



## ***Randersonia* Chamorro, a new genus with two new species of North American Cryptorhynchinae (Coleoptera: Curculionidae)**

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### **Abstract**

A new North American genus *Randersonia* Chamorro with two new species, *Randersonia cartwrighti* Chamorro & Presnall sp. n. from Prince William County, Virginia, USA and *Randersonia schwarzi* Chamorro & Presnall sp. n. from Tampico, Tamaulipas, Mexico are described. The unique specimen of *R. cartwrighti* was collected under deer droppings in 1965 and the only known specimens of *R. schwarzi* were collected more than 109 years ago in 1912. An updated couplet is provided for use in the key to genera in American Beetles as well as a key to the species of *Randersonia*. A short discussion is included regarding veracity of collections. Habitus photographs are included.

**Key words:** Species discovery, Mexico, weevils, Virginia

### **Introduction**

The subfamily Cryptorhynchinae is represented in the USA by 31 genera in two tribes (Anderson, 2002). In America North of Mexico, most of these 31 genera are represented by only one to four species, with the exception of *Tyloderma* Say with 30 species and *Gerstaeckeria* Champion with 18 species (Anderson 2002). In the process of understanding the diversity of Curculionoidea of Virginia, the authors discovered a tiny, bizarre-looking cryptorhynchine weevil in the unidentified specimens of the USNM collection. The species, known from a single specimen, was collected in 1965 under deer dung by “C & C”, presumed to be Oscar L. Cartwright, a former USNM dung beetle (Scarabaeidae) specialist, and his wife Sara Marie (Spangler, 1985). In addition to this species, a series of 18 specimens from Mexico, tentatively identified by L. L. Buchanan (former specialist on Curculionoidea at the USNM) as a new species of *Paracamptus* Casey, were also examined and determined to be congeneric.

These two new species appear to be near *Paracamptus* Casey, 1895, but based on significant differences presented below, a new genus is here described to accommodate them. An updated couplet to the key to genera of Cryptorhynchinae in American Beetles (Anderson 2002) is provided.

### **Materials and Methods**

Terminology follows Oberprieler (2014). We consulted Anderson (2002) and Champion (1909) to place the taxa. Habitus photographs were taken with the Macropod Pro 3D system using Canon MP-E 65mm lens f/2.8 1-5x macro lens on a Canon 6D camera body on Focus stacking rails controlled by StackShot and Canon MT-24EX Macro Twin Lite flash units (Macroscopic Solutions, Connecticut, USA). The images were stacked using Zerene Stacker (Zerene Systems LLC 2019). Paratypes of the Mexican series of *R. schwarzi* will be donated to the CMNC (3 specimens mounted on a single card) and UNAM (2 specimens mounted on a single card).

CMNC – Canadian Museum of Nature, Ottawa, Ontario, Canada

## Results

### *Randersonia* Chamorro gen. nov.

(Figs 1–3)

<http://zoobank.org/urn:lsid:zoobank.org:act:5CD84C86-2426-4159-9B8E-7FBD4D433D0B>

#### Gender. Feminine

**Type species.** *Randersonia schwarzi* Chamorro & Presnall new species, here designated.

**Differential diagnosis.** The new genus is similar to *Paracamptus* (Fig. 4) based on the presence of the following characters: simple claws, sternal channel extended posterior to mesosternum, funicle with 7 articles, metasternum long with the distance between the middle and hind coxae subequal or longer than length of antennal club, pronotum produced over head, and tibia very short, less than one-half as long as femur and with large erect scales. *Randersonia* differs from *Paracamptus* and other Cryptorhynchinae based on the presence of the following features: integument light reddish-brown colored, mostly glabrous with scattered plumose and elongate spatulate, erect scales (in *Paracamptus* the integument is clothed in tightly arranged scales obscuring the underlying cuticle); interstriae flat, (elevated in *Paracamptus*), metanepisternal suture covered by elytra; punctation large and deep (diameter less than distance between punctures); wings absent, humeri not prominent; and hind tibiae with comb of stout setae.

