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Asiopsectra gen. n., a second genus of the family Brachypsectridae (Coleoptera, Elateroidea) from the Palaearctic Region

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Abstract
A new genus of the family Brachypsectridae with two new species, *Asiopsectra luculenta* gen. et sp. n. (type species) from the Middle East (Iran) and *A. mirifica* sp. n. from Middle Asia (Tajikistan) are described. The genus *Asiopsectra* gen. n., in contrast to the genus *Brachypsectra*, is characterized by the 12-segmented bilamellate antennae, the very large and subcontiguous antennal fossae, the strongly raised supra-antennal keels, the very narrow mandibles, the presence of small "window" punctures on the elytra, the lack of keels along the posterior pronotal angles, and only a small patch of excretory hairs at the posterior edge of abdominal ventrite 5. A revised diagnosis for the family Brachypsectridae is given.

Keywords
Coleoptera; Elateroidea; Brachypsectridae; new taxa; Palaearctic

Introduction

The infraorder Elateriformia includes many families whose members manifest many similar trends of structural transformations making it difficult both to define family attribution of some groups, and to divide this enormous group into distinct subgroups with reasonable taxonomic significance of different ranks (Lawrence 1988; Lawrence et al. 1995, 2011; etc). At the same time, placement of some groups has frequently changed after re-estimation of the phylogenetic value of separate groups of characters. The genus *Brachypsectra* was initially proposed in the composition of the family Rhipiceridae Latreille, 1834 (LeConte 1874) and later its position was changed sometimes (e.g., Forbes 1926; Blair 1930, among others). Horn (1881) erected for this

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genus a new separate tribe within the family Dascillidae Guérin-Méneville, 1843. Crowson (1955), apparently following Barber (1905), put this family in the superfamily Cantharoidea mostly because of some larval characters (particularly the perforate mandibles), but later he (Crowson 1973) erected the superfamily Artematopoidea and transferred Brachypsectridae to it. Finally, Lawrence and Newton (1982) jointed Artematopoidea and Elateroidea into one supefamily, and then in many recent publications this united superfamily is regarded together also with all members of the former Cantharoidea. The new genus here described sheds light on the variability of this group and could be an important contribution to clarifying the systematics of the superfamily Elateroidea and phylogenetic links between its groups.

During recent studies on Elateroidea in the collections of the Zoological Institute of the Russian Academy of Sciences and Hungarian Natural History Museum (Budapest), two new species of the new genus were discovered. Comparison with representatives of different families of this superfamily made it possible to determine that they are rather similar and related to the genus *Brachypsectra* LeConte, 1874 (Brachypsectridae Horn, 1881). Till now, only one species of the family was known from the Palaearctic (Hájek 2010).

Material and methods

The type specimens of the new species are deposited in the collections of the Hungarian Natural History Museum, Budapest, Hungary (HNHM) and the Zoological Institute of the Russian Academy of Sciences, Saint Petersburg, Russia (ZIN). Male genitalia, after the standard preparation procedure, were dipped in a drop of Euparal and placed on a plastic card pinned below the mounted beetles. The digital colour photographs were taken with a Canon EOS 40D digital camera with a Canon MP-E 65 mm objective and on a Leica MZ9.5 stereo microscope equipped with a Leica DFC290 digital camera from dry specimens; they were combined using the Helicon Focus software. One of the holotypes was also examined with a Zeiss EVO 40 scanning electron microscope at the Herzen State Pedagogical University (Saint Petersburg) to test the characters not readily visible with optical equipment.

The superfamily Elateroidea sensu lato (Lawrence & Newton, 1995) is traditionally divided into two groups which formerly were usually called Elateroidea and Cantaroidea (Crowson, 1972, 1973; Kazantsev, 2013, among others) and in some recent publications these groups are respectively named as “clicking elateroids” and “soft-bodied elateroids” (Lawrence et al., 2007, 2011; Bocak et al., 2014; Kundrata et al. 2014, among others). Unfortunately because of many problems in the classification of the Elateroidea remain unsolved and currently are the focus of intensive discussions, in this paper these two groups of Elateroidea sensu lato are conventionally mentioned with the traditional names Elateroidea sensu str. and “Cantharoidea” (with quotation marks) till the phylogenetic relationship in Elateroidea will reach unambiguous interpretation.

Specimens of different elateroid groups for comparison were used from the ZIN collection.

Systematics

Order Coleoptera Linnaeus, 1758
Suborder Polyphaga Emery, 1886
Superfamily Elateroidea Leach, 1815
Family Brachypsectridae Horn, 1881

Redefined diagnosis for adults (after Costa et al. 2006).

