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A new species of *Bonfilsus* Scherer 1967 (Coleoptera: Chrysomelidae: Galerucinae: Alticini) from the Dominican Republic

ANNETTE Y. MICHELI[1] & ALEXANDER S. KONSTANTINOV[2]
[1]*Department of Entomology, Smithsonian Institution, P.O. Box 37012, National Museum of Natural History, Washington, DC 20013-7012, USA (aymicheli@gmail.com).*
[2]*Systematic Entomology Laboratory, USDA, c/o Smithsonian Institution, P.O. Box 37012, National Museum of Natural History, Washington, DC 20013-7012, USA (e-mail: alex.konstantinov@ars.usda.gov).*

Abstract

A new species of previously monotypic genus of flea beetles (Coleoptera: Chrysomelidae: Galerucinae: Alticini), *Bonfilsus* Scherer 1967, is described from the Dominican Republic. This is the first record of *Bonfilsus* from the island of Hispaniola. The new species is compared to the only known species of the genus [*B. subpubenscens* (Bechyne)] and its distinguishing features as well as other morphological characters are illustrated and described.

Key words: flea beetles, West Indies, Hispaniola, adult morphology

Introduction

The genus *Bonfilsus* Scherer 1967 was proposed to include a single species [*B. subpubenscens* (Bechyne 1956)], originally described as *Aedmon* Clark 1860 (type species *A. sericellum* Clark 1860). *Aedmon* is a species rich Monoplatina genus, endemic to the West Indies that was previously confused with *Hadropoda* Suffrian 1868 (type species *H. ferrugineus* Suffrian 1868) (Blake 1943). *Hadropoda* was consequently synonymized with *Aedmon* (Scherer 1962). However, the affinities of *Aedmon* to another Monoplatina genus, *Hypolampsis* Clark 1860 (type species *H. balii* Clark 1860), remain unexplored.

Bonfilsus clearly differs from both *Aedmon* and *Hypolampsis* based on the following features: head sparsely covered with hairs (in *Aedmon* - densely covered with hairs); frontal ridge wide (Fig. 4) (in *Aedmon* and *Hypolampsis* - generally narrow); pronotum wider compare to width of elytra at base (Fig. 6) (in *Aedmon* and *Hypolampsis* - generally narrow compared to width of elytra at base); also in *Bonfilsus* sides of pronotum evenly convex, pronotum widening gradually posteriorly (in *Hypolampsis* sides of pronotum sinuate, pronotum narrower basally than apically); mesoscutellum narrowly triangular (Fig. 10) (in *Aedmon* - widely triangular); arm tendons of metendosternite situated slightly beyond middle of arms (Fig. 12) (in *Aedmon* - in middle); ridge *D* of metatergite flatter (Fig. 9) (in *Aedmon* - more evenly convex); appendage of abdominal sternite 1 widely rounded (Fig. 10) (in *Aedmon* and *Hypolampsis* - triangular); posterior, free, part of vaginal palpi shorter than anterior, solid, part (Fig. 20) (in *Aedmon* and *Hypolampsis* - longer than anterior).

The second species of *Bonfilsus* was discovered in the Dominican Republic, it is described and illustrated below.

Material and Methods

Dissecting techniques and morphological terminology follows Konstantinov (1998). In addition, terminology for adult thoracic structures and ridges follows Lawrence & Ślipinski (2013), Lingafelter & Konstantinov (2000) and McHugh *et al.* (1997). Specimen observations were made with a Zeiss Stemi SV11 Apo microscope. Digital photographs of morphological structures were taken with Axio Zoom V16 microscope and AxioCam HRC digital camera attached to

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it and with AxioCam HRC Zeiss attached to Leitz Diaplan compound microscope. The specimens are deposited in collections of the National Museum of Natural History, Smithsonian Institution, Washington DC, USA (USNM) and Museo Nacional de Historia Natural, Santo Domingo, Dominican Republic (MHND).