**Description.** Body elongate-narrow to oval, 1.25–1.50 mm in length (exclusive of head and rostrum), 0.5–0.8 mm in width (measured at widest point), depth 0.4 mm, color light reddish-brown, integument mostly glabrous with deep punctation throughout and sparsely placed erect, plumose and elongate spatulate scales. Head not impressed, with scattered scales variously arranged. Rostrum straight, moderately long, about as long as or longer than pronotum, with dorso-ventrally flattened, scales variously arranged, antennae inserted one half to one-third from base of rostrum. Mandibles triangular. Antennae light brown, funicle with seven desmomes, club narrow, pilose, elongate. Eyes separated by about diameter of eye, oval, flat, not covered by post ocular lobes. Pronotum produced over the head, two times longer than wide, anterior margin medially feebly emarginate to evenly convex, lateral margins subparallel, widest point medially or basally, in lateral view pronotum sinuate one third from anterior margin; prominently, variously punctate; with two types of variously located scales (erect clavate and plumose); post-ocular lobes weakly evident along ventral margin. Elytra elongate cylindrical to subcylindrical, twice length of pronotum, lateral margins subparallel in basal two-thirds, moderately narrowing apically, humeri weakly to not developed; large, deep punctures aligned into longitudinal striae, interstriae flat, with interspersed light brown, elongate, clavate, erect scales; disk of elytra without fascia. Metasternum long, distance between middle and hind coxae longer than length of antennal club; metanepisternal suture concealed under elytra. Scutellum small or apparently absent. Venter either clothed or not clothed with clavate scales, crust sometimes evident, sparsely setose, feebly punctate; sternal channel rimmed, well developed, extended posterad, ending between middle coxae, punctation not well-developed, distance between middle and hind coxae distinctly longer than length of antennal club. Abdominal ventrites 1 and 2 subequal in length, appearing fused, together at least 1.5 times longer than 3–5 combined, 3 and 4 shorter than 5. Pygidium covered by apex of elytra. Legs with outer surface with scattered clavate, erect scales; femora elongate, narrow, unarmed; tibia short, half as long as femora, hooked spur and row of stout spine-like setae forming comb at apex. Tarsi subequal in length to tibiae, first and second tarsomeres twice wider than long, third tarsomere bilobed, fifth tarsomere subequal in length to first and second combined, tarsal claws simple and divergent, stout, each longer than tibial spur.

**Etymology.** The genus is named in honor of Robert “Bob” Anderson, friend, colleague, and mentor. Bob has offered constant and unwavering guidance to MLCh and his knowledge of all things weevil, enthusiasm, and all around good nature and humor has served as an inspiration.

**Distribution.** Virginia, USA and Tampico, Mexico.

***Randersonia cartwrighti* Chamorro & Presnall sp. n.**

(Fig. 1)

<http://zoobank.org/urn:lsid:zoobank.org:act:997472C9-44E3-4404-8529-FF6032D1EB40>

**Type Locality.** USA, Virginia, Prince William County Forest Park.

**Material examined.** Holotype, ♂: Deer droppings / VA: Prince Wm. / Forest Park / 5 Aug 1965 / C & C // USNMENT01448850 // HOLOTYPE / *Randersonia cartwrighti* / des. Chamorro & Presnall 2022 (USNM) (not dissected).

**Differential diagnosis.** *Randersonia cartwrighti* can be distinguished from *R. schwarzi* by the absence of a visible scutellum, the medially narrower elytra, less developed humeri, glabrous apex of the rostrum beyond the antennal insertion (possibly a sexually dimorphic character), longer desmomeremes, each approximately two times longer than wide, pronotum two times longer than wide instead of 1.25 times longer as in *R. schwarzi*, basal squamose scales present and relatively smaller ommatidia, and ventrites 1+2 two times longer than wide versus two times wider than long in *R. schwarzi*.

The species is similar to *P. floridianus* and *R. schwarzi* in having flattened interstriae, different from *P. subtropicus* which has the interstriae elevated. It also resembles these two other species in small size, being almost half as long as *P. subtropicus* and in having a more horizontal profile.

