



<https://doi.org/10.11646/zootaxa.4504.2.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:DA9CF61F-0398-4E71-8CE5-3A77FEB00CB0>

Five new species of the tribe Gyrophaenina Kraatz 1830 (Coleoptera: Staphylinidae: Aleocharinae) from the southern part of the United States

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Abstract

Four new species of *Gyrophaena* Mannerheim, 1830 and one of *Phanerota* Casey, 1906 from southern states of the USA are described and illustrated: *G. affinifera* Enushchenko, **sp.n.** (Alabama), *G. fontanedai* Enushchenko, **sp.n.** (Alabama, Florida), *G. marjakata* Enushchenko, **sp.n.** (Arizona), *G. velada* Enushchenko, **sp.n.** (Arizona), and *Ph. paradissimilis* Enushchenko, **sp.n.** (Florida). A new species group is erected, the *nitidula*-group, containing *G. nitidula* (Gyllenhal 1810), *G. pseudonitidula* Semenov 2015 and *G. fontanedai* Enushchenko, **sp.n.**, and a key for the species of this group is given.

Key words: rove beetles, *Gyrophaena*, *Phanerota*, Nearctic, new species, new species group

Introduction

The history of the study of the subtribe Gyrophaenina Kraatz, 1856 (Aleocharinae) in the Nearctic Region begins with Say (1834) who described *Aleochara fasciata* from Pennsylvania, later transferred to the genus *Phanerota* by Casey (1906). Erichson (1839) described *Gyrophaena corruscula*, *G. dissimilis* and *G. socia* from “Carolina meridionali”, and *G. vinula* from Pennsylvania, later transferred to *Phanerota* (*Ph. dissimilis*) and *Eumicrota* (*Eu. corruscula*, *Eu. socia*) by Casey (1906). Melsheimer (1844) described *G. flavicornis* and *G. rufa* from Pennsylvania. The taxonomic status of *G. rufa* as a good species still remains unclear. LeConte (1850) cited *G. amenda* and *G. bellula* but did not provide descriptions and both these names are obviously ‘nomina nuda’. Mäklin (1853) described *G. geniculata* from Alaska, and later Fenyés (1918) supposed that this species belongs to *Agaricochara*. Jekel (1873), described *G. flavocincta* from “North America”, later synonymized by Casey (1906) with *Phanerota fasciata* (Say 1834), who also synonymized Erichson’s species *G. vinula* with *Ph. fasciata*. Casey (1906), revised the Nearctic ‘Gyrophaenae’, described *Eumicrota* and *Phanerota* with several species in each and 32 new species of *Gyrophaena*, and made several taxonomic combinations of previously described species. Casey (1911) described *Eumicrota oligotina* from “Missouri (St. Louis)”, *G. attonsa* from New York, *G. criddlei* from Manitoba and *G. keeni* from British Columbia. Later, Fenyés (1918) synonymized most of the species described by Casey. Notman (1920) provided new records of *Eumicrota* and *Gyrophaena* for the south-eastern USA, described *Eu. anomala* from Virginia and *Eu. insolita* from Florida, the latter was later synonymized with *Eu. socia*. Bernhauer (1929) described four *Gyrophaena* from Mexico: *G. cordobensis* (Cordoba), *G. nemoralis* (Chapingo), *G. punctatissima* (Desierto) and *G. punctatissima pubicollis* (Cordoba). The taxonomic revision of Seevers (1952) made a great contribution to the knowledge of the Nearctic Gyrophaenina, where he proposed descriptions of species groups, redescribed all known taxa and described 37 new species. Later, Moore & Legner (1975) recorded five species of *Agaricochara*, four of *Eumicrota*, and 61 of *Gyrophaena* from the USA and Canada (excluding the province of New Brunswick). Campbell & Davies (1991) added *G. geniculata* Mäklin 1853 and *G. nana* (Paykull 1800) from Alaska; *G. affinis* Mannerheim 1830, *G. antennalis* Casey 1906, *G. insolens* Casey 1906, *G. keeni* Casey 1911 and *G. modesta* Casey 1906 from New Brunswick; *G. gilvicillis* Casey 1906 and *G. (Phaenogyra) gracilis* Seevers 1951, the latter two species were recorded for Ontario with a question mark. Ashe (1984) erected the genus *Agaricomorpha* for *A. apacheana* (Seevers 1951), distributed in the south-western United States, and listed 18 unnamed species of Gyrophaenina from Mexico, the USA and Canada. Klimaszewski *et al.* (2009) described *G.*

meduxnekeagensis Klimaszewski & Webster 2009 and *G. pseudocriddei* Klimaszewski & Webster 2009 from New Brunswick (Canada) and provided provincial records for 24 species of Gyrophaenina. *Agaricomorpha websteri* Klimaszewski & Brunke 2012 was described from the same province, together with a new record of *Phanerota fasciata*, which was collected on mushrooms in southern Ontario (Brunke *et al.* 2012). Several papers with records of Gyrophaenina for Canada were published by Klimaszewski *et al.* (2008, 2011, 2012, 2016, etc.), and Majka & Klimaszewski (2010, 2011). There are now 29 species of *Gyrophaena*, two species of *Eumicrota* and one species of *Phanerota* known to occur in Canada, considering records provided by Campbell and Davies (1991), Dollin *et al.* (2008), as well as data provided later (Brunke *et al.* 2012, Klimaszewski *et al.* 2008, 2009, 2011, 2012, 2016, etc., Majka & Klimaszewski 2010, 2011). Thus, 77 valid species of the subtribe Gyrophaenina are known from America north of Mexico (Seevers 1951, 1978; Klimaszewski *et al.* 2011; Brunke *et al.* 2012).

During the study of material from the Field Museum (Chicago), I found four new species of *Gyrophaena* Mannerheim 1830 and a new species of *Phanerota* Casey 1906 from the southern United States. Descriptions of these species are presented in this article. Besides that, I found that *G. fontanedai* **sp.n.**, does not match with any groups of species erected by Seevers (1952), but clearly corresponds with two related species from the Palaearctic region. Thus, a new species group is erected for these three species and a key to all of them is given.

Material and methods

The present study is based on the material from the following institutional collections:

FMNH the Field Museum of Natural History, Chicago, USA (M.K. Thayer, C. Maier);

ZMM Zoological Museum of Moscow University (collection of V.I. Motschulsky), Moscow, Russia (A.A. Gusakov)

Some paratypes of species described here are deposited in the author's collection—cIE (Irkutsk, Russia).

Morphological studies were carried out using MBS-9 and MicMed-6 microscopes with a digital camera DCM 510 (USB 2.0) 5Mpixels. All measurements are given in millimeters and taken with a microscope using an ocular micrometer. Abdominal tergites, sternites and aedeagus were mounted in Canada balsam on plastic microslides pinned under the specimens from which they originated.

The type labels are cited in inverted commas and separated from each other by a comma. Different lines in labels are separated with a vertical line; explanations of the type labels and necessary notes within the label are given in square brackets.