Body of medium size (4–8 mm), oblong, slightly convex dorsally and ventrally, finely pubescent.

Head transverse, partly inserted into prothorax, without occipital carina or subgenal ridges; anterior part of frons strongly declined, so that mouthparts are directed ventrally; each supra-antennal fossa continuing ventrally and laterally to form a short and oblique subantennal groove. Eyes large to very large, globular, strongly protruding and finely faceted. Gular sutures diverging posteriorly. Antennae 11-segmented with subapical antennomeres expanded to form a pectinate club (weaker in female) or 12-segmented and bilamellate; scape longer than wide and longer than pedicel. Labrum small, free, well sclerotized, transverse and rounded or subtruncate at apex. Mandible small, unidentate, wide and subtriangular or narrow, slightly curved and subacute at apex, without mola or prostheca. Maxilla with galea and lacinia subequal in length; galea more or less hyaline and lined with setae; ultimate palpomere fusiform (Fig. 11). Mentum transverse and trapezoidal; ligula short; ultimate palpomere fusiform (Fig. 10).

Pronotum transverse, widest at base, with lateral carina not visible from above; anterior angles obtuse, not projecting anteriorly; posterior angles usually acute or obtuse and projecting posteriolaterally along sides of elytral bases; posterior carina, if present, meeting the lateral carina at top of posterior angles; disc slightly convex in male and somewhat flattened anteriorly in females (of *Brachypsectra*); posterior edge trisinuate with moderately developed interlocking device. Prosternum slightly convex or flattened to slightly depressed medially, at least twice as long as procoxal cavity; chin piece short and explanate or absent; head rest transverse and slightly oblique; prosternal process narrow, about 0.4 times as wide as procoxal cavity, with sides more or less converging apically and apex truncate or acuminate, extending posteriorly to fit into mesoventral cavity; procoxal cavities transverse, open internally, broadly open externally, postcoxal process of prohypomera short and angulate. Procoxae transverse with well-developed articulating area and slender trochantin more or less concealed under expansion of prosternal cowling. Scutellum abruptly elevated, with straight or widely rounded, carinate basal edge, slightly rounded lateral edges and rounded to subtruncate or slightly emarginate apex.

Elytra 1.5–2 times as long as wide combined and 3.2–5 times as long as prothorax; sides subparallel or slightly wider at posterior third; apices conjointly rounded; disc subflattened with nine very weak punctate striae or with irregular rows of "window" punctures; scutellary striole absent; humeri more or less well developed, carinate anteriorly, the carinae continuing along base to scutellar carina; epipleura complete, narrowed from base to level of anterior third of metepisterna and subparallel distally.

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Mesoventrite in same plane as metaventrite, mesepisterna clearly separated from one another and from mesoventrite; anterior part of mesothorax with pair of large and shallow procoxal rests and median convexity; mesoventral cavity in posterior part relatively large and deep, extending far beyond anterior edges of mesocoxal cavities. Mesocoxal cavities separated by little more than one-third of shortest diameter, slightly transverse, laterally open (partly closed by mesepisterna and mesepimera). Mesometaventral junction complex with metaventral knob fitting into notch on mesoventral process. Metaventrite relatively long and flattened; discrimen more or less expressed, vaguely indicated anteriorly but extending beyond base of metaventral process; metakatepisternal suture absent; visible portion of metepisterna moderately narrow, subparallel-sided and distant from mesocoxal cavity; metepimera concealed beneath elytra; metacoxae strongly transverse, extending laterally to meet epipleura; metacoxal femoral plates narrow, complete.

Hindwing (Fig. 14) about twice as long as wide, apical field 0.17 times as long as total wing length, with a pair of strongly oblique, apically diverging linear sclerites; radial cell about three times as long as wide, its base complete, forming right inner posterior angle; cross-vein r3 short and slightly oblique; basal portion of RP extending to basal third of wing; R-M loop moderately broad; median spur very slightly curved and reaching wing edge; median field with five free veins (MP3, MP4–CuA1, CuA2, AA3 and AA4); wedge cell absent; anal embayment weakly developed or absent, AP3–4 undivided; jugal remnant present.

Legs rather thin and moderately long; trochanters moderately elongate, trochanterofemoral joints more or less oblique; tibial spurs absent; tarsi 5-5-5; tarsomeres 1–4 combined more than twice as long as tarsomere 5; tarsomere 4 small, weakly lobed underneath; claws simple; empodium bisetose.