**Description.** Holotype male, body elongate narrow, 1.5 mm in length (exclusive of head and rostrum), 0.5 mm in width (measured at widest point), depth 0.4 mm, color light reddish brown. Head not impressed, with scattered scales mostly concentrated around eyes. Rostrum straight, moderately long, impunctate, about as long as pronotum, dorso-ventrally flattened, scales present basally, absent from apical half, antennae inserted at about midlength rostrum. Antennae light-brown, funicle with seven desmomeremes, first desmomere slightly longer than second, second desmomere almost two times longer than third. Eyes oval, flat. Pronotum two times longer than wide, anterior margin, medially feeble emarginate, widest point medially, in lateral view sinuate one third from anterior margin; large, deep punctation evenly throughout, punctures with diameter greater than intervening distance; light brown, erect, clavate scales, predominantly anteriorly and laterally; plumose scales scattered throughout with two basal lateral clumps and along basal margin. Elytra elongate-cylindrical, humeri not developed, scutellum not visible. Venter not clothed with scales or crust, sparsely setose, feebly punctate, ventrites 1 and 2 two times longer than wide. Male (apex of median lobe visible) not dissected.

**Etymology.** The species is named in honor of Oscar L. Cartwright (1900–1983) former curator of Coleoptera at the USNM and an authority on Western Hemisphere aphodiine scarabs. He and presumably his wife, collected the only known specimen of this new species.

**Distribution.** USA: Virginia.

***Randersonia schwarzi* Chamorro & Presnall sp. n.**

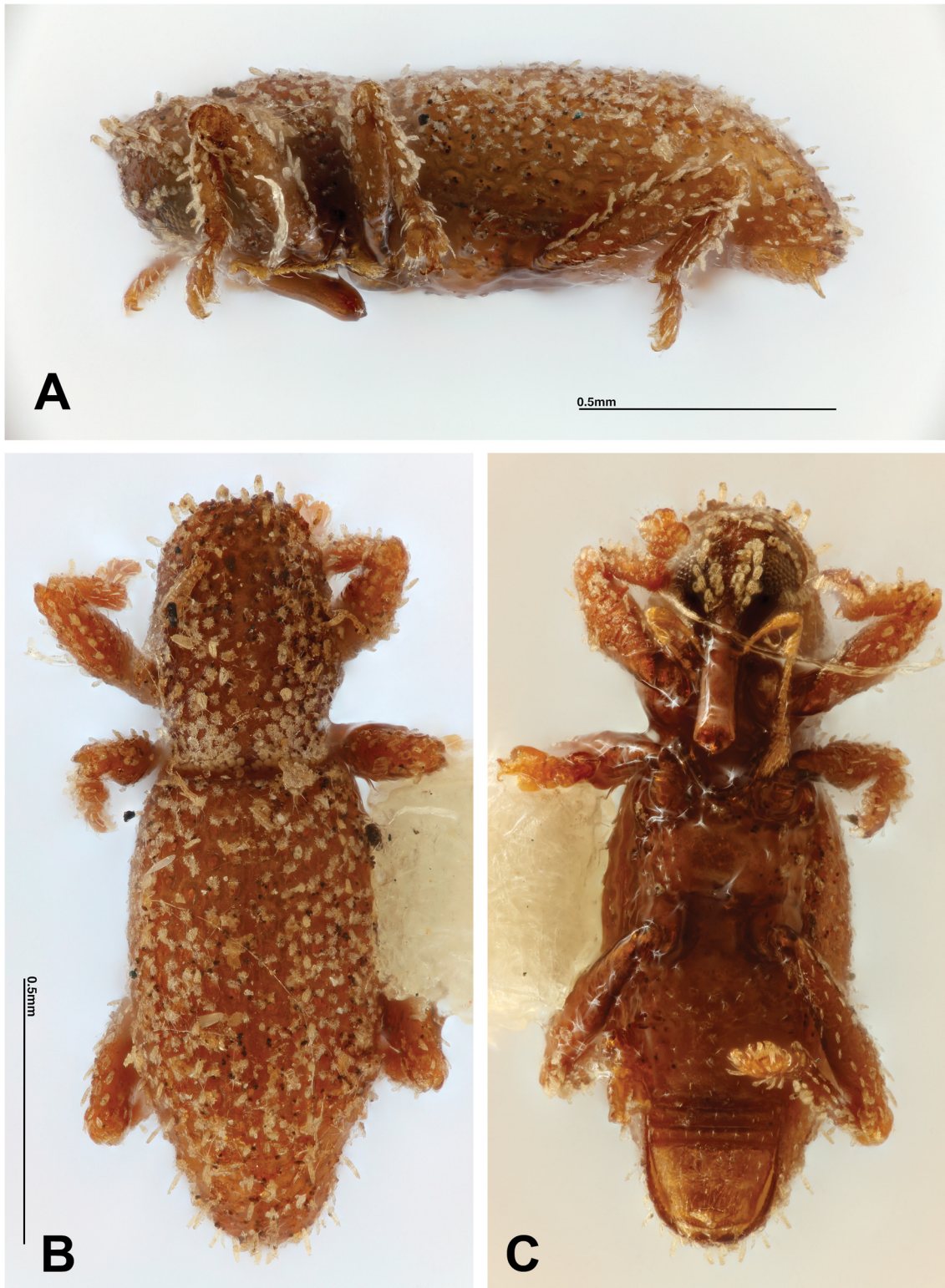
(Figs 2, 3)