Results

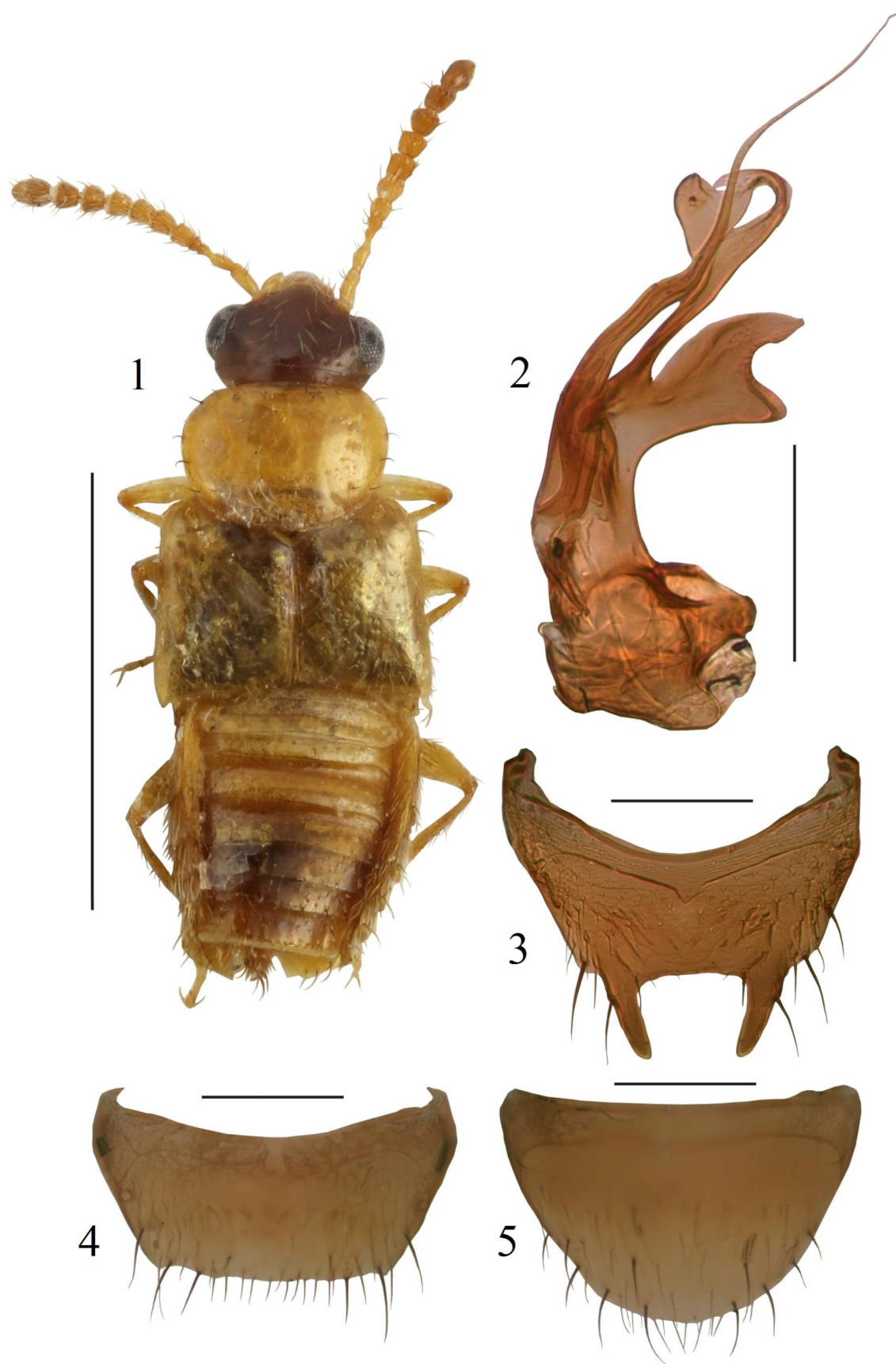
Gyrophaena (s. str.) *affinifera* Enushchenko, sp.n.

(Figs. 1–5)

Type material examined: Holotype: 1 ♂ [The specimen was re-glued by me on a white rectangular card; a plastic card with a preparation of the aedeagus in Canada balsam]: USA: 'ALA[bama]: Shalby Co[unty]; | Helena 397D | IV-24-1955 | leg. H.R. Steeves Jr.', 'CNHM 1962 | H.G. Steeves | Gen. Coleop. Colln. | Acc. Z-13, 050', 'on | mushroom', 'HOLOTYPE | *Gyrophaena* | *affinifera* sp.n. | Enushchenko I.V. | 2018 des.' <red printed label> (FMNH).

Paratypes: 3 ♂, 3 ♀ [Specimens on white rectangular cards; one specimen left was originally glued on a narrow triangular card]: USA: 'ALA[bama]: Shalby Co[unty]; | Helena 397D | IV-24-1955 | leg. H.R. Steeves Jr.', 'CNHM 1962 | H.G. Steeves | Gen. Coleop. Colln. | Acc. Z-13, 050', 'on | mushroom', 'PARATYPE | *Gyrophaena* | *affinifera* sp.n. | Enushchenko I.V. | 2018 des.' <red printed label> (FMNH: 2 ♂, 2 ♀; cIE: 1 ♂, 1 ♀).

Description. Body narrowly oval; length 1.40–1.80 mm. Habitus as in Fig. 1. Head red-brown; pronotum, elytra and abdomen yellow to yellowish red; disc and postero-lateral margins of elytra, and abdominal tergites



FIGURES 1–5. *Gyrophaena affinifera* sp.n.: 1—habitus, 2—aedeagus, lateral view, 3—male abdominal tergite VIII, dorsal view, 4—female abdominal tergite VIII, dorsal view, 5—female abdominal sternite, dorsal view. Scale bars: 1 mm (1), 0.1 mm (2–5).

V–VII light brown to yellow-brown; antennae yellow-red; mouthparts and legs yellow. Body with weak, indistinctly reticulate microsculpture, stronger on elytra. Head almost twice as wide as long; vertex with small, sparse, distinct punctures; median area impunctate. Antennomere III transverse to slightly elongate, antennomeres V–X incrassate, V segment distinctly elongate, V–X quadrate to slightly elongate; apical antennomere elongate, 1.2 times as long as wide. Pronotum 1.4 times as wide as long and head, microsculpture as that in head, with two median rows of small, shallow, weakly defined punctures, very indistinct on basal portion. Elytra as long as pronotum, almost twice as wide as long; with well-defined rugose microsculpture and small, shallow and matt punctures like those in *G. affinis* Mannerheim 1830. Microsculpture of abdomen as that on head and pronotum.

Male. Abdominal tergite VII with semicircular median elevation; apical margin of abdominal tergite VIII (Fig. 3) with two long lateral teeth, slightly acute and curved inwards. Aedeagus (Fig. 2) with ventral plate strongly protruded laterally, bifurcate apically, with short inferior part, widely rounded apically and slightly elongate superior part with curved acute apex; apical portion of median lobe very narrow, fusiform, significantly exceeding ventral plate, strongly curved dorsad, with wide bulbous apex; dorsal projection of internal sac approximately straight and extremely long.

Female. Tergite VIII wide, trapezoid (Fig. 4); sternite VIII rounded apically (Fig. 5).

Comparative notes. Based on the shape of antennomeres, arrangement of pronotal and elytral punctures and microsculpture, *G. affinifera* **sp.n.** belongs to the *affinis* group as defined by Seevers (1951). This Holarctic group contains Holarctic *G. affinis* Mannerheim 1830, European *G. rousi* Dvořák 1966 and North American *G. dybasi* Seevers 1951.

By the structure of the aedeagus *G. affinifera* **sp.n.** is similar to *G. dybasi*, distributed in Wisconsin, Illinois, Indiana, Missouri and North Carolina (Seevers 1951) and New Brunswick in Canada (Klimaszewski *et al.*, 2009). It can be distinguished by the paler coloration, even less distinct microsculpture of the body and by details of structure of the aedeagus (ventral plate of aedeagus of *G. dybasi* slender, with acute apex, not divided apically; apical portion of median lobe with spiral-shaped apical structures; dorsal projection of internal sac shorter and wider).

For illustrations of *G. dybasi* see Klimaszewski *et al.* (2009: Figs. 12, 85–88).

Etymology. The specific epithet is composed of the Latin adjectives *affinis*, *-is*, *-is*, *-e* (closely related) and *fero* (to carry). It confirms the morphological similarity with *G. affinis*.