Abdomen with five flattened or convex and freely articulated ventrites, densely clothed with secretory hairs in both sexes, with more sparse hairs on ventrite 5, or only with patch of secretory hairs on ventrite 5; apical edge of abdominal ventrite 5 broadly rounded to subtruncate. Abdominal spiracles located on segments 1 to 8.

Male sternite 8 with bisinuate or Y-shaped mediobasal edge, forming a pair laterobasal struts and also a broad and rounded or subtruncate median plate (Figs. 17, 20); sternite 9 widely (Fig. 21) or narrowly (Fig. 18) fused at middle with base of tergite 9; tergite 9 basally rounded, apically deeply emarginate and separated from tergite 10 (Fig. 22) (if this tergite present) or apical tergal sclerite (tergite 9, or fused tergites 9+10), not divided and rounded at apex (Fig. 18). Aedeagus symmetrical, phallobase more or less emarginate at base, parameres narrow and simple, or each with subapical projection; penis trunk undivided, with short basal struts.

Female sternite VIII in *Brachypsectra* (after Costa et al., 2006) trapezoidal, with posterior edge sinuous and setose, spiculum ventrale well developed. Ovipositor elongate; paraproct longer than gonocoxites combined, with longitudinal baculi; proximal and distal gonocoxites indistinctly separated, styli well developed, articulated. Internal tract with long anterior bursa and spermathecal duct entering tract between gonopore and base of bursa; spermatheca slender.

Genus *Asiopsectra* gen. n.

Type species: *Asiopsectra luculenta* sp. n.

Composition

Type species and *A. mirifica* sp. n.

Diagnosis

Body elongate oval, slightly convex dorsally and ventrally, dark-coloured. Head large, supra-antennal carinae more or less prominent, subcontiguous. Eyes large or very large, hemispherical or nearly spherical, finely faceted. Antennal fossae very large and narrowly separated from each other, their inner ridges anteriorly conjoined to sharp median carina. Epicranial part between antennal fossae and anterior edge of epicranium distinctly impressed, subtriangular. Antennae moderately long, 12-segmented, bilamellate. Scape longer than wide, considerably longer and wider than pear-shaped pedicel; antennomere 3 elongate and slightly enlarged apically. Antennomeres 4–11 somewhat enlarged to apices, each antennomere with a pair of diverged, moderately long and nearly flattened lamellae, each of them transversely emarginate at apex and bearing long needle-like seta at each side of apical emargination (Figs 5, 6). Ultimate antennomere relatively small, compressed, its apex slightly emarginate and with some needle-like setae. Labrum transverse and rounded at apex. Mandibles narrow, slightly curved and subacute at apex. Pronotum with a pair of more or less distinct paramedial fossae and slightly conspicuous longitudinal median impression, its posterior angles distinctly projecting posteriolaterally, without supplementary and posterior carinas. Dorsal surface of head and pronotum covered with polygonal meshes with distinct central granule bearing hair in each mesh. Prosternum subflattened to slightly depressed medially and without visible chin piece (Fig. 13). Scutellum subflattened, more or less transverse, subpentagonal. Rows of elytra slightly conspicuous due to coarse elytral sculpture. Elytra with deep and very coarse, rugose and at least partly confluent sculpture around "window" punctures. Metaventrite with discrimen along entire length or partly obliterated. Metacoxal femoral plates somewhat lengthening inwards. Tarsi subequal in length with tibiae; tarsomeres 1–4 combined more than twice as long as tarsomere 5; tarsomere 1 elongate, subequal to or barely shorter than tarsomere 2 and about 1.5 times as long as tarsomere 3; tarsomere 4 small with weak ventral lobe. Abdominal integument rough, with fine, shallow and dense punctures; last abdominal ventrite with small, transverse patch of dense, dark excretory hairs before apical edge (Figs 7, 15). Male sternite 9 narrow, slightly emarginate apically; basolateral struts fused medially to stalk, fused at middle with the base of tergite 9 (Fig. 18). Tergite 9 (or tergites 9+10 fused in one sclerite) broadly rounded apically. Parameres of aedeagus gradually narrowing apically, their apices acute and slightly deflected outwards.