<http://zoobank.org/urn:lsid:zoobank.org:act:8821FB6B-388B-4AD2-B9B0-AC2A5ED619A6>

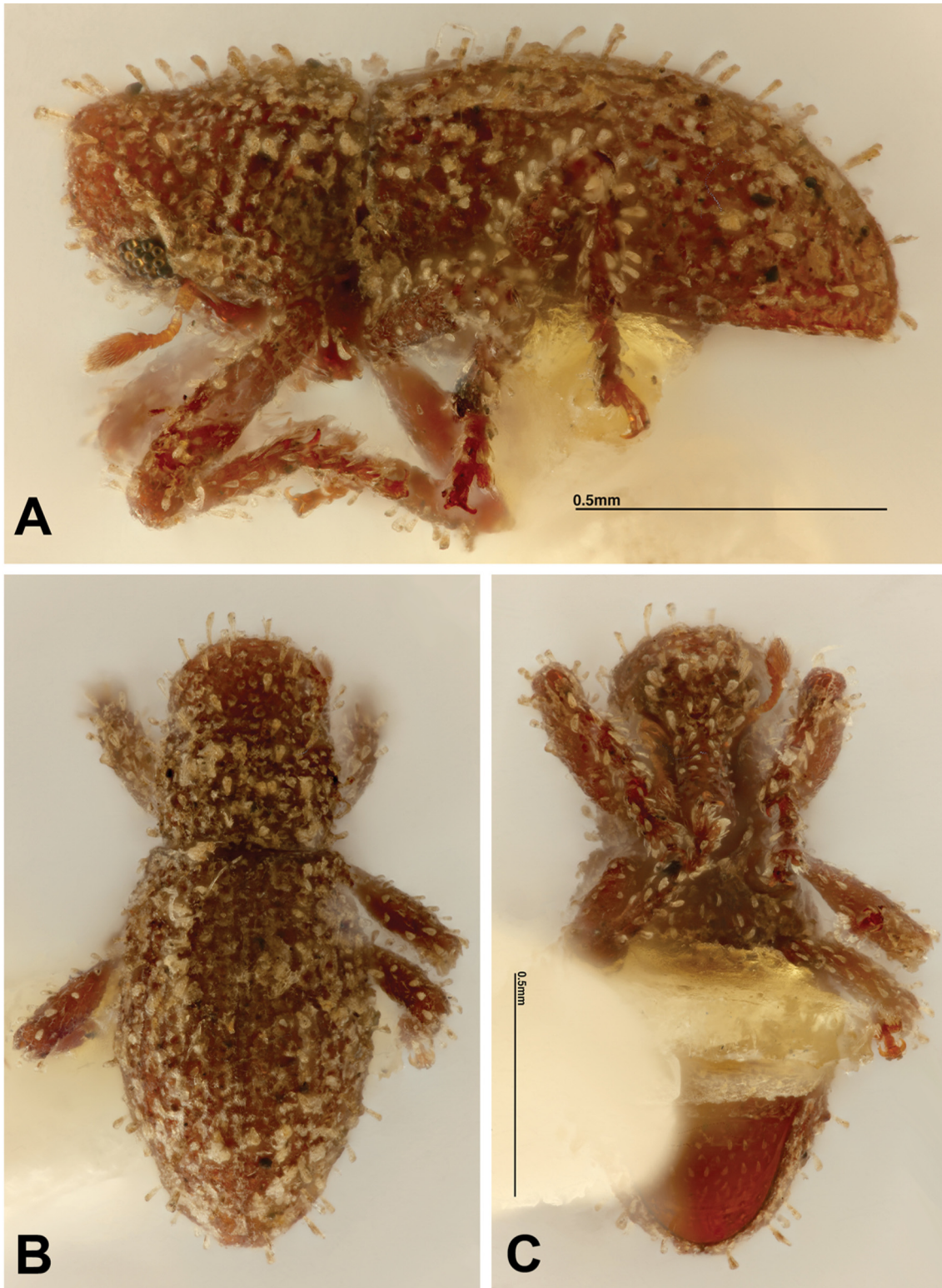
**Type Locality.** Mexico, Tampico.