Figure 1. *Bonfilsus sofiae* Konstantinov & Micheli sp. nov., dorsal habitus, illustrated by Abby Williams.

Results

Bonfilsus Scherer 1967:219. Type species *Aedmon subpubenscens* Bechyne 1956:598 by original designation. Type locality: Guadeloupe. Distribution: Dominica, St. Lucia (Peck 2016), Guadeloupe (Bechyne 1956).

***Bonfilsus sofiae* Konstantinov & Micheli sp. nov. (Figs 1–24)**
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Distribution: Dominican Republic.

Type material: Holotype, male. Labels: 1) Dominican Republic: Pedernales Prov., 3 km (st3) N of Cabo Rojo 1125 m, 19.VI.2005, 18°07.263′N, 71°35.869′W leg. A. Konstantinov; 2) Holotype *Bonfilsus sofiae* new species Konstantinov and Micheli des. 2019 (USNM). Paratypes the same labels at holotype (35 specimens USNM, 5 MHND). Paratypes. Labels: 1) Dominican Republic: Pedernales Province, env. Pedernales, Cabo Rojo Rd. 1072 m. 15.VII.2006, 18°07.262′N, 71°35.854′W leg. A. Konstantinov; 2) Paratype *Bonfilsus sofiae* new species Konstantinov and Micheli des. 2019 (58 specimens USNM). Labels: 1) Dominican Republic: Env. Pedernales, Cabo Rojo Rd.11. XII.2014, 1189m, WP-514, 18°07.261′N, 71°35.830′W Leg. A. Konstantinov; 2) Paratype *Bonfilsus sofiae* new species Konstantinov and Micheli des. 2019 (21 specimens USNM).

Host plants: *Prosopis* sp. or *Vachellia* sp. (Fabaceae) (Figs 23, 24).

Description: Body length 1.83 – 2.4 mm, width 0.97 – 1.29 mm (Figs 1 – 3), sparsely pubescent, elongate and flat in lateral view. Head, antennomeres 6 through eleven, pronotum, metafemur and elytra close to suture light brown to brown. Mouthparts, base of elytron, antennomeres 1 through 5, front and middle legs and metatibia yellowish to light brown. Apex of protibia and apical part of elytron yellowish. Lighter and darker parts of elytron covered with translucent, whitish setae.

Head (Figs 4, 5, 7) slightly convex in lateral view and sparsely pubescent. Vertex wide and flat, shagreened, with about ten shallow punctures on each side, near eyes; some bearing setae. Supraorbital setiferous pore distinguishable. Antennal callus visible, slightly to not raised, shinier than rest of vertex. Midfrontal sulcus well developed. Supracallinal, orbital, supraorbital, supraantennal, and suprafrontal sulci barely noticeable to absent. Orbit relatively wide. Interantennal space as wide as transverse diameter of eye. Frontal ridge wide, parallel sided. Anterofrontal ridge merged with frontal ridge. Eyes slightly protruding laterally, inner margin nearly straight. Labrum smooth, with six symmetrically placed setiferous pores. Apical maxillary palpomere conical in shape, shorter and narrower than preceding palpomere. Labial palpomeres of equal length, apical palpomere conical. Antenna with 11 antennomeres, filiform.

Pronotum (Figs 6, 8) 1.47 times wider than long, slightly convex in lateral view. Pronotal disc with shallow punctures. Antebasal transverse impression absent. Anterior margin straight, with distinct border. Lateral margins slightly convex, with narrow explanation. Posterior margin evenly curved, with distinct border. Anterolateral callosity nearly perpendicular to pronotum length, short, triangular, extending far from lateral margin, bearing large setiferous pore. Setae vary in color from whitish to dark brown. Posterolateral callosity present, bearing seta, smaller than anterolateral callosity, extending beyond lateral margin. Pronotal surface covered with small irregular and moderately shallow punctures and sparse and translucent setae. Scutellum triangular, few setae present. Prosternum wide but short. Prosternal surface sparsely covered with irregular punctures. Prosternal intercoxal process narrow in middle (Fig. 7). Posterior end more than twice as wide as middle. Procoxal cavities closed posteriorly. Mesosternum (Fig. 11) longer than prosternal process. Metasternum smooth, relatively flat in lateral view, longer than pro- and mesosterna together. Metathoracic discrimen long, nearly reaching level of middle coxal cavities. Metendosternite with narrow stem and wider arms (Fig. 12).

