelli salient in male, reduced in female. Pigmentation of head capsule light green to tan, transitioning to reddish-brown along vertex in male.

Pronotum very long and slender, saliently carinated throughout, supracoxal dilation marked. Prozona margins parallel toward anterior in male, clearly converging toward anterior in female, strongly denticulate in both sexes. Metazona 3.0 times as long as prozona in male, 3.0-3.5 times as long as prozona in female. Metazona slightly widened posteriorly. Metazonal margins armed with fine, narrow, acutely angled, densely arranged teeth in both sexes; denticulation of male primarily with blackish bases with some smaller denticulation having monochromatic bases, denticulation of female consistently monochromatic with body color. Pigmentation of pronotum light greenish-brown in male, monochromatic greenish to tan in female. Prosternum blacked between bases of forecoxae.

Prothoracic legs. Forecoxae elongated, very finely denticulate on both margins, pigmented monochromatic light green to tan. Forefemora very slender, elongate, dorsal margin straight, bearing 3 discoidal, 4-5 posteroventral and 15 anteroventral spines; tibial spur groove placed in middle. Forefemora pigmented light green to light brown, occasionally contrasting to forecoxae coloration, with pale line on posterior surface near ventral margin and darker shading running length of limb. First discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Second discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Foretibiae with 9-12 posteroventral and 13-15 anteroventral spines. All spines pigmented same as body color at base with blackish tips on posterior surface. Penultimate 1-3 anteroventral tibial spines and tibial spur with base, tips, and portion of middle blackened on anterior surface; darkening being more pronounced in female.

Meso/metathoracic legs very long, slender, very finely denticulate and very finely punctated with black throughout. Basitarsi of metathoracic legs measuring much longer than remaining tarsomeres combined. Coloration generally monochromatic light green to tan to match body color but may be light green in tan phase or tan in green phase.

Wings. Male forewing abbreviated, reaching to abdominal tergite VI. Pigmentation of male forewings hyaline, tinted light greenish to tan with darker costal ridge. Costal area subopaque reddish-tan. Hindwings hyaline, tinted light greenish to tan. Female forewings vestigial, reaching anterior third of metanotum, heavily reticulated, costal area spanning one third that of discoidal area, opaque throughout. Pigmentation of female forewings shaded reddish-brown with tan venation. Female hindwings not developed.

Abdomen long, slender, cylindrical in both sexes. Male abdominal tergites monochromatic light greenish to tan. Female tergites marked with orange-brown or pinkish stripe down median of dorsal surface, variably bordered by yellowish-tan. Abdominal pleura edged with thick white line. Male supra-anal plate subtriangular, measuring 1.4 broader than long. Female supra-anal plate sublanceolate, measuring 1.2 times longer than its basal width. Cerci greatly elongated, slender, gradually tapering; measuring 7.0 times longer than supra-anal plate in male and 2.5 times longer than super-anal plate in female.

Etymology. The specific epithet *xerophila* is derived from the Greek words *xēros* (ξηρός), meaning dry, and *philos* (φίλος), meaning loving or fond of. The name thus signifies "dry-loving" or "adapted to arid conditions." It refers to the xeric, desert-like habitats of Aruba in which this species occurs, particularly the island's arid scrublands and drought-adapted vegetation. The epithet highlights the ecological setting that first distinguished this insular population from mainland congeners and reflects its apparent association with Aruba's uniquely dry Caribbean environment.

Diagnosis. Male. Body length 60-62 mm. Pronotum length 20 mm. Prozona margins parallel toward anterior. Denticulation of metazonal margins fine, narrow, acutely angled, densely arranged; base of teeth blackened. Metazona length to prozona length 3.0. Anteroventral margin of prothoracic coxa denticulate. First discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Second discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Pronotum length to body length 0.3. Prothoracic coxa length to metazona length 0.6-0.7.