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Comparison

The somewhat transverse projecting procoxae with exposed trochantin and free abdominal ventrites of *Asiopsectra* gen. n. are similar to those in members of "Cantharoidea". The characteristic long prosternal process of the new genus provides a basis to consider it among Elateroidea sensu str. rather than "Cantharoidea" (the latter have not any raised prosternal process). The members of the Omalisidae Lacordaire, 1857 have a short and slender prosternal process, but they differ from *Asiopsectra* gen. n. in the number of ventrites (seven free ventrites in *Omalisus* Geoffroy, 1762 and *Phaeopterus* A. Costa, 1856, six in *Cimbrion* Kazantsev, 2010). The recent members of elateroid families possess subspherical procoxae, except the Plastoceridae Crowson, 1972 and Brachypsectridae. The plastocerids, in contrast to the new genus, are characterized by six visible abdominal ventrites with the connate abdominal ventrites 1–3 and exposed ventrite 7 (derivate of sternite 9) participating in the male genital capsule, the tibiae with two distinct apical spurs, the ultimate palpomeres subruncate apically, and the male sternite 9 not fused at middle with the base of tergite 9. Crowson (1972) pointed out that the plastocerid abdomen includes six "freely articulated" ventrites; however, the dissected abdomen of *Plastocerus angulosus* (Germar, 1845) from Asia Minor (ZIN collection) shows that the basal three ventrites are indeed immovably jointed. The hindwing venation of the new genus is particularly similar to that in the genus *Brachypsectra*, although separate structural details of the hindwing of both demonstrate similarity with homologous elements of the hindwing in different elateroids. The new genus is distinct from *Brachypsectra* in the 12-segmented and bilamellate antennae, the very large and subcontiguous antennal fossae, the strongly raised supra-antennal keels, the very narrow mandibles, the presence of small "window" punctures on the elytra, the lack of keels along the posterior pronotal angles, only the small patch of excretory hairs at the posterior edge of abdominal ventrite 5, and also in the structure of the pregenital segments (see description).

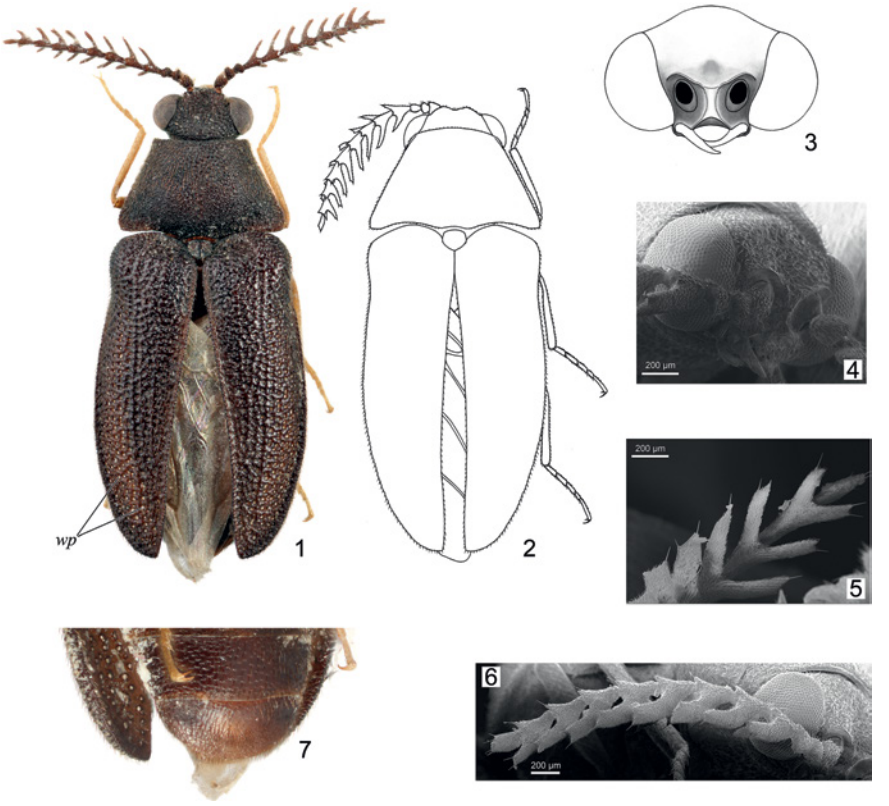
Etymology

The generic name is formed from the name of the continent of origin of both new species (Asia) and Greek "ψήκτρα", meaning "scraper" or "currycomb". Gender feminine.

Notes

The abdominal base of the examined holotypes of both new species demonstrated a clear ability to move. This feature can be interpreted as a support of free articulation between the ventrites 1–3.

Asiopsectra luculenta sp. n. (Figs 1–7, 16)
Holotype, ♂ with labels "IRAN, prov. Fars, Zagros, 5 km above Thangebolhayat (to Shiraz), 1750 m, 6–7.x.2002, leg. P. Gyulai & A. Garai" (HNHM). The left mid leg of the holotype is lost.