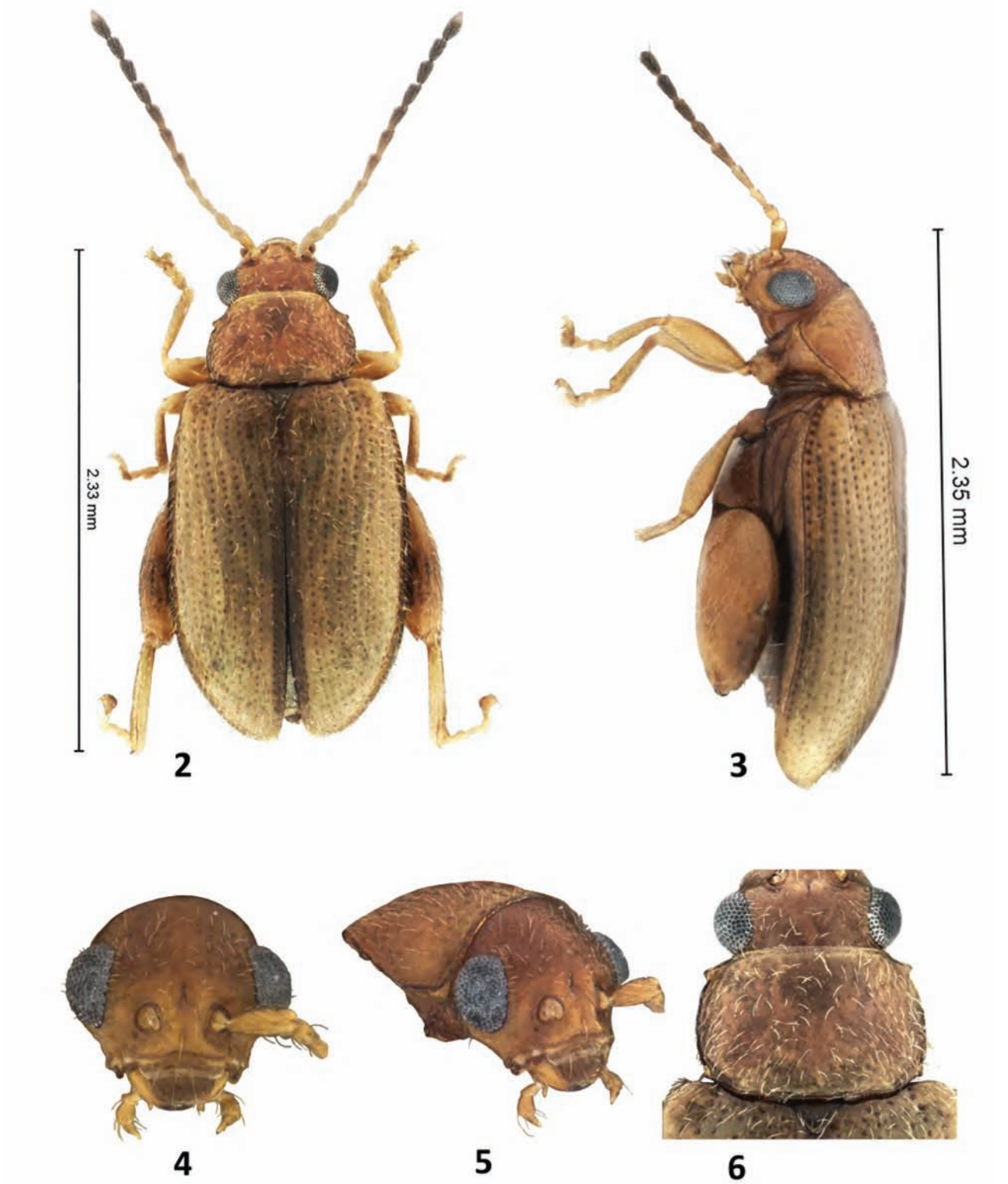
Wings well developed.