Female. Body length 65-67 mm. Pronotum length 24-25 mm. Basal third of antennae slightly thickened beyond second segment, then gradually narrowing. Head capsule spanning 1.7-1.8 times as wide as supracoxal dilation. Prozona margins clearly converge toward anterior. Forewings pigmented reddish-tan throughout. Metazona length to prozona length 3.0-3.5. First discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Second discoidal spine with black tip on posterior surface; base, tip and portion of middle blackened on anterior surface. Pronotum length to body length 0.4. Prothoracic coxa length to metazona length 0.6-0.7.

Type Locality. Aruba Arikok National Park, 12°29.23' N 69°56.84' W, Aruba

Distribution. Precinctive to Aruba island (according to present knowledge)

Measurements. *Male.* Body length 59.5-61.5; pronotum length 19.5-20; prozona length 5; metazona length 15; prothoracic coxa length 9.5-10; forewing length 29-29.5. *Female.* Body length 64.5-66.5; pronotum length 23.5-25; prozona length 5.5-6; metazona length 18-19; prothoracic coxa length 11-13; forewing length 6-7.

TAXONOMY

Taxonomic Summary. *Brunneria* currently comprises seven described species, two of which are new.

Brunneria Saussure, 1869
Brunneria borealis Scudder, 1896[1]
Brunneria brasiliensis Saussure, 1870[2]
Brunneria longa Giglio-Tos, 1915
Brunneria orinocensis Agudelo & Chica, 2002[3]
Brunneria prominens **n. sp.**[4]
Brunneria subaptera Saussure, 1869
= *Brunneria gracilis* Giglio-Tos, 1915
Brunneria xerophila **n. sp.**[5]

DISCUSSION

[1] Cabe et al. (2024) conducted the first direct genetic comparison between North American *borealis* and South American populations identified as *subaptera*, sequencing a standard mitochondrial COI segment. Their results demonstrated that the single haplotype found throughout North American populations of *borealis* falls within the genetic variation observed among Uruguayan and Argentine populations attributed to *subaptera*, with pairwise identity reaching 99.5% between *borealis* and certain Uruguayan haplotypes. On this basis, they suggested that *borealis* may represent a relatively recent colonization event from a South American

lineage and proposed that synonymy under *subaptera* may be appropriate pending further study. Importantly, however, the study of Cabe et al. (2024) did not include Saussure's female holotype of *subaptera*, nor material verified directly against the type specimen. Rather, their South American sampling consisted of specimens identified as *subaptera* from across portions of its currently accepted distribution. Thus, while their molecular data demonstrate close genetic affinity between North American *borealis* and sampled South American populations assigned to *subaptera*, the application of the name *subaptera* in that study was not explicitly anchored to the name-bearing type.

The present diagnostic treatment and dichotomous keys are based strictly upon morphometric data derived from digital examination of the female holotype of *subaptera.* In the case of the male, *gracilis* type material was digitally examined, given the recent synonymy of this species by Rivera & Svenson (2020: 82). Ratios and measurements used herein for the female diagnosis therefore represent *subaptera sensu* Saussure, as defined by the type specimen itself. North American specimens of *borealis* are consistently larger in absolute dimensions and differing proportionally from the holotype-based metrics of *subaptera*. These observations do not contradict the molecular findings of Cabe et al. (2024). Rather, they suggest that the current species concept of *subaptera*, as broadly applied across southern South America, may encompass multiple distinct lineages under a single name. If so, the North American population currently recognized as *borealis* falls within a wider "subaptera complex" *sensu lato*, while remaining morphometrically distinct from *subaptera sensu* Saussure as represented by the holotype. The possibility that *subaptera* represents a conglomerate of several cryptic or semi-cryptic taxa has not yet been tested with type-anchored molecular data.