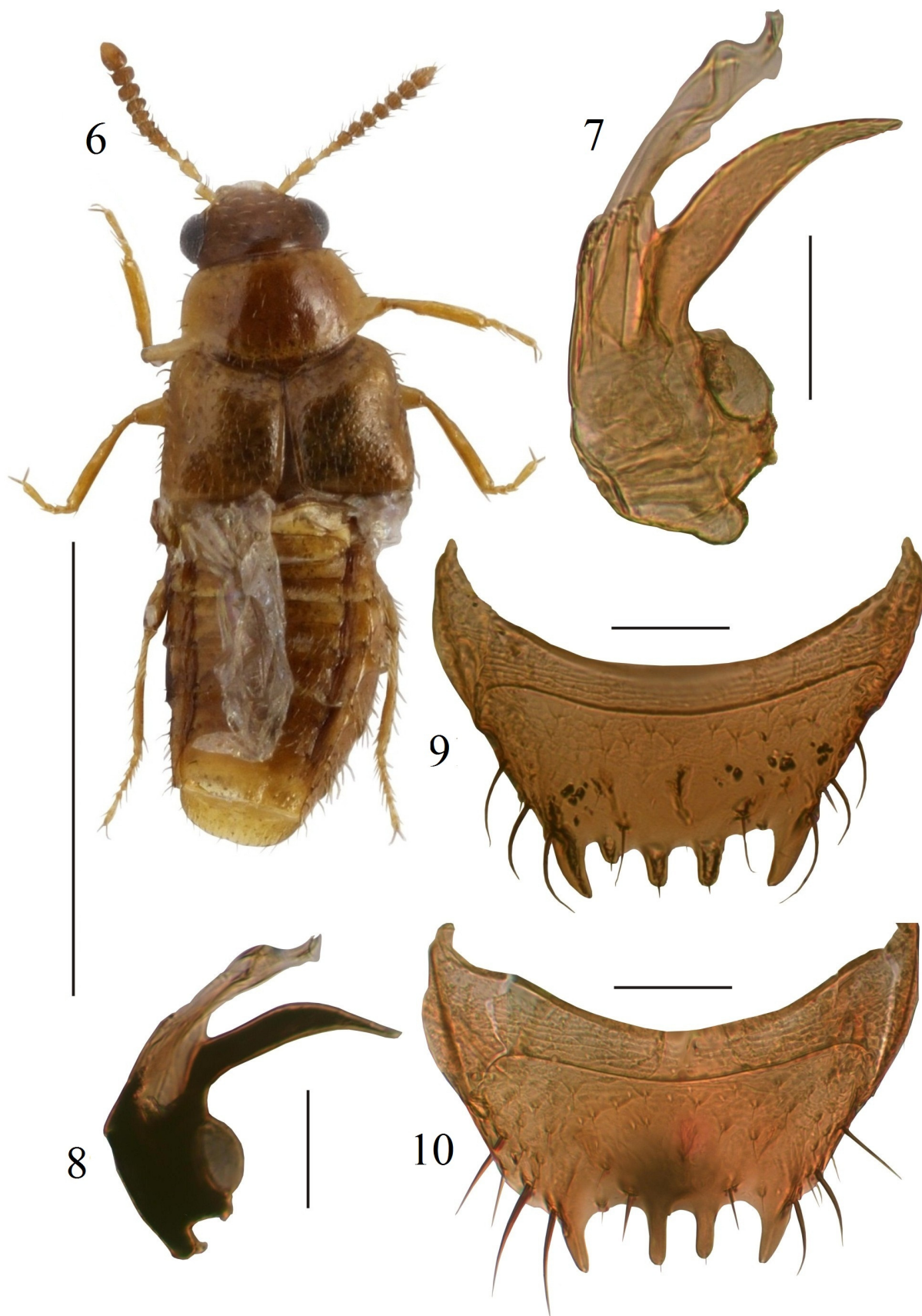
***Gyrophæna* (s. str.) *fontanedai* Enushchenko, sp.n.**

(Figs. 6–10)

Type material examined: Holotype: 1 ♂ [Specimen from was re-glued by me on white rectangular card; a plastic plate with a preparation of the aedeagus and abdominal segments VIII in Canada balsam was pinned under the card with specimen]: **USA:** ‘ALA[bama]: Shalby Co[unty]; | Helena 684B | I-3-1959 | leg. H.R. Steeves Jr.’, ‘CNHM 1962 | H.G. Steeves| Gen. Coleop. Colln. | Acc. Z–13, 050’ ‘Tree Hole’, ‘HOLOTYPE | *Gyrophæna* | *fontanedai* **sp.n.** | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH).

Paratypes: 1 ♂ [Specimen from was re-glued by me on white rectangular card; a plastic card with a preparation of the abdominal tergite VIII in Canada balsam was pinned under the card with specimen; aedeagus is lost]: ‘U.S.A. Florida | Monroe Co[unty].; Lignum | Vitæ Key. 14:III:1968 | leg. S. Peck, Ber.: #109’, ‘FM(HD) #68-15, | Ber.: hardwood | forest litter. 28 lbs.’, ‘PARATYPE | *Gyrophæna* | *fontanedai* **sp.n.** | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH); 1 ♂ [Specimen was cleaned and reglued by me on white rectangular card; a plastic card with a preparation of the abdominal tergite VIII and aedeagus in Canada balsam was pinned under the card with specimen]: ‘*Gyrophæna* | *breviuscula* | Motch.[ulskiy] | Am.[erica] bor.[ealis]’ <green handwritten label>, ‘PARATYPE | *Gyrophæna* | *fontanedai* **sp.n.** | Enushchenko I.V. | 2018 des.’ <red printed label> (ZMM).

Description. Body red-yellow to red-brown; length 1.50 mm. Habitus as in Fig. 6. Antennae, mouthparts and legs yellow-red or red-brown. Body with distinct reticulate microsculpture, weaker on abdomen. Head almost twice as wide as long; vertex with small, sparse punctures; median area impunctate. Antennomeres IV and V as wide as long, quadrate to slightly elongate, antennomeres VI–X subquadrate to feebly transverse, apical antennomere flattened, conical, 1.5 times longer than wide. Pronotum 1.6 times as wide as long and 1.4 times as wide as head; microsculpture as that on head, with two median rows consisting of three small, shallow, weakly



FIGURES 6–10. *Gyrophaena fontanedai* sp.n.: 6—habitus, 7—aedeagus, lateral view (Holotype), 8—aedeagus, lateral view (Paratype), 9—male abdominal tergite VIII, dorsal view (Holotype), 10—male abdominal tergite VIII, dorsal view (Paratype). Scale bars: 1 mm (6), 0.1 mm (7–10).

defined punctures; basal portion of pronotum impunctate. Elytra approximately as long as pronotum, almost twice as wide as long; with distinct reticulate microsculpture, surface covered by indistinct, small punctures and well-defined tubercles, most densely in the middle part and in the posterior margins of elytra.

Male. Apical margin of abdominal tergite VIII with four teeth, with lateral pair rather stout and slightly curved inwards and medial pair blunt, equal to margin carinae (Fig. 9). Ventral plate of aedeagus long, widely curved latero-ventrally, with acute apex (Fig. 7); apical part of median lobe very short; dorsal projection of internal sac long but distinctly shorter than ventral plate, inclined to the ventral plate, slightly widening to apex.

Female unknown.

Comparative notes. Based on the morphological features both of habitus and aedeagus, *G. fontanedai* **sp.n.** differs from all known Nearctic species and is more similar to the Euro-asiatic *G. nitidula* (Gyllenhal 1810) and, especially by the distinct reticulate microsculpture of the body, shapes of antennomeres IV–IX and shape of the aedeagus to *G. pseudonitidula* Semenov 2015, described recently from the Chuvash Republic of Russia and known from a vast range extending from the European part of Russia to the Russian Far East (Semenov *et al.*, 2015). From both these species, *G. fontanedai* **sp.n.** differs by the significantly smaller body (see the key below) and by the shape of elongated teeth on the apical margin of abdominal tergite VIII of male (these teeth in *G. nitidula* and *G. pseudonitidula* are significantly smaller).

For illustrations of *G. nitidula* and *G. pseudonitidula* see Semenov *et al.* (2015: Figs. 2, 3).

Etymology. The new species is dedicated to the Spanish shipwreck survivor Hernando de Escalante Fontaneda (1536–1575, dates uncertain) who lived among the Indians of Florida for 17 years. His memoir, written in 1575, is one of the most valuable contemporary contributions to the history and ethnography of the life of American Indians.

Remarks. The specimen (paratype) with green label “Am. bor.” in the collection of V.I. Motschulsky (ZMM) were collected by him between November 1853 and March 1854, when he visited the USA (Krivokhatskiy, 2013). The specimen was noted by him as a “*G. breviscula* Motch.”, but no description was published.