Elytra (Figs 2, 15) with punctures forming nine striae (not including marginal and short scutellar striae), sparsely pubescent with translucent setae. Seventh and eighth striae do not reach basal margin of elytron. Humeral calli well developed. Base of elytron with callus situated between suture and humeral corner. Epipleura wide, nearly vertical, narrowing abruptly at elytral apex but not reaching it.

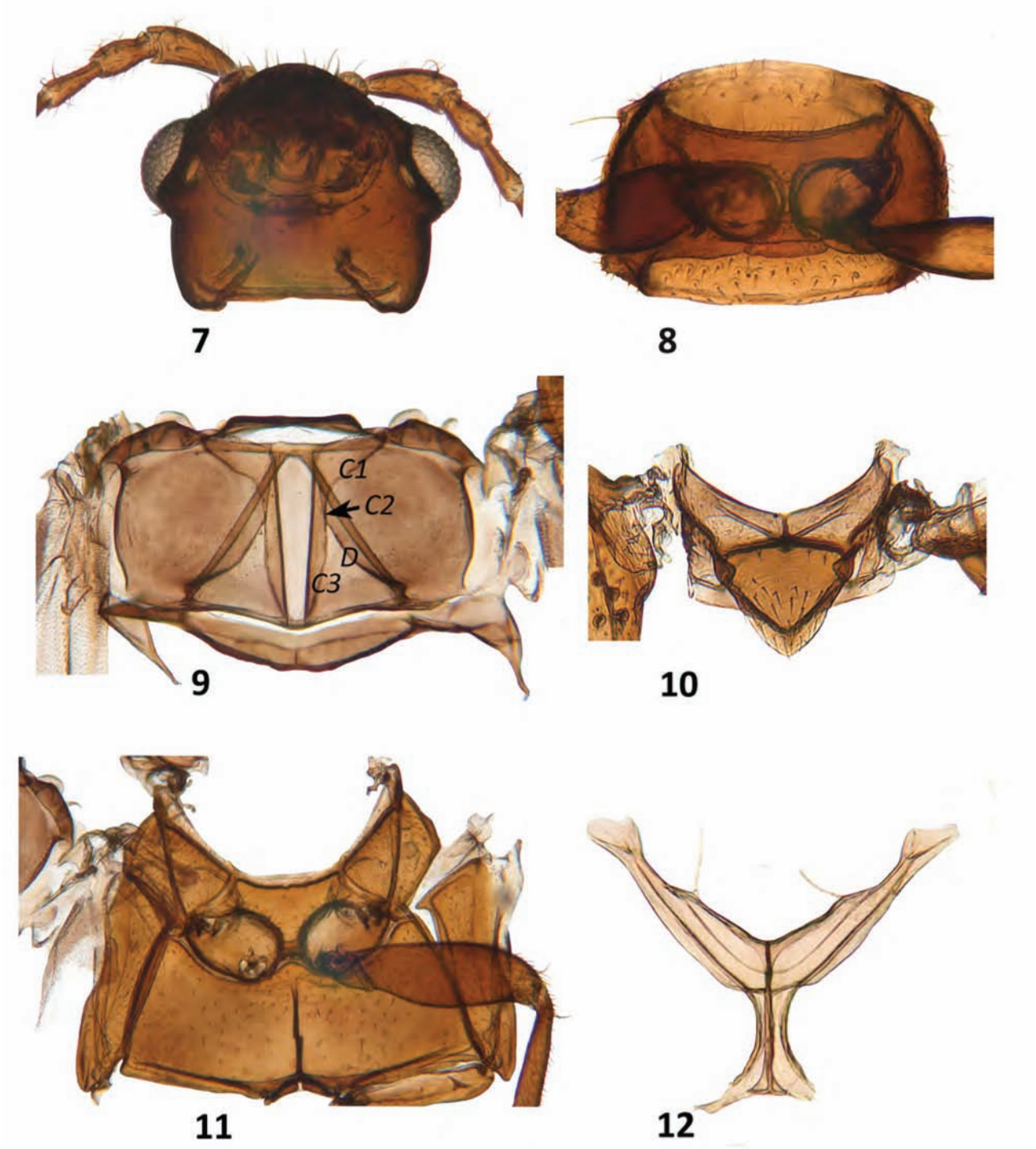
Mesofemur (Fig. 18) slightly wider than profemur; pubescence sparsely distributed. Metafemur (Fig. 16) greatly enlarged, 1.54 times longer than wide and 1.62 times longer than metatibia. Pro- and mesotibiae without apical spurs. Metatibia straight in lateral view, slightly curved in dorsal view. Upper side flat to canaliculate, bordered by ridges. Outer and inner dorsal ridges more or less straight without denticles along, but with one denticle each at the end.