Because the holotype of *subaptera* was not sampled in the molecular analysis of Cabe et al. (2024), the precise relationship between *subaptera sensu* Saussure, other South American populations attributed to that name, and North American *borealis* remains unresolved. A definitive resolution will require (1) molecular sampling of topotypic or type-verified *subaptera* material, (2) expanded nuclear and mitochondrial datasets, and (3) a comprehensive revision of the genus integrating morphometrics, genital morphology, and population-level genetic data. Until such integrative revision is completed, the present key treats *subaptera* in the strict sense of its holotype and retains *borealis* as distinct for practical identification purposes. This approach does not reject the molecular evidence suggesting close affinity between the two taxa; rather, it reflects a conservative, type-anchored interpretation pending a full systematic reassessment of *Brunneria*.

Habitus remains of adventive specimen from Trinidad (CABI.84) deposited in the Centre for Agriculture and Bioscience International (CABI) UK.

[2] The single *Brunneria* specimen recorded from Trinidad was previously discussed by Anderson (2021: 44) during a historical review of material housed in the University of the West Indies Zoology Museum (UWIZM). At that time, the specimen—collected from the Aripo Savannas of Trinidad in 1987 and reported earlier by Greener & Rutherford (2014)—had been identified by those authors as *subaptera*. Anderson questioned this determination and suggested that the Trinidadian specimen more likely represented *orinocensis*. This earlier interpretation was made in the absence of confirmed female material of *orinocensis* and thus relied primarily on general habitus characters and regional biogeography.

The present study provides the first detailed characterization of the female of *orinocensis*,

allowing for a more accurate comparison with the Trinidad specimen. Re-examination of the Trinidadian material in light of these newly established diagnostic characters demonstrates that the specimen does not correspond to *subaptera* nor to *orinocensis*. Instead, the available morphological evidence indicates that it represents *brasiliensis*. This conclusion is supported by the combination of characters exhibited by the Trinidad specimen, including its overall habitus size, the architecture of the pronotum, and the morphology of the surviving antennal segments. These characters collectively align with *brasiliensis* rather than with the diagnostic proportions and structures now confirmed for the female of *orinocensis*.

Despite this revised identification, the broader interpretation of the Trinidad record remains unchanged: the specimen is still best regarded as an adventive individual rather than evidence of an established Caribbean population. To date, no additional *Brunneria* specimens have been collected or documented from Trinidad before or since this isolated record, despite multiple faunistic surveys of the island's Mantodea. The absence of corroborating records strongly suggests that the specimen represents a transient occurrence rather than a resident population. Such dispersal events are not unprecedented within *Brunneria*. The genus has repeatedly demonstrated the capacity to colonize distant regions beyond its primary South American distribution. Molecular evidence indicates that North American populations of *Brunneria* likely originated from South American stock (Cabe et al., 2024), while more recent introductions have been documented in Europe (Fernández & Santaeufemia, 2016) and the Hawaiian Islands (Howarth & Mull, 1992). These recurrent colonization events suggest that members of the genus possess an unusual capacity for long-distance establishment. A likely factor facilitating this dispersal is the facultative parthenogenetic reproductive strategy observed in *Brunneria*. The ability of females to reproduce without mating allows a single transported individual—whether moved by natural dispersal mechanisms or anthropogenic means—to establish a temporary or even persistent population. This reproductive flexibility greatly lowers the threshold required for successful colonization and provides a plausible explanation for the sporadic appearance of *Brunneria* outside its principal continental range. The Trinidad specimen therefore fits a broader pattern of occasional adventive occurrences that have periodically extended the geographic footprint of the genus well beyond its core South American distribution.