The *nitidula* species group is erected here for this new and two above-mentioned species. This group is characterized by similar shape of the male tergite VIII and aedeagus (see the key below). Additionally, species of this group have long antennae with elongated antennomere V and subquadrate antennomeres VI–X; surface of head and pronotum moderately glossy, with well pronounced microsculpture; elytra with coarse and widely distributed punctures.

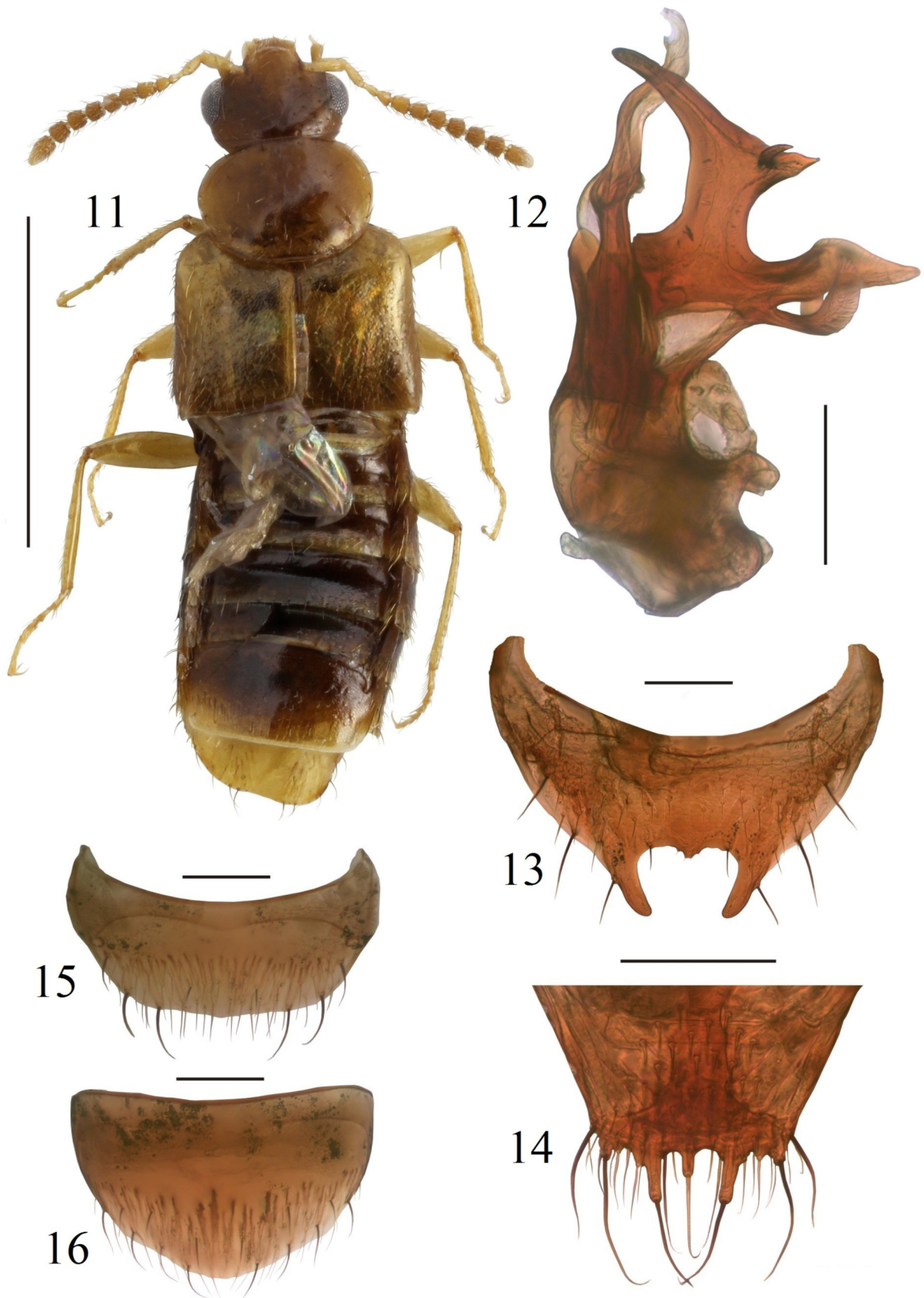
Key to species of *nitidula* group of the genus *Gyrophæna*

- 1 Larger, body length: 2.60–3.00 mm. Elytra between cells of microsculpture without micropunctures. Ventral plate of aedeagus quite long; right wall between ventral plate and dorsal projection of internal sac slightly distinguishable (see Semenov *et al.* 2015: Fig. 3a) *G. nitidula*
- Body distinctly smaller. Elytra between cells of microsculpture with micropunctures. Ventral plate of aedeagus slightly or distinctly shorter; right wall of aedeagus between ventral plate and dorsal projection of internal sac well visible (see Semenov *et al.* 2015: Fig. 3c) 2
- 2 Body length: 2.20–2.60 mm in length. Head and pronotum with dense, distinct punctures. Ventral plate of aedeagus short *G. pseudonitidula*
- Smaller, body length: 1.50 mm. Head and pronotum with sparse, shallow punctures. Ventral plate of aedeagus quite wider and longer. *G. fontanedai* **sp.n.**

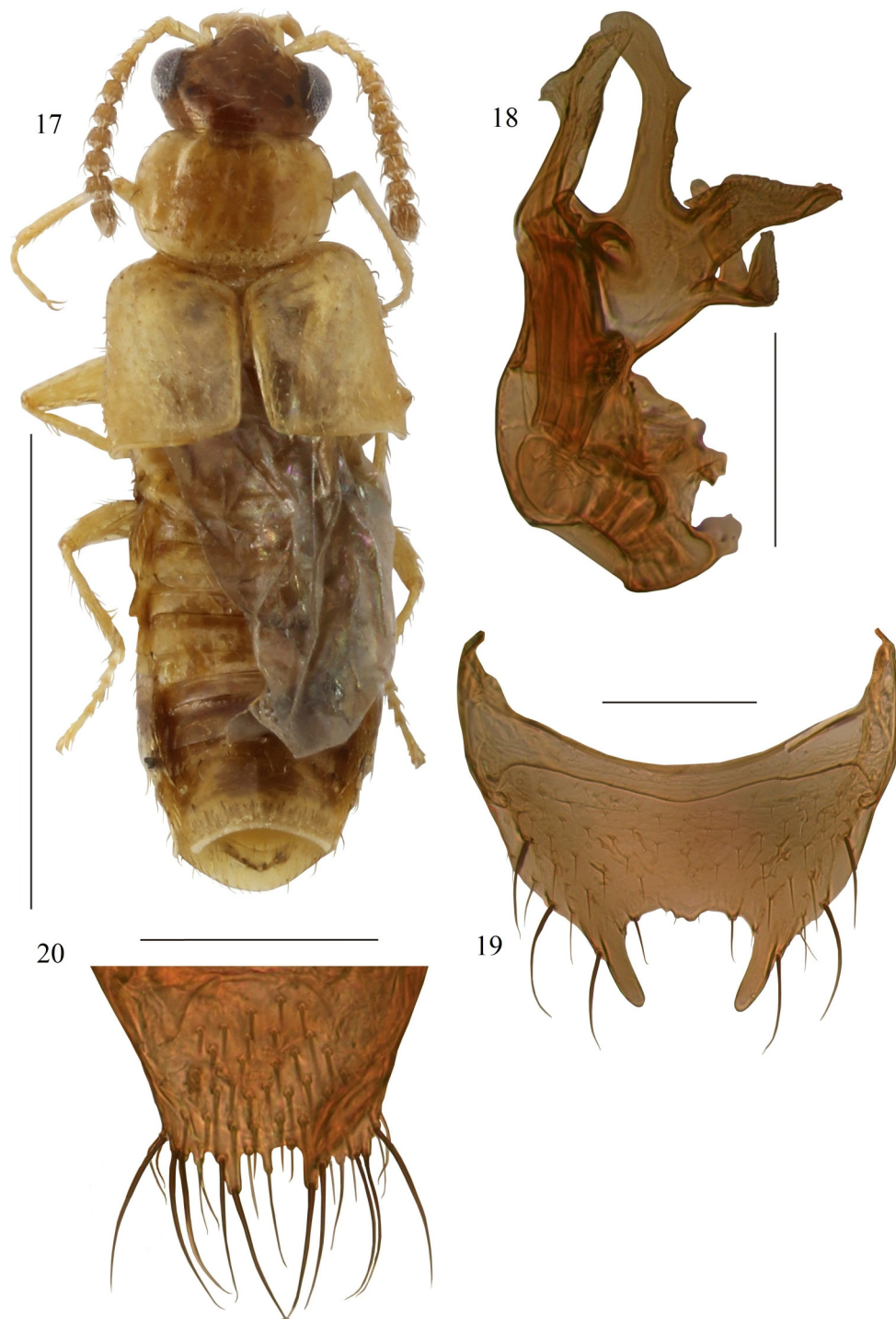
Gyrophæna (s. str.) *marjakata* Enushchenko, sp.n.