Metatibial spur well developed. First metatarsomere inserted apically and shorter than two subsequent tarsomeres together. Claw tarsomere swollen (Fig. 16). Claw appendiculate in male and female.

Abdomen pubescent, with five visible sternites. Apical sternite in female shorter than three preceding sternites combined, without appendages basally (Fig. 14). Last abdominal tergite of female without groove in middle, narrowing apically, with small, impression at apex. Apex of last abdominal sternite in males with lobe bent ventrally.



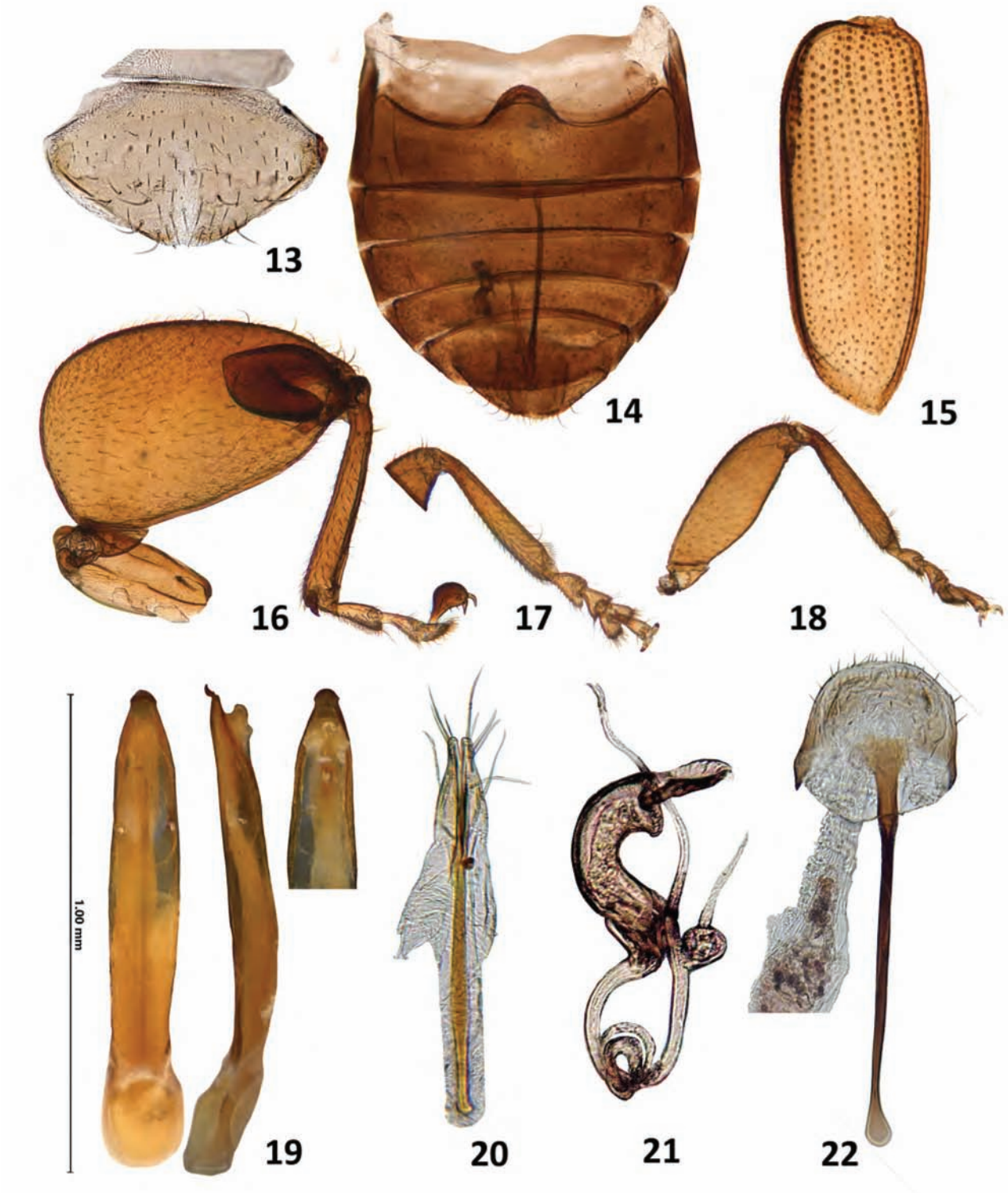
Figures 2–6. *Bonfilsus sofiae*. **2,** habitus, dorsal view; **3,** habitus,ventral view; **4,** head, frontal view; **5,** head, three quarter view; **6,** pronotum, dorsal view.



Figures 7–12. *Bonfilsus sofiae*. **7,** head, ventral view; **8,** prothorax, ventral view; **9,** metatergite, *C1 – C3, D* ridge numbers according to Konstantinov (1998). **10,** mesotergite; **11,** meso-and metasternites; **12,** metendosternite.

Median lobe simple, nearly straight in lateral view; in ventral view without longitudinal groove, from middle narrows apically and basally. Apex abruptly widening to form denticle, abruptly curved in lateral view (Fig. 19).