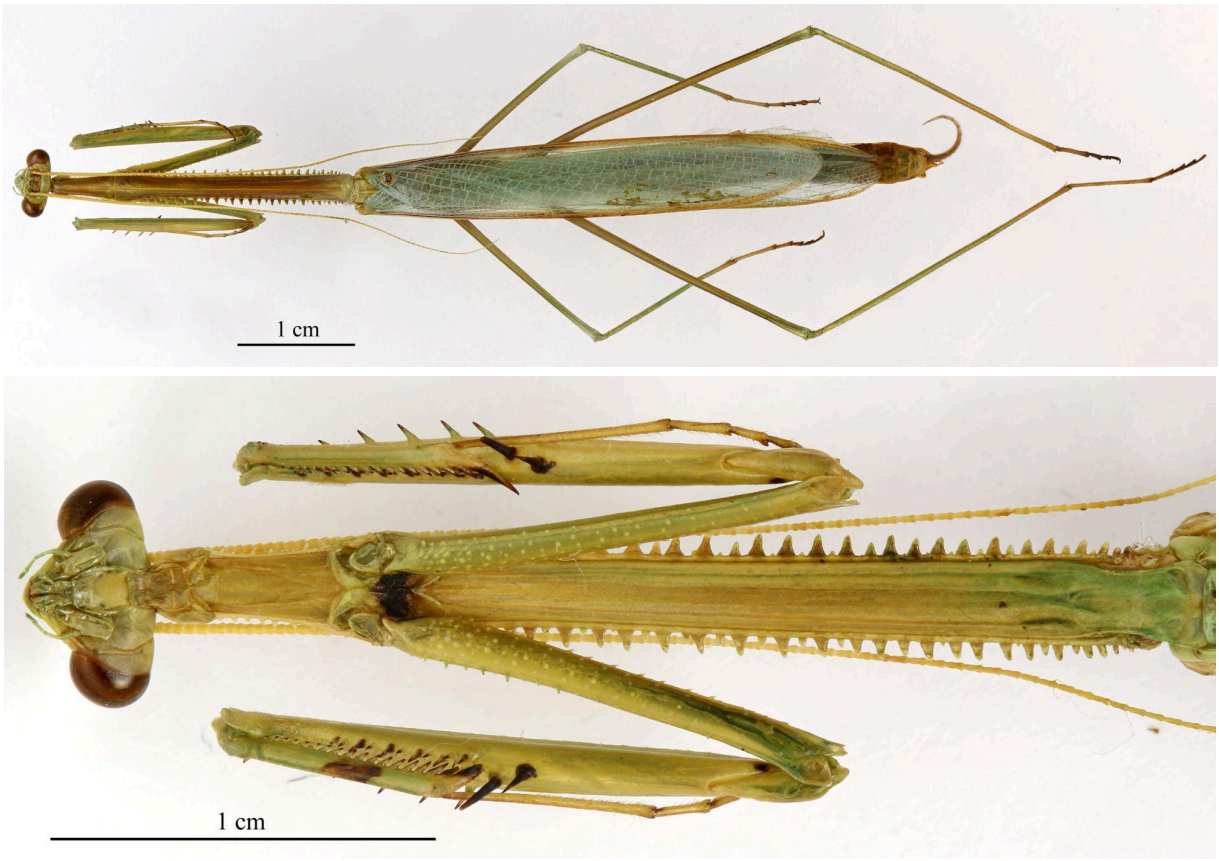
Male non-type (MNHN 1805) of *Brunneria orinocensis***.** Dorsal habitus (left), ventral habitus (right). Venezuela: Bolívar, Auyán-tepuy, 1000 m, 12.XII.1998, P.L. Aricha, leg. G. Tavakilian. Images authored by CMNH staff as part of Project Mantodea: Systematics and Evolution, sourced through online image database (MantID).

Female non-type (MNHN 1806) of *Brunneria orinocensis***.** Dorsal habitus (left), ventral habitus (right). Venezuela: Jusepín, VIII.1955, leg. M. Lauislte. Images authored by CMNH staff as part of Project Mantodea: Systematics and Evolution, sourced through online image database (MantID).