Figs 1–7 *Asiopsectra luculenta* gen. et sp. n., holotype. (1) Body, dorsal view (*wp*, "window" punctures). (2) Outline of body. (3) Head, frontal view. (4) Head, frontolateral view. (5) Apex of antenna with needle-like setae on lamellae, ventral view. (6) Antenna, lateral view. (7) Abdominal apex, ventral view. Length of specimen 5.3 mm. This figure is published in colour in the online edition of this journal, which can be accessed via http://booksandjournals.brillonline.com/content/journals/1876312x.

Diagnosis

This new species differs from the second congener (below) in the smaller body size, the much larger eyes making the head wider than the anterior prothoracic foramen, the smaller mandibular sinuses, the less transverse pronotum with less projecting and rounded posterior angles, the shorter elytra with coarser sculpture and with the less raised longitudinal costae. The male genitalia of this new species (Fig. 16) are rather similar to those in another congener (Fig. 19) and differences in this organ between both species can be defined after a further study of additional material.

Description

Body length 5.30 mm, width 2.25 mm.

Head and pronotum dull, elytra slightly shiny; body colouration brownish black, antennae dark brown; femora brown with lighter apices; tibiae, tarsi and mouthparts

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brownish yellow. Dorsum with subuniform short, semirecumbent, inconspicuous brownish hairs. Underside with fine recumbent brownish hairs.

Head large, about 1.1 times as wide as distance between anterior angles of pronotum. Eyes very large, globular (Figs 3, 4). Supra-antennal carinae sharp, nearly contiguous from frontal view, slightly concave above antennal insertions from dorsal view. Mandibular sinuses moderately large.

Pronotum transverse, about 1.65 times as wide as long along middle, trapezoidal, narrowing anteriorly, posterior angles rounded at apex, distance between them 1.8 times that between anterior angles; disc moderately convex and with pair of nearly indistinct paramedial impressions in anterior half and with scarcely conspicuous median impression.

Elytra about 1.65 times as long as wide combined behind middle, and about 3.2 times as long as pronotum; humeri well expressed, sides behind them gently arcuate to apices; sutural edges slightly emarginate; disc subflattened, with irregular rows of "window" punctures of different size and two more or less expressed longitudinal costae on disc (?odd-numbered interstriae). Elytral integument very rough due to deep irregular and partly confluent depressions bearing oval "window" punctures in bottom of depressions, convex interspaces between punctures more or less obliterated and somewhat shiny.

Abdomen convex; last abdominal ventrite with small, transverse patch of dense, dark excretory hairs in median part before broadly rounded apical edge (Fig. 7).

Aedeagus as in Fig. 16.

Etymology

The epithet of the new species in Latin means "striking", "distinguished", "excellent".

Asiopsectra mirifica sp. n. (Figs 8–15, 17–19)

Holotype, ♂ with labels "Кондара, 1100 м, д. Варзоза, Тадж., Гуссаковский, 26.VIII.945" (Tajikistan, valley of Varzoz (apparently Varzob) River, Kondara Gorge, Gussakovskij, 26.viii.1945) (ZIN). The holotype is without left mesotibia and mesotarsus, right mesotarsomeres 2–5 and left posterior leg; also, its left antenna is broken with missing last two antennomeres and the right antenna is represented by only antennomeres 1 and 2.