**Material examined.** HOLOTYPE, ♂: Tampico [22.278167, -97.867723, uncertainty 63,891 m]/ Mexico 6 12 [1909] // EASchwarz / Collector // [yellow paper, handwritten presumably by Buchanan] *Paracamptus* sp. nov. // USNMENT01448951 // HOLOTYPE *Randersonia schwarzi* / Chamorro & Presnall 2022 (USNM); PARATYPES (17): USNMENT01448832 same data as holotype; USNMENT01448950, USNMENT01448824–USNMENT014488230 date 14 12; USNMENT01448831 date 16 12. USNMENT01448829 includes eight paratypes glued to three cards on a single pin (one card with 3 specimens will be deposited at CMNC and one card with two specimens will be deposited at UNAM); USNMENT01448824 is the dissected male (Fig. 3).

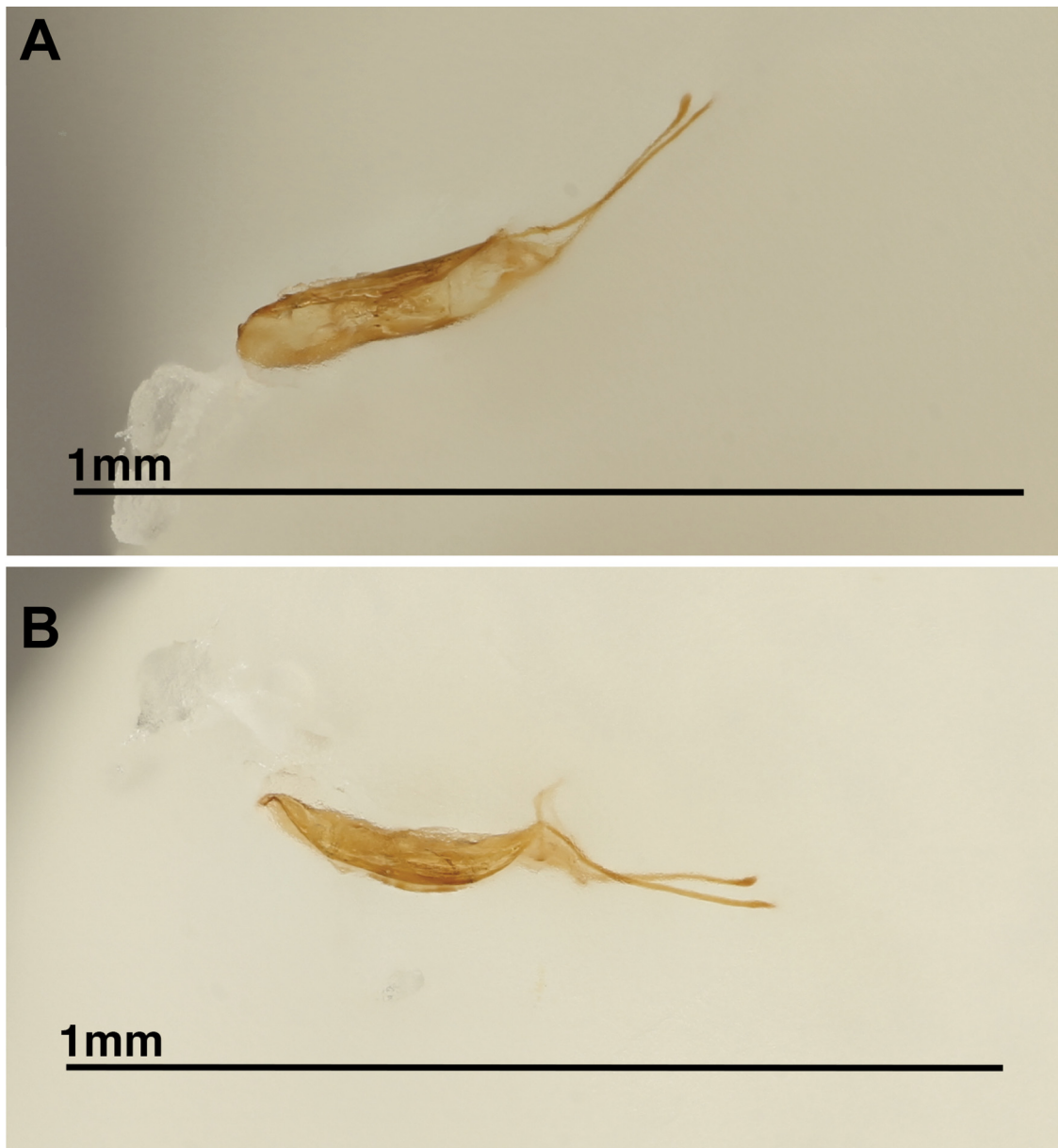
**Diagnosis:** *Randersonia schwarzi* can be distinguished from *R. cartwrighti* by presence of a visible scutellum, the medially broader elytra; slightly more developed humeri; by the slightly wider rostrum with pubescent scales beyond antennal insertion; by the funicular segments (desmomeremes) each two times wider than long, making the