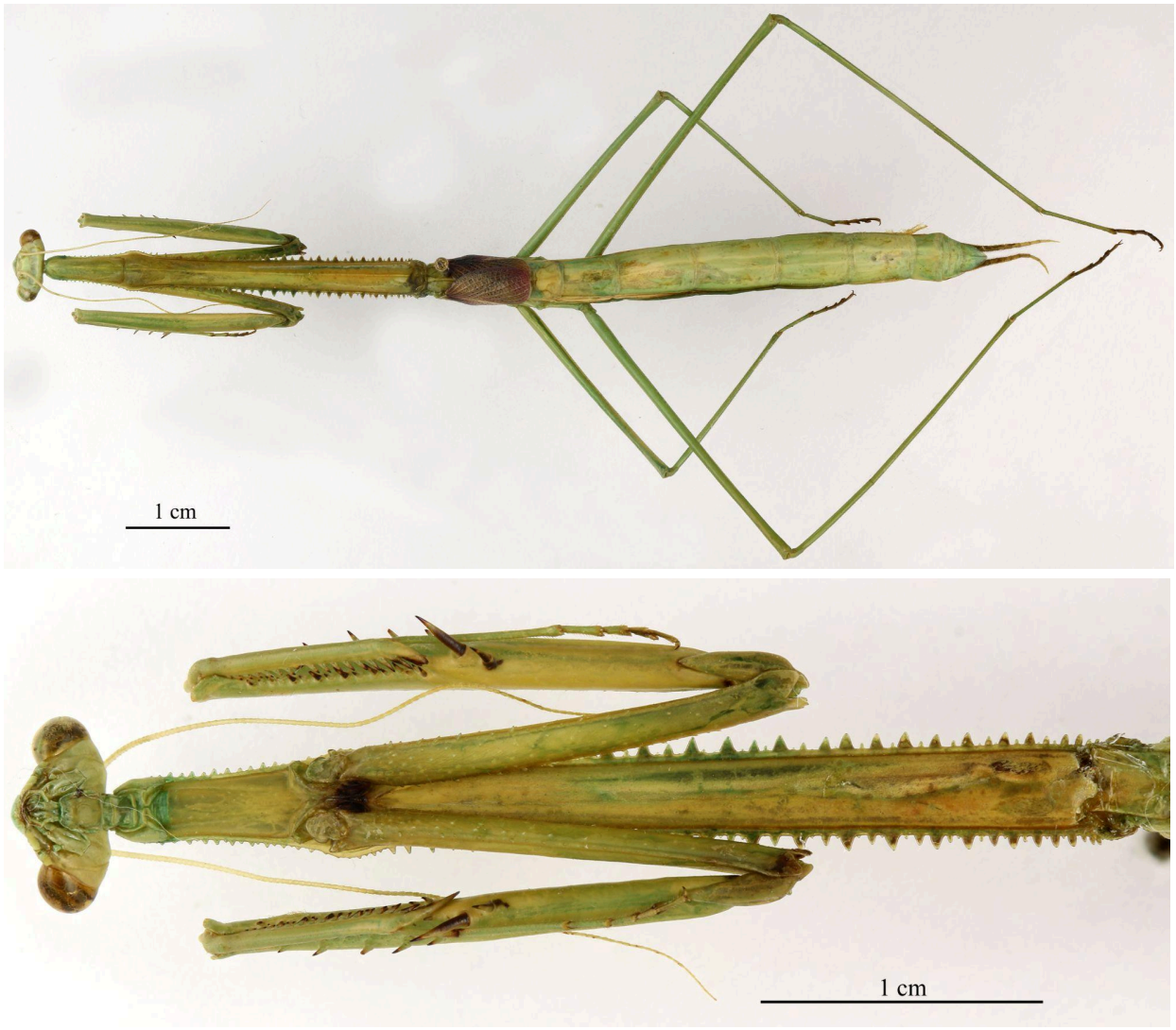
[3] The association of the digitized MNHN non-type specimens with *orinocensis* is supported both by morphology and by the geographic context of the available material. The male holotype of *orinocensis* originates from the Orinoco basin, and the female specimen examined from Jusepín, Monagas, Venezuela lies well within this same broader biogeographic region. Jusepín occurs in the eastern portion of the Orinoco drainage and shares the same lowland basin context as the type locality, with comparable savanna–forest mosaic habitats typical of the greater Orinoco system. As such, the geographic provenance of the Jusepín specimen is entirely compatible with the

distribution expected for the species and presents no biogeographic conflict with the origin of the male holotype.