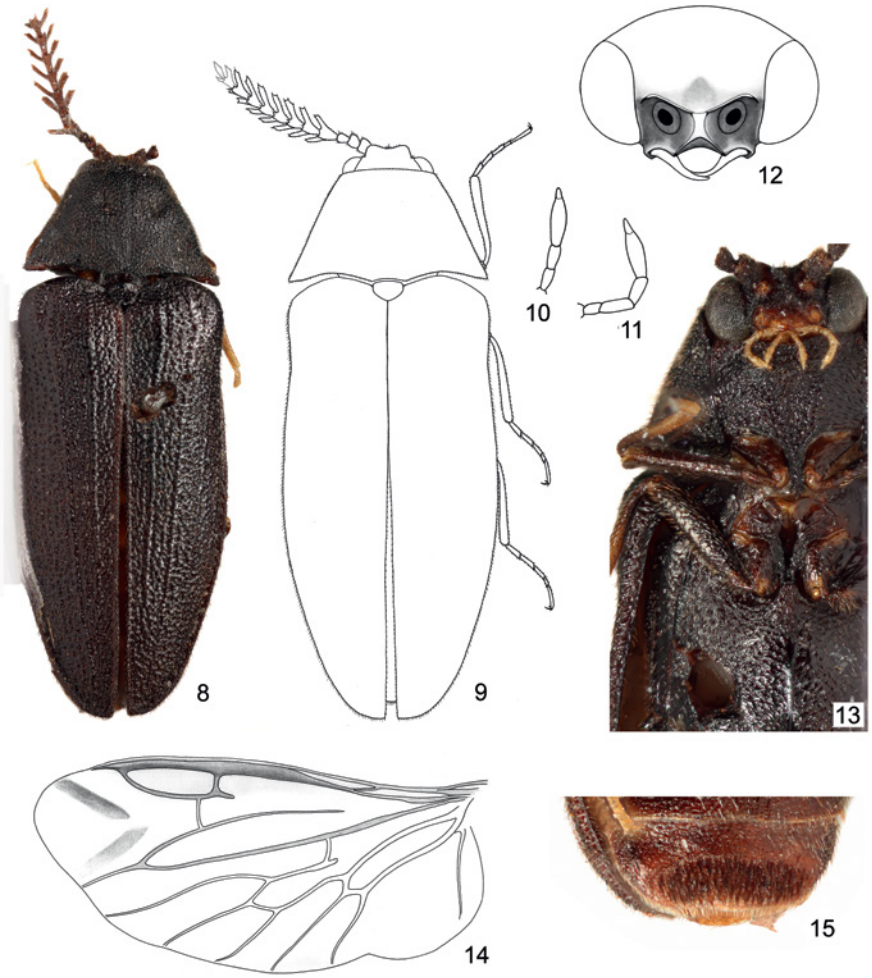
Diagnosis

See the diagnosis of the previous species.

Description

Body length 6.65 mm, width 2.55 mm.

Head and pronotum dull, elytra feebly shiny; body colouration brownish black; antennae and femora dark brown, knees somewhat paler; tibiae brown at base, gradually becoming brownish yellow to apex, tarsi and mouthparts brownish yellow.



Figs 8–15 *Asiopsectra mirifica* gen. et sp. n., holotype. (8) Body, dorsal view. (9) Outline of body. (10) Labial palp. (11) Maxillary palp. (12) Head, frontal view. (13) Head and thorax, ventral view. (14) Hindwing. (15) Abdominal apex, ventral view. Length of specimen 6.65 mm. Length of hindwing 5.4 mm. This figure is published in colour in the online edition of this journal, which can be accessed via http://booksandjournals.brillonline.com/content/journals/1876312x.

Dorsum with subuniform short, inconspicuous brownish hairs. Underside with fine and recumbent brownish hairs.

Head large, about as wide as distance between anterior angles of pronotum. Eyes large, hemispherical (Fig. 12). Supra-antennal carinae strongly protruded, nearly contiguous from frontal view; convex above antennal insertions from dorsal view. Mandibular sinuses very large, saucer-like.

Pronotum distinctly transverse, about 1.8 times as wide as long along middle, trapezoidal, subrectilinearly narrowing to apex; posterior angles acute and narrowly rounded at tip, distance between them 2.15 times greater than that between anterior

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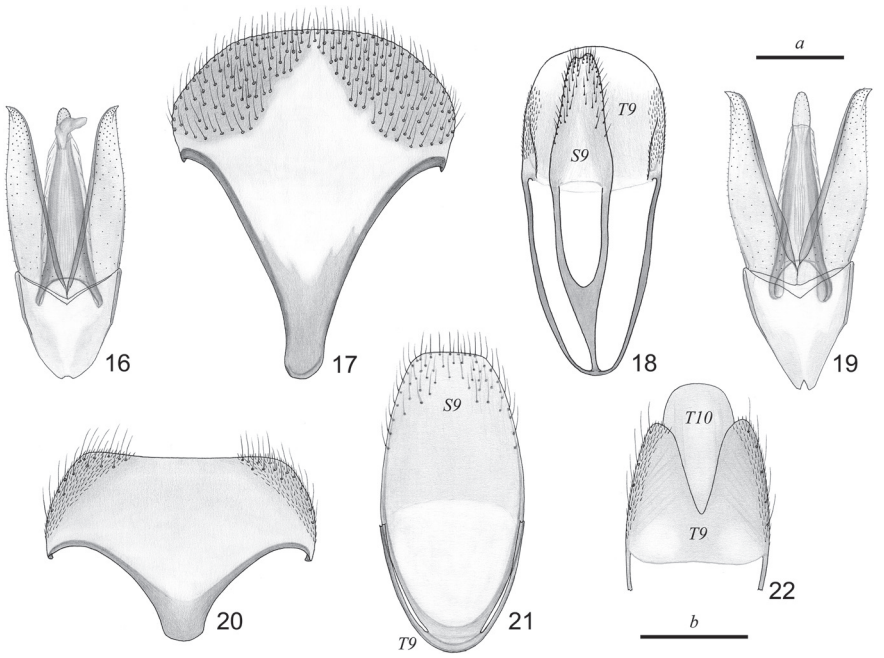