(Figs. 11–16)

Type material examined: Holotype: 1 ♂ [Specimen was re-glued by me on a white rectangular card; a plastic card with a preparation of the aedeagus and abdominal segments VIII–IX in Canada balsam was pinned under the card with specimen: USA: ‘Ariz[ona].: Graham Co[unty] | Pinaleno Mtns. | Wet Canyon | 5-IX-1976’, ‘sift litter | along stream | D.S. Chandler’, ‘HOLOTYPE | *Gyrophæna* | *marjakata* sp.n. | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH).



FIGURES 11–16. *Gyrophaena marjakata* sp.n.: 11—habitus, 12—aedeagus, lateral view, 13—male abdominal tergite VIII, dorsal view, 14—male abdominal tergite IX, dorsal view, 15—female abdominal tergite VIII, dorsal view, 16—female abdominal sternite, dorsal view. Scale bars: 1 mm (11), 0.1 mm (12–16).



FIGURES 17–20. *Gyrophaena blatchleyi* Seevers: 17—habitus, 18—aedeagus, lateral view, 19—male abdominal tergite VIII, dorsal view, 20—male abdominal tergite IX, dorsal view. Scale bars: 1 mm (17), 0.1 mm (18–20).

Paratypes: 5 ♂, 12 ♀ [All paratypes are glued across narrow-triangular cards]: ‘Ariz[ona].: Graham Co[unty] | Pinaleno Mtns. | Wet Canyon | 5-IX-1976’, ‘sift litter | along stream | D.S. Chandler’, ‘PARATYPE | *Gyrophaena* | *marjakata* sp.n. | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH: 3 ♂, 10 ♀, cIE: 2 ♂, 2 ♀).

Description. Body length 1.70–2.20 mm; head brownish-black; pronotum, elytra and abdomen brown to dark brown; antennomeres I–IV yellow; antennomeres IV–XI yellowish red. Habitus as in Fig. 11. Body with reticulate microsculpture, more distinct on head and elytra. Head 1.4 times wider than long; with small, shallow, indistinct punctures in middle. Eyes slightly more than twice as long as wide. Antennal segment III slender and long, 1.3

times as long as IV, antennomeres IV–X incrassate; IV–V elongate, VI–X subquadrate to feebly transverse; segment X conical, 1.5 times longer than wide. Pronotum 1.8 times as wide as long, 1.3 times as wide as head; with weak, reticulate microsculpture and sparse distinct punctures in median area; basal portion of pronotum impunctate. Elytra 1.3–1.6 times wider than long and 1.6 times as wide as pronotum, with distinct reticulate microsculpture; each elytron with indistinct, sparse, small punctation and well-defined tubercles on external posterior angles. Microsculpture of abdomen as that on pronotum.

Male. Middle part of abdominal tergite VII with small medial tubercle; apical margin of abdominal tergite VIII with two strong, slightly incurved, rather obtuse lateral processes, and short, wide median tooth (Fig. 13); abdominal tergite IX as in Fig 14. Ventral plate of aedeagus wide and complex, with elongate bifurcate inferior part, curved acute superior part and strongly protruded latero-dorsal process, with very deep rounded notch between inferior and superior parts; dorsal projection of internal sac narrowly elongate, twisted (Fig. 12).

Female. Tergite VIII strongly transverse, trapezoid, with a small tip at the top (Fig. 15); sternite VIII rather acute rounded apically (Fig. 16).

Comparative notes. Based on the shape of antennomeres, arrangements of pronotal and elytral punctures and microsculpture, *G. marjakata* **sp.n.** belongs to the *coniciventr* group consisting of six Nearctic (*G. arizonae* Seevers 1951, *G. barberi* Seevers 1951, *G. blatchleyi* Severs 1951, *G. coniciventr* Casey 1906, *G. huachucae* Seevers 1951, *G. spatulata* Seevers 1951) and two Euro-asiatic species: the widespread *G. manca* Erichson 1839 and *G. aedugena* Enushchenko 2011, described from the Baikal Region (Enushchenko & Shavrin, 2011).

In the punctation, microsculpture of the body, shapes and structure of the aedeagus and male abdominal tergite IX, *G. marjakata* **sp.n.** is more similar to *G. blatchleyi* (Figs. 17–20), distributed in Michigan and Indiana, and can be distinguished from the latter by the larger body, darker coloration, distinctly elongated antennomere V and by the shape of the ventral plate of the aedeagus (pronotum of *G. blatchleyi* yellow-red, elytra and abdomen uniformly red-brown; antennomere V slightly transverse to slightly elongated; ventral plate of aedeagus wide, with acute and very small superior protrusion on medio-ventral margin of latero-dorsal process, as in Fig. 19).

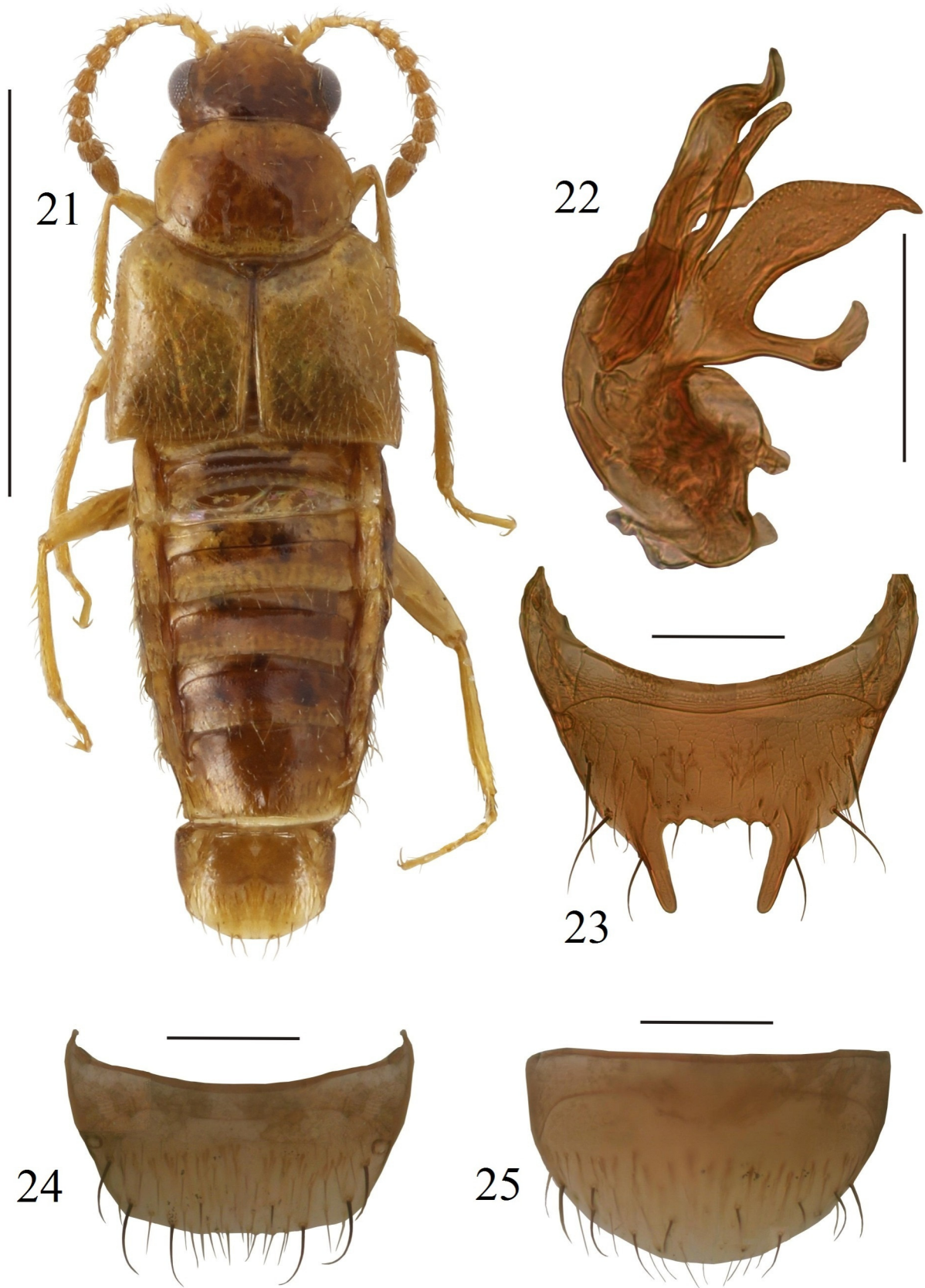
Etymology. The new species name is derived from the Uichol/Huichol Indians (the tribe of Central and West Mexico) ‘*mara’akate*’/‘*mara’akame*’ (plur.), (*sacrificer*), shaman performing the ceremony of eating sacred mushrooms and plants.