The additional male specimen from Auyán-tepuy, Bolívar, Venezuela originates from the Guiana Shield region and may therefore be interpreted as somewhat outside the immediate lowland biogeographic context of the type locality. Nevertheless, the site remains within the broader Orinoco–Guiana region and does not represent a clear geographic discontinuity that would preclude conspecificity. Moreover, this non-type male matches the morphology of the male holotype of *orinocensis* in all diagnostic respects. On that basis, the specimen is regarded as a conspecific representative of the species. Given the strong morphological agreement between the Auyán-tepuy male and the holotype, and the compatible Orinoco-basin biogeography of the female from Jusepín, the latter specimen is here interpreted as the opposite sex conspecific of *orinocensis*. Together these specimens provide a geographically coherent and morphologically consistent representation of the species across the broader Orinoco region.



Male holotype (MNHN 2136) of *Brunneria prominens* **n. sp.** Dorsal habitus (top), ventral habitus (bottom). Images authored by MNHN staff as part of their ongoing collection digitization project, sourced through the museum's online image database.



Female allotype (MNHN 2137) of *Brunneria prominens* **n. sp.** Dorsal habitus (top), ventral habitus (bottom). Images authored by MNHN staff as part of their ongoing collection digitization project, sourced through the museum's online image database.

[4] During the course of a digital comparative analysis of the Aruba material of *xerophila* against both type and non-type material of other species of *Brunneria*, a conspecific pair from northeastern Brazil deposited in the Muséum national d'Histoire naturelle, Paris (MNHN) was examined. Per the museum labels, this pair had previously been determined by Roy in 1993 as *brasiliensis*. Roy's determination appears to have been based primarily on comparison of the female of this pair with the female syntype of *brasiliensis*, also housed in MNHN (specimen MNHN 2138), to which the female of *prominens* superficially bears resemblance. However, this female syntype of *brasiliensis* is missing its antennae, a critical diagnostic character within the genus *Brunneria*. Examination of non-type female material attributed to *brasiliensis*, including specimens deposited in the Museum für Naturkunde, Berlin (ZMB) and determined by Giglio-Tos to represent that species, demonstrates that females of *brasiliensis* possess antennae with the basal third distinctly and moderately thickened beyond the second segment. This condition contrasts markedly with the female of *prominens*, which Roy identified as *brasiliensis*, wherein the basal third of the antennae is only faintly thickened beyond the second segment. The antennal structure of *prominens* thus more closely resembles the relatively slender condition typical of males than the robust basal thickening observed in females of congeners.

Additional diagnostic differences further distinguish the two taxa. In *prominens*, the metazona is proportionally longer relative to the prozona, yielding a noticeably greater metazona-to-prozona length ratio than that observed in *brasiliensis*. Furthermore, the head capsule of *prominens* is considerably broader relative to the width of the pronotum at the supracoxal dilation, producing a distinctly wider cephalic profile compared to *brasiliensis*. Biogeographically, the two taxa also occur in markedly different regions. *Brunneria brasiliensis* is known from southern Brazil (Rio Grande do Sul, Santa Catarina, Paraná), regions largely associated with subtropical grasslands and temperate transitional ecosystems of the southern Brazilian plateau and adjacent pampas. In contrast, the specimens representing *prominens* originate from northeastern Brazil (Bahia and Sergipe), within the northeastern Atlantic forest–Caatinga transitional zone. These regions differ substantially in climate, vegetation structure, and biogeographic history, further supporting the interpretation that the northeastern Brazilian material represents a distinct taxon rather than a disjunct population of *brasiliensis*.