Figs 16–22 Brachypsectridae, male genitalia and pregenital sclerites. (16) *Asiopsectra luculenta* gen. et sp. n., aedeagus. (17–19) *Asiopsectra mirifica* gen. et sp. n.: (17) sternite 8; (18) sternite 9 with tergite 9 (or 9+10); (19) aedeagus. (20–22) *Brachypsectra fulva* LeConte, 1874: (20) sternite 8; (21) sternite 9 with base of tergite 9; (22) tergites 9 and 10. Abbreviations: *S9*, sternite 9; *T9*, tergite 9; *T10*, tergite 10. Scale bars: *a*, 0.5 mm for figs 16–19; *b*, 0.5 mm for figs 20–22.

angles; disc moderately convex, with a weak median groove, a pair of large and distinctly impressed round paramedian fossae before middle, and a pair of smaller and less distinct paramedian impressions posteriolaterally of the former pair.

Elytra combined about twice as long as wide behind the middle and 3.87 times as long as pronotum; humeri well developed, prominent; sides somewhat constricted in anterior third and slightly arcuately widening behind and from middle narrowing to rounded apices forming a joint arc; sutural edges more or less straight; disc subflattened, with four clear and more or less rectilinear longitudinal costae (? odd-numbered interstriae) with a row of "window" punctures at each side of every costa; intervals between adcostal rows of "window" punctures with less regular double rows of "window" punctures. Elytral integument more or less rough due to deep irregular and partly confluent depressions bearing oval "window" punctures in bottom of depressions; convex interspaces between punctures finely rugose and slightly shiny (nearly dull). Last abdominal ventrite with large patch of very dense, dark excretory hairs along subtruncate apical edge (Fig. 15).

Aedeagus as in Fig. 19.

Etymology

The epithet of the new species in Latin means "wonderful" "amazing".

Discussion

The most prominent diagnostic characters of the new genus are seen in the structure of the head and antennae. The very narrow mandibles could be explained by some peculiarities in diet and feeding behaviour. The very large and subcontiguous antennal fossae and the strongly raised supra-antennal keels seem to be associated with a comparatively strong development of the antennae of the bilamellate type. This type of antennae is generally rare among Coleoptera, but occurs in various groups of Elateroidea. A similar structure of antennae is found in some Elateridae Leach, 1815 in different subfamilies (*Anisomerus* Schwarz, 1897; *Pityobius* LeConte, 1853, and *Sinoaplastinus* Schimmel, Platia et Tarnawski 2008) and in Eucnemidae Eschscholtz, 1829 (some Afrotropical and Madagascan *Phyllocerus* Le Peletier et Audinet-Serville, 1838; *Goudotus* Fleutiaux, 1945; *Cladidus* Fleutiaux, 1918; *Procladidus* Fleutiaux, 1921; *Sarpedon* Bonvouloir, 1871). Also, bilamellate or "perfoliate" antennae are widespread among various groups of Lampyridae Rafinesque, 1815 (*Psilocladus* Blanchard, 1846; *Pollaclasis* Newman, 1838; *Cyphonocerus* Kiesenwetter, 1879; *Alecton* Laporte de Castelnau, 1833; many Pleotomini Summers, 1874; *Lamprocera* Laporte de Castelnau, 1833; *Lucio* Laporte de Castelnau, 1833) and in Rhagophthalmidae Olivier, 1907 (*Bicladodrilus* Pic, 1921; *Bicladon* Pic, 1930; *Diplocladon* Gorham, 1883; *Dodecatoma* Westwood in Guérin-Méneville, 1849; *Falsophrixothrix* Pic, 1937), as well as in the genus *Cydistus* Bourgeois, 1885, of uncertain position in the infraorder Elateriformia. In the above-mentioned groups, the appearence of paired lamellae on each of the flagellomeres seems to often be combined with regular transformation of the ultimate antennomere dividing it into two segments, e.g., in *Pityobius*, *Phyllocerus*, *Alecton*, *Diplocladon*, *Dodecatoma*, *Cydistus*, etc. Within the genus *Brachypsectra*, there are species with the widened and subtruncate apices of the distal flagellomeres making the antennal type almost pectinate rather than clubbed. In addition, the apices of some (mostly preapical) flagellomeres in distal view (apical plane of flagellomeres) are not suboval but showing a trend to form isolated lobes (Costa et al. 2006: p. 420, fig. 40). *Brachypsectra moronei* Branham in Costa et al., 2006 from the Miocene Dominican amber has comparatively long subpectinate antennae with antennomeres 4–10 bearing an apical lobed process on each antennomere (Costa et al. 2006: p. 431: "acute spines in the distal inner angle of antennomeres 6–10"). The latter species was described without mention of many characters which were scarcely visible because of the condition of the amber piece containing the holotype, although taking into consideration the antennal structure and also the transverse (not oblique) and more oval metacoxae, its generic distinctness can be assumed.