**FIGURE 1.** Habitus of *Randersonia cartwrighti* Chamorro & Presnall, sp. n., male. A—lateral view; B—dorsal view; C—ventral view.



**FIGURE 2.** Habitus of *Randersonia schwarzi* Chamorro & Presnall, sp. n., male. A—lateral view; B—dorsal view; C—ventral view.



**FIGURE 3.** Median lobe of *Randersonia schwarzi* Chamorro & Presnall, sp. n. A—lateral view; B—dorsal view.

funicle shorter. The pronotum is 1.25 times longer than wide, being widest at the base, whereas in *R. cartwrighti* the pronotum is two times longer than wide and widest at the middle, the basal squamose scales are absent, and the anterior margin of the pronotum is not feebly emarginate. The ommatidia are larger, making the compound eye appear with fewer facets but pronounced, whereas in *R. cartwrighti* the ommatidia are relatively smaller and the eye is more flush with the frons. *Randersonia schwarzi* has ventrites 1+2 as long as wide, unlike *R. cartwrighti*, which has ventrites 1+2 two times longer than wide.

**Description.** Holotype male, body elongate-oval, 1.25 mm in length (exclusive of head and rostrum), 0.8 mm in width (measured at widest point), depth 0.4 mm, color light reddish brown. Head not impressed, with scales throughout. Rostrum straight, slightly longer than head, punctate, about as long as pronotum, dorso-ventrally flattened, scales present throughout, antennae inserted at a point about one-third from base. Antennae light-brown, funicle with seven desmomeres, first desmomere almost as long as 2–4 combined, second desmomere subequal to third. Eyes with ommatidia prominent, globose. Pronotum 1.5 times longer than wide, anterior margin evenly convex, widest point basally; punctate throughout with smaller punctures anterad; light brown, erect, clavate scales present throughout; plumose scales within punctures, absent laterally and along basal margin. Elytra subcylindrical,

humeri weakly developed; scutellum visible, small, trapezoidal. Venter clothed with clavate scales, ventrites 1 and 2 as long as wide. Median lobe as in figure 3.

**Etymology.** This species is named in honor of Eugene A. Schwarz (1844–1928), former United States Department of Agriculture (USDA) entomologist at the National Museum of Natural History (USNM), co-founder of the Entomological Society of Washington and the collector of the only known specimens of this species.

### Amended key for Cryptorhynchinae of U.S.A. (modified from Anderson (2002:40) to include *Randersonia*)

- 6(3). Metasternum short, the distance between middle and hind coxae distinctly shorter than length of antennal club. . . . . 7
- Metasternum long, the distance between middle and hind coxae subequal to or distinctly longer than length of antennal club . . . . . 15
- 15(6). Pronotum markedly produced over head, head not visible in dorsal view; tibia very short, less than one-half as long as femur; hind tibia with or without apical comb of stout setae; . . . . . 15b
- Pronotum not produced over head, head visible in dorsal view; tibia longer than one-half length of femur; hind tibia with apical comb of stout setae (usually arranged subparallel to long axis of tibia); . . . . . 16
- 15b (15). Hind tibia without apical comb of stout setae; integument clothed in grey and black or variously colored, tightly arranged scales obscuring underlying cuticle, scattered plumose scales absent, scutellum and humeri prominent; disk not distinctly punctate; interstriae elevated, metanepisternal suture distinct and wings present; longitudinal elytral striae with each puncture shallow, diameter less than space between punctures. . . . . *Paracamptus*
- Hind tibia with apical comb of stout setae; integument straw colored, visible, mostly glabrous, not clothed in dense scales, scattered plumose scales present, scutellum may or may not be visible and humeri not or weakly developed; interstriae not elevated, metanepisternal suture covered by elytra; longitudinal elytral striae with each puncture deep, diameter equal to or greater than space between punctures . . . . . *Randersonia*