Non-type males attributed to *brasiliensis*, deposited in the Zoologisches Museum Hamburg (ZMH) and determined by Beier, exhibit characteristic pronotal morphology. Specifically, the metazonal margins bear weakly projecting, uniform, broadly triangular denticles with the bases of the teeth distinctly blackened. This morphology contrasts sharply with that of the male *prominens*, in which the metazonal margins are armed with strongly projecting, irregular, narrowly triangular teeth. Additionally, the denticulation in *prominens* is whitish with the base of the teeth light brownish-green.

Taken together, the antennal morphology of the female, proportional differences in pronotal structure, head capsule proportions, distinct patterns of metazonal denticulation in the male, and the substantial geographic separation between southern and northeastern South American populations demonstrate that the MNHN pair determined by Roy as *brasiliensis* represents a distinct and previously undescribed species. These characters support the recognition of the northeastern Brazilian specimens as the new species *Brunneria prominens*.

Male holotype (RMNH.INS.1737935) of *Brunneria xerophila* **n. sp.** Dorsal habitus (top), lateral habitus (middle), posterior surface of foreleg (bottom). Images authored by Yvonne van Dam at Naturalis Biodiversity Center and facilitated by Charlotte Hartong, Collection Manager.

Female allotype (RMNH.INS.1737937) of *Brunneria xerophila* **n. sp.** Dorsal habitus (top), lateral habitus (second from top), posterior surface of foreleg (third from top), anterior surface of foreleg (bottom). Images authored by Yvonne van Dam at Naturalis Biodiversity Center and facilitated by Charlotte Hartong, Collection Manager.

Male paratype (RMNH.INS.1737936) of *Brunneria xerophila* **n. sp.** Dorsal habitus (top), lateral habitus (second from top), posterior surface of foreleg (third from top), anterior surface of foreleg (bottom). Images authored by Yvonne van Dam at Naturalis Biodiversity Center and facilitated by Charlotte Hartong, Collection Manager.

Female paratype (RMNH.INS.1737938) of *Brunneria xerophila* **n. sp.** Dorsal habitus (top), lateral habitus (second from top), posterior surface of foreleg (third from top), anterior surface of foreleg (bottom). Images authored by Yvonne van Dam at Naturalis Biodiversity Center and facilitated by Charlotte Hartong, Collection Manager.

[5] This species is most closely aligned with *orinocensis* but is separable by clear differences in overall body size and thoracic proportions. *B. orinocensis* is the larger of the two species, whereas *xerophila* is distinctly smaller. In addition to these absolute size differences, the two species

differ in relative pronotal proportions: *orinocensis* exhibits a more elongated metazona, while *xerophila* has a comparatively shorter metazona. Thus, beyond general size reduction, *xerophila* demonstrates a proportionally less elongate pronotum relative to *orinocensis*, indicating a consistent and quantifiable distinction in thoracic architecture between the two taxa. Additionally, the type localities of the two species are not merely separated by distance (~600 miles), but by biome type, dispersal regime, and hydrological architecture.