Another very prominent feature of both new species is the presence of clear "window" punctures on their elytra. It is more characteristic of most recent archostematans which have this peculiarity as a synapotypy of the oldest coleopterans (Kirejtshuk et al. 2014), and thus the most common recent archostematans are known as "reticulated beetles" (Cupedidae Laporte, 1836 sensu lato, including Ommatinae Sharp et Muir, 1912) as their elytra maintain the more or less raised traces of primary venation and traces of the initial wing membrane. However, different elateriformian and cucujiformian groups secondarily and independently acquired a

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similar elytral structure in cases where widening of fine punctures continued into columellae piercing the elytra. Except for the new brachypsectrid genus, such an elytral structure is present in members of some elateroids, such as Omethidae LeConte, 1861, Omalisidae, Lycidae Laporte, 1856, etc., and also byrrhoids (Callirhipidae van Emden, 1924), cucujoids (Protocucujidae Crowson, 1954) and some Sphindidae Jacquelin du Val, 1860, sometimes reaching a considerable similarity with that in cupedids (some lycid genera). Thus, the above considered structural characters could originate as a result of homoplasy.

There have been proposed some different interpretations of phylogenetic relations for Elateroidea sensu lato and placement of the Brachypsectridae which were reviewed by Costa et al. (2006). Forbes (1926) considered the hindwing folding in *Brachypsectra* as more similar to that in Elateridae and Lampyridae. Blair (1930) noted that adults of *Brachypsectra* are more similar to Elateridae or Eucnemidae in the form of the clypeus, the carinate posterior pronotal angles, the prolonged prosternal process fitting into a cavity in the mesoventrite, the metacoxal femoral plates, and the form of the aedeagus. The latter researcher also noted a resemblance of *Brachypsectra* to *Cerophytum* and suggested their probable affinity. However, larval characters of *Brachypsectra* are compatible with "Cantharoidea" rather than with other elateroids sensu lato (Barber 1905; Crowson 1955; etc.). Thus, the differences in interpretation depend on what characters, larval or imaginal, are under more detailed analysis. Kasap and Crowson (1975), considering the free abdominal ventrites in adults, did not exclude any of two possibilities: either Brachypsectridae belong to "Cantharoidea" and/ or to "Artematopoidea", although these authors placed Brachypsectridae in the latter superfamily. In the cladograms of Lawrence (1988) and Lawrence et al. (1995), after an analysis of all available characters, it was shown that the Brachypsectridae can be placed in most cases at the base of Elateroidea sensu str. (Cerophytidae, Eucnemidae, Throscidae Laporte, 1840, and Elateridae). Costa et al. (2006) followed this tradition and concluded that the Brachypsectridae is a basal group of the Elateroidea sensu str.; however, the latter authors pointed out that the relationships within this group are not well understood, and many problems remain unsolved. A considerable difficulty is in the combination of plesio- and apotypic structural features of Brachypsectridae, as well as in the problems of probability of homoplastic transformations within Elateroidea in general. McKenna et al. (2015) proposed a phylogenenetic model for the order Coleoptera based on DNA sequence data from eight nuclear genes, and put Brachypsectridae in their Bayesian summary tree, together with Eucnemidae, Throscidae and Cerophytidae, while in their maximum-likelihood summary tree the Brachypsectridae fell into the branch with Elateridae and some "Cantharoid" families (Cantharidae, Lycidae, Omalisidae, Lampyridae, Phengodidae LeConte, 1861, Rhagophthalmidae and Drilidae). On the other hand, Brachypsectridae are known only from Lower Miocene Dominican amber (Burdigalian) as fossils (Woodruff 2004; Costa et al. 2006) which does not support a very old origin of this group in comparison with other close relatives (Chang et al. 2010; Kovalev et al. 2013; Kirejtshuk & Ponomarenko 2015, among others). The discovery of a new genus of this family provides important additional data for a future analysis of relationships in the superfamily Elateroidea.

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