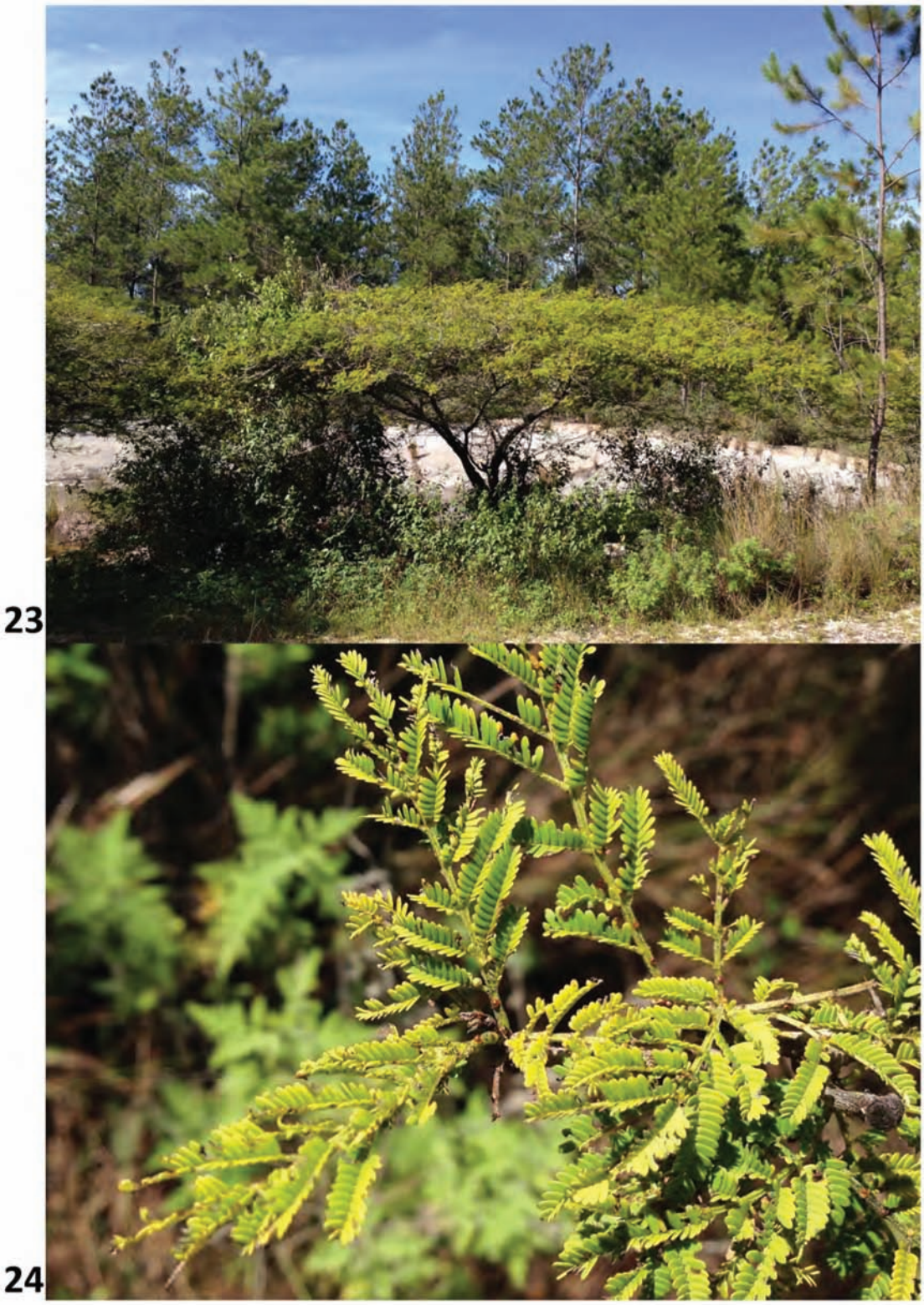
In female genitalia, anterior part of sternite eight round at margin, bearing relatively long setae near apex. Tignum (Fig. 22) strongly sclerotized with spoon-like, rounded anterior margin. Posterior part of tignum wider than middle, concave, merging with following sclerites. Vaginal palpi (Fig. 20) strongly elongate, anteriorly and along middle strongly sclerotized, each with about six setae at apex, with posterior sclerotization shorter than anterior. Posterior, free, part of vaginal palpi shorter than anterior, solid, part. Spermatheca strongly curved (Fig. 21), receptacle elongate and narrow, basal and apical part equally wide. Pump as wide as receptacle, not separated from receptacle, apex of pump with flat projection. Spermathecal duct long, forming complete coils.