***Gyrophaena* (s. str.) *velada* Enushchenko, sp.n.**
(Figs. 21–25)

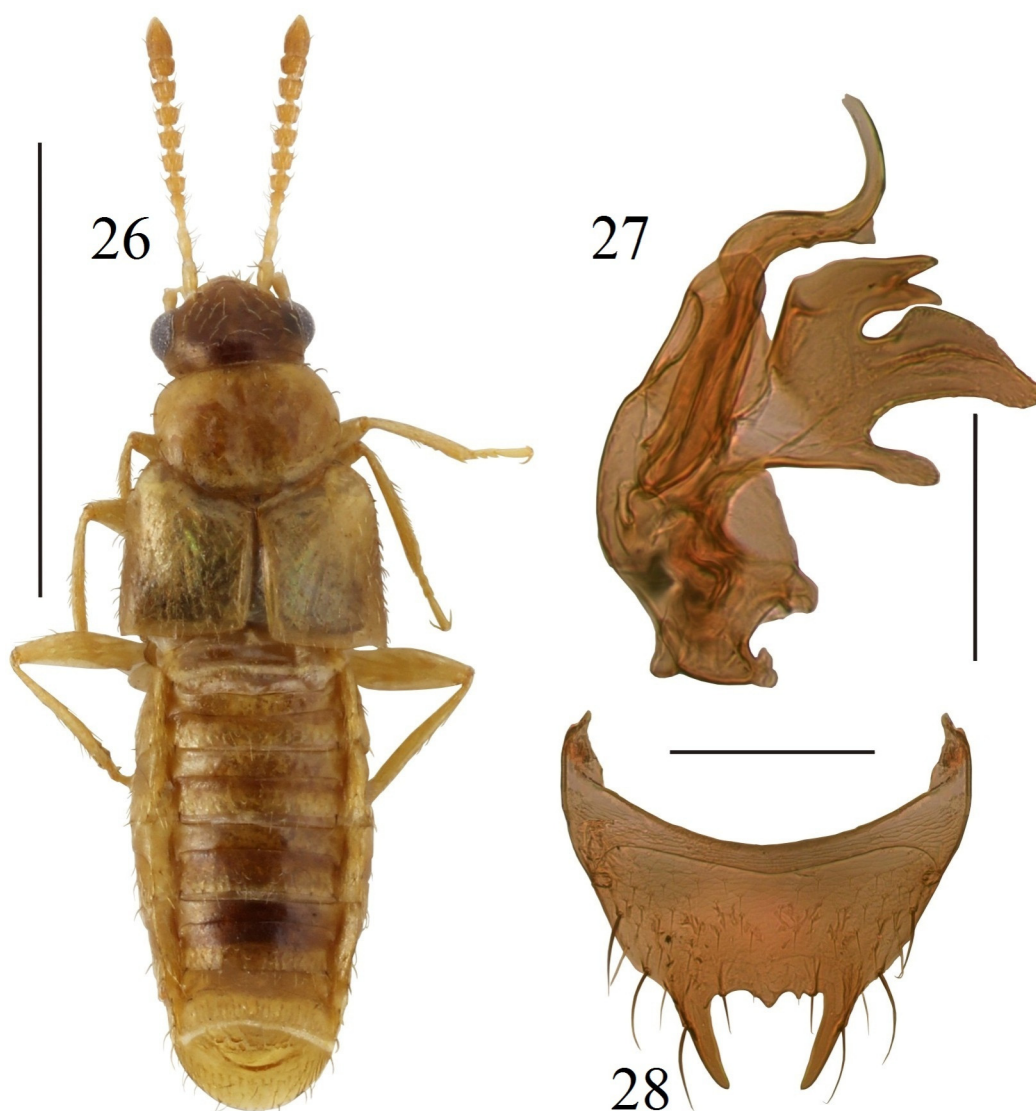
Type material examined: Holotype: 1 ♂ [Specimen was re-glued by me on a white rectangular card; a plastic plate with a preparation of the aedeagus, parameres and abdominal segments VIII–X in Canada balsam was pinned under the card with specimen]: USA: ‘USA: Arizona, Cochise Co[unty]. | n[ea]r. Portal Chiricahua | Mtns., below Rustlers P[ar]k. | 24-VIII-1965’, ‘FMHD #65-495. | on mushroom, | H.S. Dybas’, ‘HOLOTYPE | *Gyrophaena* | *velada* sp.n. | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH).

Paratypes: 2 ♂, 1 ♀ [Both paratypes were re-glued by me on white rectangular plates]: USA: ‘USA: Arizona, Cochise Co[unty]. | n[ea]r. Portal Chiricahua | Mtns., below Rustlers P[ar]k. | 24-VIII-1965’, ‘FMHD #65-495. | on mushroom, | H.S. Dybas’, ‘PARATYPE | *Gyrophaena* | *velada* sp.n. | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH); 1 spec. [Unsexed (without abdominal tergites IV–VIII and apical segment); Specimen is glued on a narrow-triangular plate]: USA: ‘USA: Arizona, Cochise Co[unty]. | n[ea]r. Portal Chiricahua | Mtns., below Rustlers P[ar]k. | 24-VIII-1965’, ‘FMHD #65-495. | on mushroom, | H.S. Dybas’, ‘PARATYPE | *Gyrophaena* | *velada* sp.n. | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH).

Description. Body length 2.10–2.40 mm. Head brown; pronotum, elytra and abdomen yellow-red to yellow-brown; antennae, mouthparts and legs yellow to yellow-red. Microsculpture moderately strongly reticulate. Habitus as in Fig. 21. Head 1.4 times as wide as long, with well distinct reticulate microsculpture and rather large punctures in middle. Antennomere III elongate, slender and long, 1.7 times as long as IV, antennomeres IV–X distinctly incrassate, antennomere IV longer than wide, antennomeres V and VI moderately large, distinctly elongate, antennomeres VII–X feebly elongate, subquadrate; apical antennomere conical, twice longer than wide. Pronotum 1.3 times as wide as long and head; vertex with distinct reticulate microsculpture and two rows of small, weak punctures in median part; medio-basal portion of pronotum impunctate.



FIGURES 21–25. *Gyrophaena velada* sp.n.: 21—habitus, 22—aedeagus, lateral view, 23—male abdominal tergite VIII, dorsal view, 24—female abdominal tergite VIII, dorsal view, 25—female abdominal sternite, dorsal view. Scale bars: 1 mm (21), 0.1 mm (22–25).