### Key to species of *Randersonia*

- Pronotum elongate, two times longer than wide, widest medially; scutellum apparently absent; based on single specimen from Virginia, U.S.A. (Fig. 1). . . . . *R. cartwrighti*
- Pronotum oval, 1.25 longer than wide, widest basally; scutellum visible, small, trapezoidal; Tampico, Tamaulipas. Mexico (Fig. 2, 3). . . . . *R. schwarzi*

### Discussion

The new genus lacks the characteristic tightly arranged scales on the body present in *Paracamptus* and instead has plumose scales, deep, large punctures, and has rounded humeri (suggesting this species to be either brachypterous or apterous and possible leaf litter dwellers). This is in line with what is currently known for *R. cartwrighti*, which was collected from under deer droppings in Virginia. On the other hand, *Paracamptus subtropicus* has been reported to be associated with dead mangrove branches (Anderson 2002) and collected in mangrove forests (USNMENT01448983 and ASUHIC0031732). These differences in biology also serve to justify a separate generic placement from *Paracamptus*.

Currently, no other specimens of *R. cartwrighti* are known to exist except for the holotype collected by the Cartwrights in 1965. That this species has not been collected since, in an area, some may argue, is well-collected, could point to possible contamination or mislabeling. This is not an impossible scenario as has been posited by Anderson (2008) for *Chaleponotus elusus* Casey (the holotype being a mislabeled specimen of the Australian *Melanterius pectoralis* Lea). The authors currently proceed with the assumption that the label data provided on the specimen is correct. Also, we consider that the leaf and soil fauna of the Eastern U.S.A. is still poorly known and these weevils may simply be rare, as is the situation with *Cercopeus simius* Sleeper, known only from a single, over one-hundred year old specimen from far western Virginia. It is also possible, that since the collector was a scarab specialist, he may have employed collecting methods not routinely used by weevil workers. And finally, this species may have since been extirpated from its natural habitat due to development and habitat destruction.