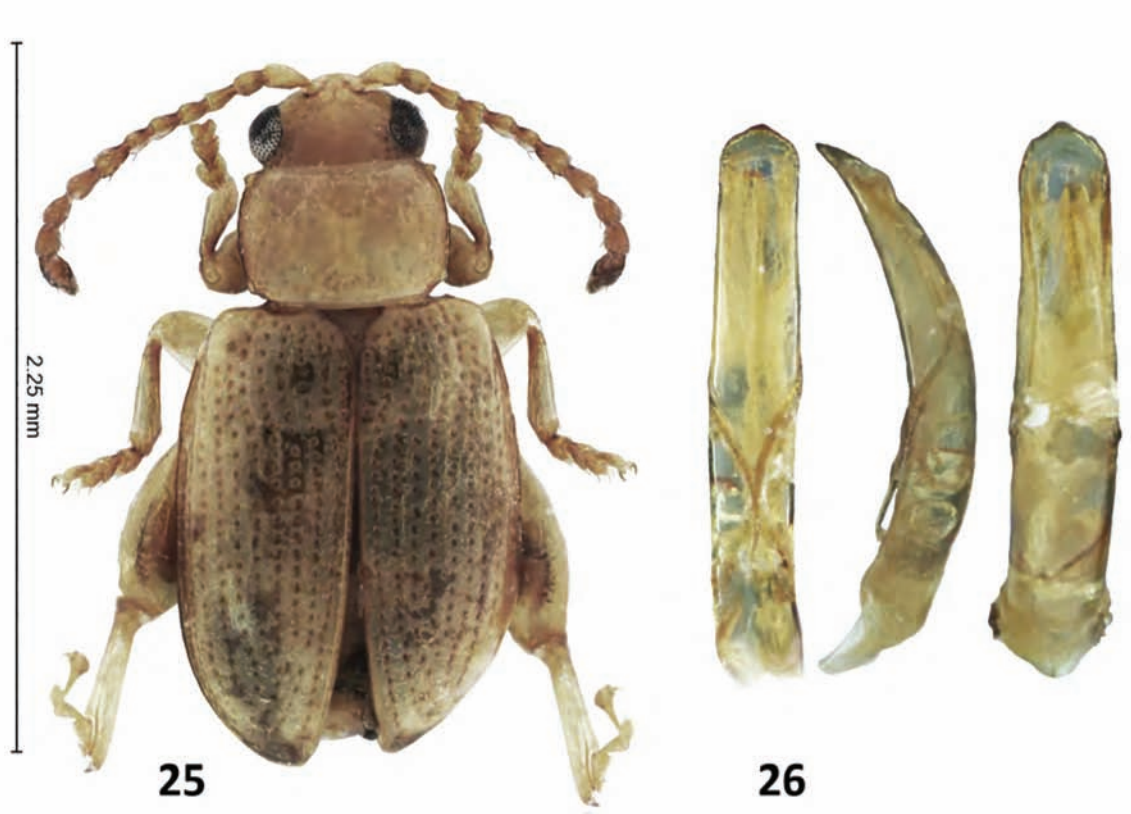
Figures 13–22. *Bonfilsus sofiae*. **13,** last abdominal tergite of female; **14,** abdominal sternites, female; **15,** left elytron; **16,** hind leg; **17,** front leg; **18,** middle leg; **19,** median lobe of aedeagus, ventral, lateral and dorsal views; **20,** vaginal palpi; **21,** spermatheca; **22,** gut, tignum and associated sclerites.

Remarks: *Bonfilsus sofiae* may be easily separated from the only other known species of the genus, *B. subpubenscens*, based on slightly more robust and lighter in color body (Fig. 25). Median lobe of *B. subpubenscens* is slightly more robust (Fig. 26), ventrally abruptly narrowing at apex, in lateral view it is generally curved and straight at apex. In *B. sofiae* median lobe is nearly straight in lateral view; in ventral view gradually narrowing at apex, which is abruptly widening, apex is abruptly curved in lateral view (Fig. 19).

Etymology: This species is named after Sofia Simon Miles, the "newest" member of the Konstantinov/Miles family. Epithet is a noun in apposition.



Figures 23–24. *Bonfilsus sofiae*. Host plant, *Prosopis* sp. or *Vachellia* sp. (Fabaceae).



Figures 25–26. *Bonfilsus subpubenscens* (Bechyne). **25,** habitus, dorsal view; **26,** median lobe of aedeagus, ventral, lateral and dorsal views.

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