FIGURES 26–28. *Gyrophaena coniciventris* Casey: 26—habitus, 27—aedeagus, lateral view, 28—male abdominal tergite VIII, dorsal view. Scale bars: 1 mm (25), 0.1 mm (26–28)

Male. Middle part of abdominal tergite VII with smooth median tubercle; abdominal tergite VIII with two long, slightly incurved lateral teeth and three short ones between them; medial tooth short, wide angled (Fig. 23). Aedeagus (Fig. 22) with ventral plate strongly protruded laterally, bifurcate into smaller and narrower inferior part, hook-shaped, curved apically and wider and more convex in the middle part with small curved apex and narrow elongate superior part; apical portion of median lobe with narrow long and moderately wide and twisted dorsal projection; dorsal projection of very narrow internal sac slightly exceeding apex of median lobe. Female. Abdominal tergite VIII wide trapezoid (Fig. 24); abdominal sternite VIII broadly rounded apically (Fig. 25).

Comparative notes. Based on the coloration of the body, shape of male abdominal tergite VIII and aedeagus, *G. velada* **sp.n.** is similar to *G. coniciventris* (Figs. 26–28), known from eastern states of the United States (SeEVERS 1951), and differs from the latter by the larger body, distinctly elongated antennomere V, stronger microsculpture of the fore-body, more distinct punctation of the head, and by distinctly narrower projections of the ventral plate of the aedeagus, with long and very narrow superior part (superior part of ventral plate of the aedeagus of *G. coniciventris* significantly shorter and wider, with bilobate apex, as in Fig. 27).

Etymology. The name of a new species is derived from the word ‘*velada*’ (evening, in Spanish), the name of

the healing vigils carried out by Masatec/Mazateco Indians during the rituals involving the use of magic mushrooms during the secret ceremony of communication with spirits and to experience enlightenment.

***Phanerota (Phanerota) paradissimilis* Enushchenko, sp.n.**

(Figs. 29–33)

Type material examined: Holotype: 1 ♂ [A plastic card with a preparation of aedeagus and VIII abdominal segments in Canada balsam was pinned under the card with specimen]; **USA:** ‘SW shore of L[ake] Clay | n[ea]r. Lake Placid, | Highlands Co.[unty], FLA[rida] | June 14, 1955’, ‘GILL FUNGUS’ <handwritten>, ‘LEG. H.S. | DYBAS’ <handwritten>, ‘HOLOTYPE | *Phanerota* | *paradissimilis* sp.n. | Enushchenko I.V. | 2018 des.’ <red printed label> (FMNH).

Paratypes: 1 ♀: **USA:** ‘SW shore of L[ake] Clay | n[ea]r. Lake Placid, | Highlands Co.[unty], FLA[rida] | June 14, 1955’, ‘GILL FUNGUS’ <handwritten>, ‘LEG. H.S. | DYBAS’ <handwritten> (FMNH); 3 ♂, 1 ♀: ‘USA: Fla.[rida], | Highlands Co.[unty], | Bootheel C[ree]k., near | Venus, 12-VI-1955 | mushroom, | H.S. Dybas (FMNH)’; 1 ♂: ‘7 mi SE of Lake | Placid, Highlands Co.[unty] | VI : 19 [19]55 FLA.[rida] | ‘Parker Islands’, ‘ex mushroom / LEG. H.S. | DYBAS’ <handwritten> (FMNH); 2 ♂, 1 ♀; cIE: ♂; 1 ♂: ‘USA: Fla.[rida], Her- | nando Co.[unty], | Brooksville (7 | mi.[les] N), 20-VI-1955’, ‘at light, | H.S. Dybas’ (FMNH); 3 ♂, 4 ♀: ‘*Gyrophana* | *rufa* | Melsh.[eimer] | Am.[erica] bor.[ealis]’ <green handwritten label> (ZMM). All specimens were re-glued by me on white rectangular plates; all paratypes with red printed label: ‘PARATYPE | *Phanerota* | *paradissimilis* sp.n. | Enushchenko I.V. | 2018 des.’.

Description. Body narrowly oval; length 1.60–2.00 mm. Habitus as in Fig. 29. Head dark brown with yellow-brown spot on frons; pronotum and elytra yellow to yellow-brown; abdomen slightly darker, red-yellow; abdominal tergite VI dark-brown; legs, antennae and mouthparts yellow. Head 1.5 times as wide as long; vertex with slight reticulate microsculpture and sparse distinct punctures; median area impunctate. Antennomere IV as wide as long, antennomeres V–X subequal in length, V–VI slightly elongate, VII–X quadrate to slightly transverse; apical antennomere elongate, 1.3–1.5 times as long as wide. Pronotum shiny, smooth, almost twice as wide as long, widest in middle, posterior angles rounded; median rows of punctures weakly defined, with two shallow and moderately large punctures; basal portion of pronotum impunctate. Elytra 1.3 times as long as pronotum, 1.5 times as wide as long; with weak, indistinctly reticulate microsculpture and small, sparse tubercles on shoulders and external corners; median part of elytra without distinct punctures and tubercles. Microsculpture of abdomen as that on head, surface of tergites anteriorly with dense and small pits.

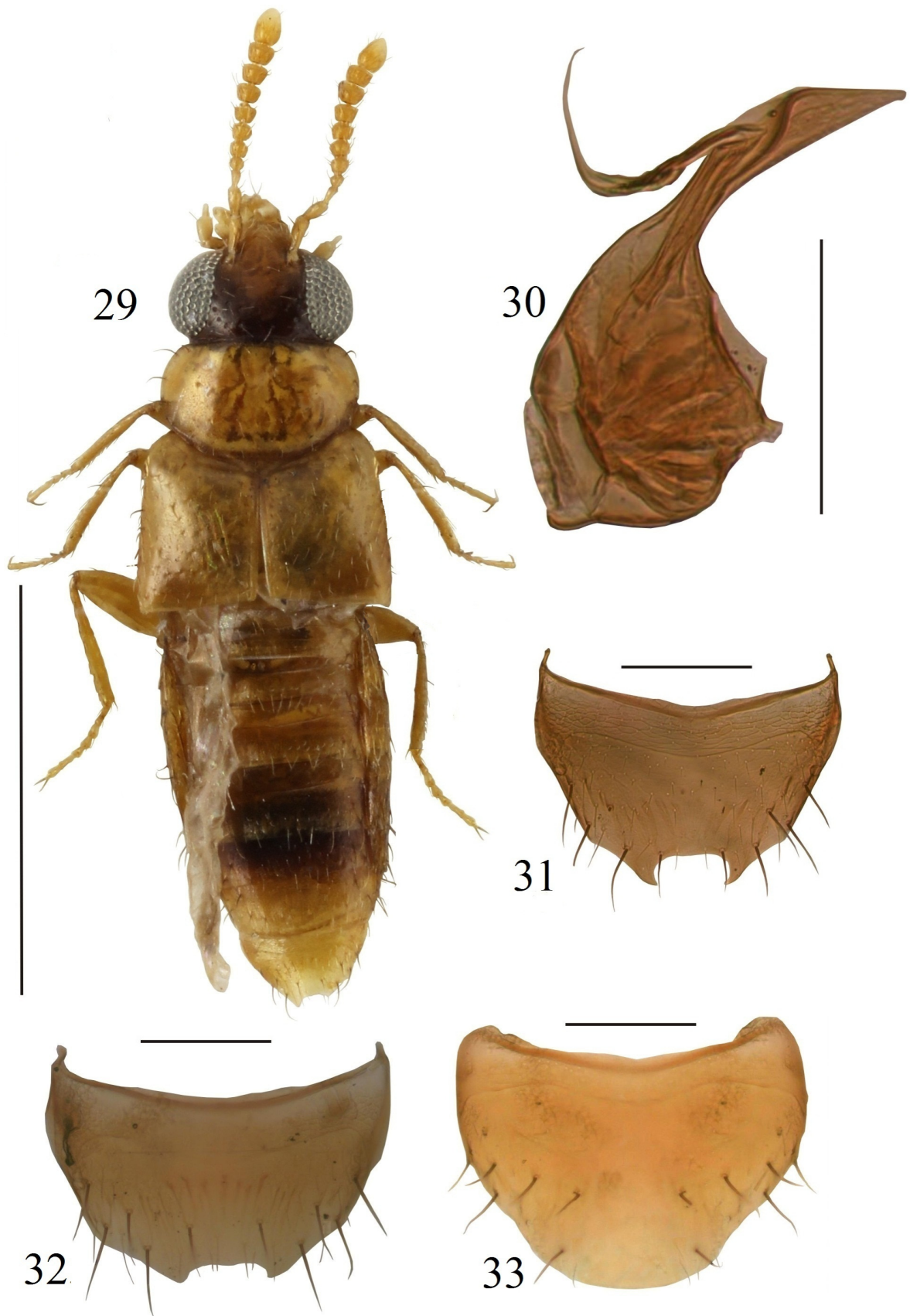
Male. Apical margin of abdominal tergite VIII (Fig. 31) with two short and broad lateral teeth, slightly curved inwards, with smooth margin between them. Aedeagus (Fig. 30) with broad basal part and elongate median lobe, with narrow middle part, slightly widened apically and narrowed toward acute apex; latero-apical projection of internal sac long, approximately as long as ventral plate, curved in middle.