The type locality of *orinocensis* is situated in eastern Colombia within Parque Nacional Natural El Tuparro (Vichada), about 500 feet from the Tomo River near its confluence with the Orinoco River. This locality lies within the Orinoquía region, a vast Neotropical savanna system characterized by extensive grasslands, gallery forests along major river corridors, and a pronounced seasonal hydrological regime. The Llanos of the Orinoquía are defined by a tropical savanna climate with marked wet and dry seasons, substantial annual precipitation, and periodic flooding driven by the Orinoco basin. Ecologically, the region represents a continental biome with broad habitat continuity across eastern Colombia and western Venezuela. Agudelo and Chica (2001: 85) described the type locality for *orinocensis*, as located near a major fluvial system, which reflects a mesic grassland environment influenced by riverine moisture, sediment dynamics, and seasonal inundation. In contrast, the type locality of *xerophila* on the island of Aruba represents a fundamentally different biogeographic and ecological setting. Aruba is a small oceanic island within the southern Caribbean, positioned approximately 525-625 miles north of El Tuparro and separated from mainland South America by open marine waters. Unlike the humid savannas of the Orinoquía, Aruba lies within the Caribbean xeric scrub ecoregion and is characterized by a semi-arid tropical climate with substantially lower annual precipitation, limited freshwater availability, and persistent trade wind exposure. The island lacks large fluvial systems comparable to the Orinoco basin and instead supports xerophytic vegetation including thorn scrub, drought-adapted grasses, and columnar cacti on calcareous and shallow substrates. Vegetation structure is patchier and more moisture-limited than in the continental Llanos, and ecological productivity is correspondingly constrained.

From a biogeographic perspective, El Tuparro occupies a continuous continental landscape within the Amazon–Orinoco transition zone, where gene flow among populations is facilitated by habitat connectivity across extensive savannas. Aruba, by contrast, is insular and ecologically isolated. Colonization of Aruba by terrestrial Mantodea would necessarily require overwater dispersal, whether via rafting, wind transport, or historical changes in sea level. Such isolation promotes reduced gene flow, founder effects, and potential endemism. The ecological pressures of a semi-arid island system differ substantially from those of a seasonally flooded savanna, and long-term population persistence under xeric conditions likely exerts distinct selective influences on morphology, physiology, and behavior.

LIVE SPECIMEN OBSERVATIONS

01, *Brunneria borealis* adult female. Atlanta, Fulton Co, Georgia, United States 09.19.25 (Photo: Grace Manning)

02, *Brunneria borealis* adult female. Corolla, Currituck Co, North Carolina, United States 09.01.21 (Photo: Joshua Liverman)

03, *Brunneria brasiliensis* adult female. Itapema, Itapema, Santa Catarina, Brazil 03.14.26 (Photo: Pedro Luiz)

04, *Brunneria longa* adult male. Puerto Quijarro, Santa Cruz, Bolivia 05.06.24

05, *Brunneria longa* adult female. Santa Cruz de la Sierra, Santa Cruz, Bolivia 12.12.24 (Photo: Katie Soliz)

06, *Brunneria orinocensis* adult male. Gigante, Gigante, Huila, Colombia 11.12.23 (Photo: Nicolás Jara Ordóñez)

07, *Brunneria prominens* adult male. Cha Grande, Cha Grande, Pernambuco, Brazil 12.28.25 (Photo: Inacio Oliveira)

08, *Brunneria prominens* adult male. Sao Jose de Piranhas, Sao Jose De Piranhas, Paraiba, Brazil 03.31.23 (Photo: Frederico Acaz Sonntag)

09, *Brunneria prominens* adult female. Iguatu, Iguatu, Ceara, Brazil 02.21.25 (Photo: Breno Figueiredo)

10, *Brunneria subaptera* adult male. Punilla, Córdoba, Argentina 2.06.17 (Photo: Lucas Rubio)

11, *Brunneria subaptera* adult female. Berazategui, Buenos Aires, Argentina 02.24.19 (Photo: Holger Braun)

12, *Brunneria xerophila* adult male. Babijn, Aruba 01.15.25 (Photo: marzaua)

13, *Brunneria xerophila* adult male. Wayaca, Oranjestad, Aruba 12.22.21 (Photo: Desislav Iliev)

14, *Brunneria xerophila* adult male. Wayaca, Oranjestad, Aruba 12.22.21 (Photo: Desislav Iliev)

15, *Brunneria xerophila* adult female. Paradera, Aruba 02.08.08 (Photo: Michael Tromp)

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