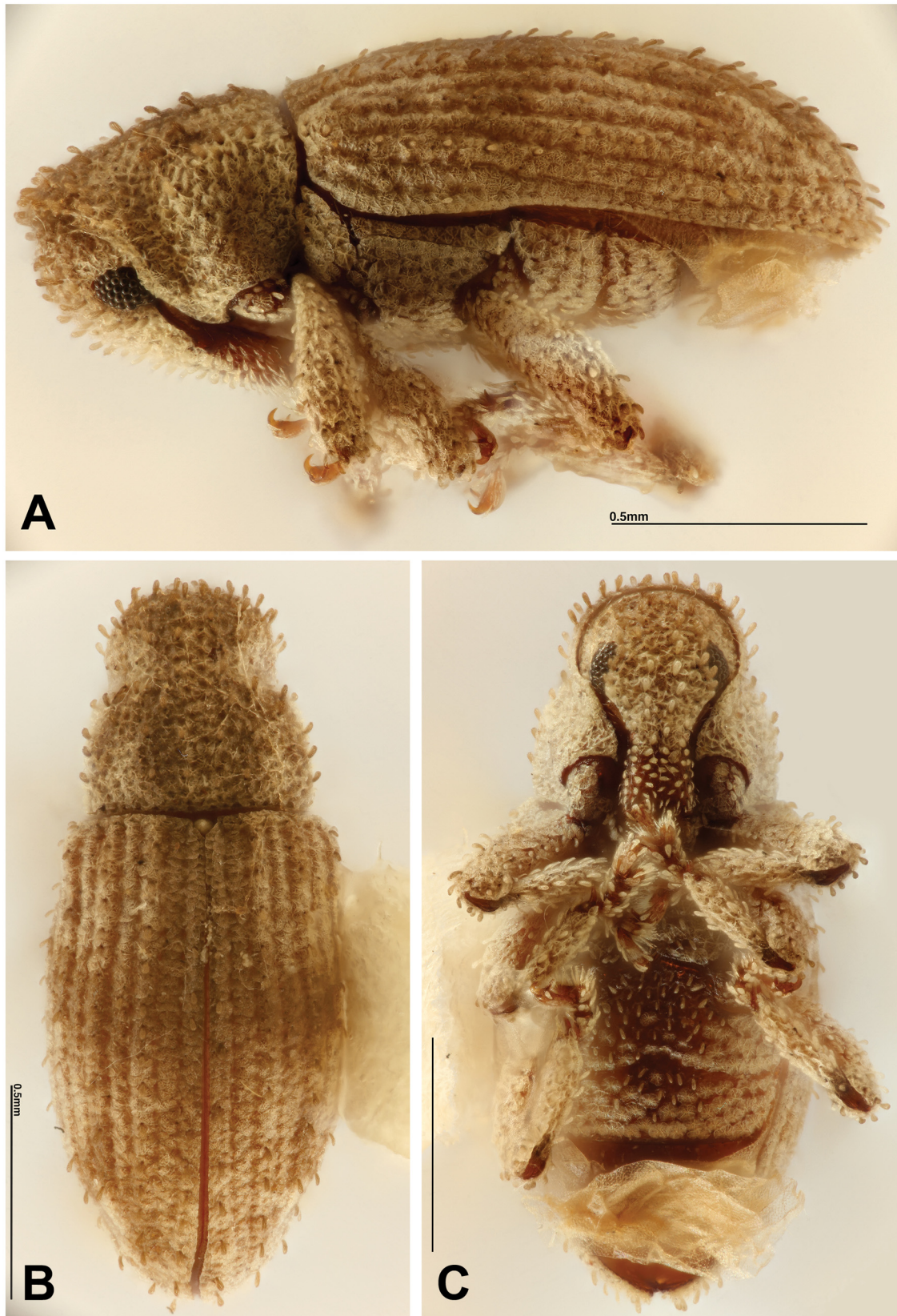


FIGURE 4. Habitus of *Paracamptus floridanus* Sleeper. A—lateral view; B—dorsal view; C—ventral view.



Much diversity still remains to be described from collections made decades, sometimes centuries ago. Current more restrictive permit regulations worldwide are impeding modern taxonomic studies (Prathapan et al. 2018) by making it increasingly difficult to collect in certain areas of the world thus our access to the faunae from these areas may be limited to historical collections. We hope this discovery and description of these new taxa stimulates further study and awareness.

## Acknowledgments

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## References

- Anderson, R.S. (2002) Chapter 131. Curculionidae. In: Arnett, R.H. Jr., Thomas, M.C. & Skelley, P. (Eds.), *American Beetles*. Vol. 2. CRC Press, Boca Raton, Florida, pp. 722–815.
- Anderson, R.S. (2008) The identity of *Chaleponotus elusus* Casey 1892 (Curculionidae: Molytinae: Conotrachelini). *The Coleopterists Bulletin*, 62, 42–44.  
<https://doi.org/10.1649/1025.1>
- Champion, G.C. (1909) Insecta. Coleoptera. Rhynchophora. Curculionidae. Curculioninae (concluded) and Calandrinae. In: Champion, G.C. (1909–1910), *Biologia Centrali-Americana*, 4 (Part 7), pp. 1–48.
- Oberprieler, R.G. (2014) 3.7 Curculionidae Latreille, 1802. In: Leschen, R.A.B. & Beutel, R.G. (Eds), *Vol. IV. Arthropoda, Insecta. Vol. 3. Morphology and Systematics, Phytophaga*. De Gruyter, Berlin, pp. 675.
- Prathapan, K.D., Pethiyagoda, R., Bawa, K., Raven, P.H., Rajan, P.D. & countries, C.-S.F. (2018) When the cure kills—CBD limits biodiversity research. *Science*, 360, 1405–1406.  
<https://doi.org/10.1126/science.aat9844>
- Spangler, P.S. (1985) Oscar Ling Cartwright 1900–1983. *Proceedings of the Entomological Society of Washington*, 87, 690–692.