Female. Tergite VIII strongly transverse and similar to that of male, but with shorter lateral teeth and distinctly wider distance between them (Fig. 32); sternite VIII wedge-shaped, with narrow lateral protrusions near apical part, broadly rounded apically (Fig. 33).

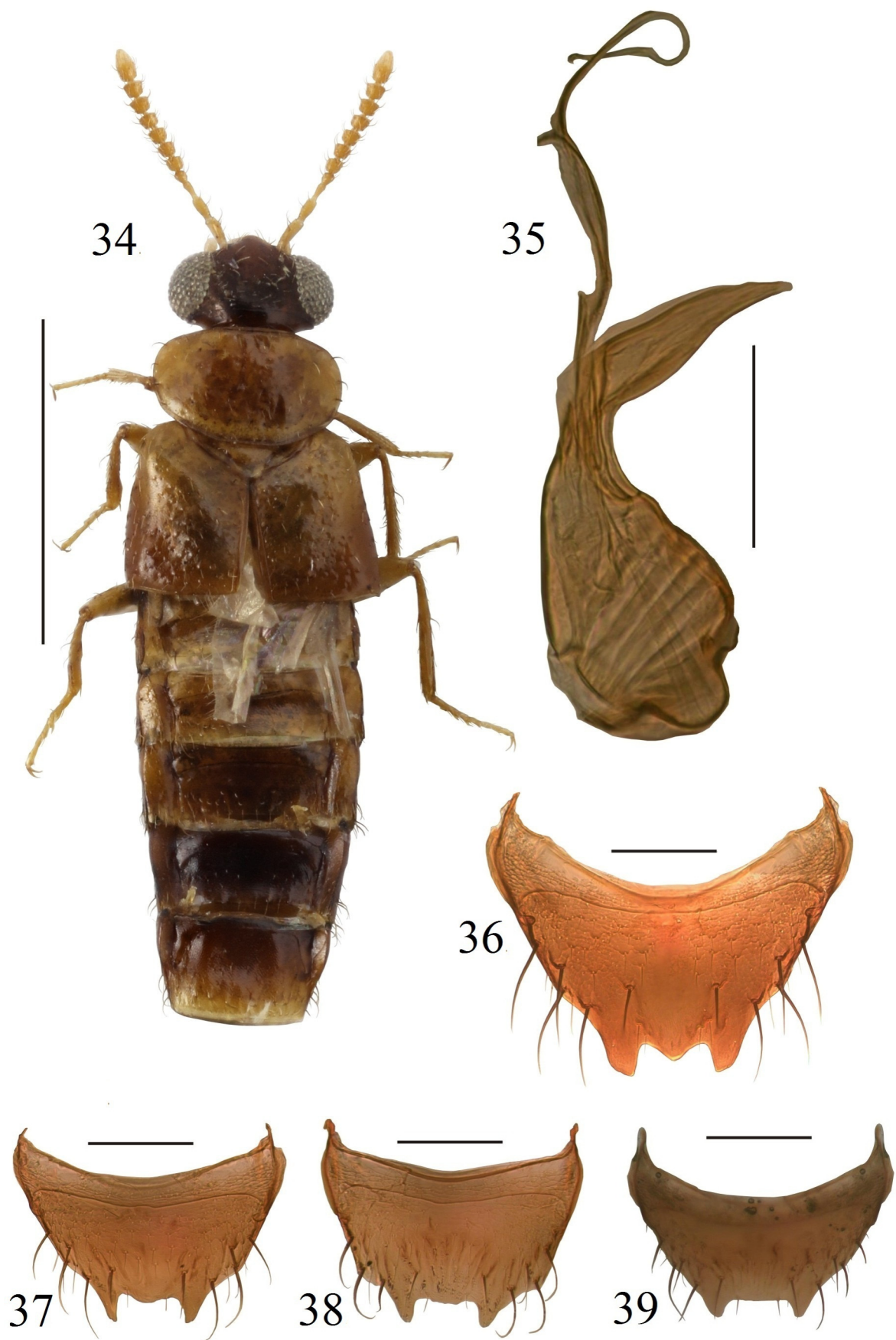
Comparative notes. Based on the general proportions of the body and reticulate head, the new species is similar to *Ph. dissimilis* (Erichson 1840) (Figs. 34–39), known from the eastern part of the United States: from Kansas to North Carolina in the east and from Michigan to Texas and Florida in the south (Seevers 1951). *Phanerota paradissimilis* sp.n. can be distinguished from *Ph. dissimilis* by the smaller body size, external and internal details of the structure of aedeagus (median lobe of aedeagus of *Ph. paradissimilis* sp.n. (Fig. 30) straight and shorter than that in *Ph. dissimilis* with distinctly narrower apical portion, slightly convex ventral margin of the median lobe and distinctly longer latero-apical projection of the internal sac, as in Fig. 35) and by the shape of the male abdominal tergite VIII (male abdominal tergite VIII of *Ph. dissimilis* with a crown of three rather broad, blunt teeth (Fig. 36), with a presence of the middle tooth. Rarely some males of *Ph. dissimilis* with somewhat modified shape of VIII abdominal tergites (Fig. 37–39), similar to those of *Ph. paradissimilis* sp.n. However, both species can be reliably recognized by the shapes of the aedeagus.

Etymology. The name of the new species alludes to its similarity to *Ph. dissimilis*.

Remarks. At the present time the species is known only from several localities on the Florida Peninsula.



FIGURES 29–33. *Phanerota paradissimilis* sp.n.: 29—habitus, 30—aedeagus, lateral view, 31—male abdominal tergite VIII, dorsal view, 32—female abdominal tergite VIII, dorsal view, 33—female abdominal sternite, dorsal view. Scale bars: 1 mm (29), 0.1 mm (30–33).



FIGURES 34–39. *Phanerota dissimilis* (Erichson): 34—habitus, 35—aedeagus, lateral view, 36—male abdominal tergite VIII, dorsal view, 37–39—mutant male abdominal tergite VIII, dorsal view. Scale bars: 1 mm (34), 0.1 mm (35–39).

Acknowledgements

I wish to thank my colleagues Margaret K. Thayer, James H. Boone, Crystal Maier (Chicago, USA) and Alexey A. Gusakov (Moscow, Russia), for making their specimens available for this study. Heartily thanks to Guillaume de Rougemont (Oxford, UK) for correction of the English text of the manuscript. I am grateful to my friend and colleague Alexey V. Shavrin (Daugavpils, Latvia) for support and assistance during the preparation of this study. Special thanks are due to Kirill V. Makarov (Moscow, Russia) for help in the preparation of the habitus photographs. I express my gratitude to Alfred Newton (Chicago, USA) for his help in searching some literature sources.

The study was supported by Program of the FASO 10345–2014–0008 (VIII.76.1.6)

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