

CONTRIBUTION TO THE KNOWLEDGE OF THE CLICK-BEETLES OF YEMEN AND OMAN (COLEOPTERA, ELATERIDAE)

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Abstract: Seven new species of click-beetles belonging to the genera *Saudilacon* Chassain, *Aeoloides* Schwarz, *Procrerus* Reitter, *Cardiophorus* Eschscholtz, *Dicronychus* Brullé and *Craspedostethus* Schwarz, from Yemen and Oman, are described.

Key words: Coleoptera, Elateridae, *Saudilacon*, *Aeoloides*, *Procrerus*, *Cardiophorus*, *Dicronychus*, *Craspedostethus*, new species, new distribution records, Yemen, Oman.

Aportación al conocimiento de los elatéridos de Yemen y Omán (Coleoptera, Elateridae)

Resumen: Se describen siete especies nuevas de los géneros *Saudilacon* Chassain, *Aeoloides* Schwarz, *Procrerus* Reitter, *Cardiophorus* Eschscholtz, *Dicronychus* Brullé y *Craspedostethus* Schwarz de Yemen y Oman.

Palabras clave: Coleoptera, Elateridae, *Saudilacon*, *Aeoloides*, *Procrerus*, *Cardiophorus*, *Dicronychus*, *Craspedostethus*, especies nuevas, nuevos registros, Yemen, Omán.

Taxonomy / Taxonomía: *Saudilacon kadleci n. sp.*, *Aeoloides yemenita n. sp.*, *Procrerus ambrusii n. sp.*, *Cardiophorus niger n. sp.*, *Dicronychus bicoloratus n. sp.*, *Dicronychus unimaculatus n. sp.*, *Craspedostethus punctulatus n. sp.*

Introduction

The examination of material of click-beetles from Yemen, received for study from the Natural History Museum of Prague by the courtesy of Dr. J. Hajek and from Oman by the czech colleague R. Ambrus, give me the opportunity to describe seven new species. Particularly interesting are the discoveries of a new species of the genus *Saudilacon* Chassain, 1983, the second known for Yemen and the presence for the first time of a new species of the genus *Procrerus* Reitter, 1905 not still recorded from the Arabian peninsula.

Material and methods

Body measurements. Body length is measured along the midline from the anterior margin of the frons to the apex of the elytra; the width is measured across the broadest part of the entire beetle.

Pronotal measurements. The pronotal length is measured along the midline; the width at the broadest part, which is most usually at the hind angles.

Abbreviations. The names of institutions, museums and private collections containing material studied are abbreviated as follows: **CAP**, Ambrus coll., Praha (Czech Republic); **CPG**, Platia coll., Gatteo (Italy); **NMPC** Národní Muzeum (Jiří Hájek), Praha, (Czech Republic).

The tribal placement of genera listed below follows Bouchard *et al.* (2011).

Results

Tribe Agrypnini Candèze 1857

Saudilacon kadleci n. sp.

Fig. 1, 11, 15, 18.

MATERIAL EXAMINED. Holotype ♂ - W Yemen: Jabal Bura' NEE, Al Hudaydah (14°52'N, 43°24'E), 260-600 m, 9-11.IV.2007, S. Kadlec (NMPC).

DIAGNOSIS. Second species of the genus *Saudilacon* Chassain, 1983 from Yemen, it can be separated from *S. balcis* Wurst, Schimmel & Platia, 2001 for the shorter antennae and pronotum just wider than long.

DESCRIPTION. Male. Moderately shiny; head and pronotum dark-brown, lighter at anterior and posterior margin, elytra blackish; antennae and legs yellow-ferruginous; covered with dense, recumbent and yellowish and silvery scales; silvery scales forming a few apparent transversal band behind the middle and around the apical extremities.

Head with eyes narrower than the anterior margin of pronotum, frons moderately impressed at the vertex, flat at the anterior margin; punctures coarse, umbilicate, with variable intervals.

Antennae short not reaching the apicis of the posterior angles of pronotum for about two articles, serrated from the fourth article on; second article subcylindrical, twice longer and twice in diameter than third; second and third taken together as long as the fourth; fourth-tenth triangular, fourth longer than wide, fifth-tenth wider than long, last longer than penultimate, subellipsoidal, constricted before the apex.

Pronotum 1.07x wider than long, widest at middle, regularly convex; sides from middle anteriad regularly narrowing, posteriad very gradually narrowing, briefly restricted before the apicis of posterior angles, the latter acuminate and slightly divergent; punctures coarse, superficial, umbilicate, on the disk with intervals on average equal to their own diameters, denser at sides.

Scutellum shield-shaped, shallowly impressed at middle, without any incision at base, sparsely punctured.

Elytra 2.34x longer than pronotum and as wide as it, convex; sides subparallel from base to after the middle then gradually narrowing to the apicis; striae deeply punctured, interstriae flat, more finely punctured.

Wings atrophied nearly reaching the middle of elytra.
Male genitalia as in fig. 1 (length 0.55 mm).
Size. Length 3.75 mm; width 1.25 mm.

ETYMOLOGY. The species is dedicated to the collector S. Kadlec.

Tribe Oophorini Gistel, 1848

Aeoloides yemenita n. sp.

Fig. 2, 2a, 8, 8a, 12, 16, 19.

MATERIAL EXAMINED. Holotype ♂ - SW Yemen: Wadi Zabid E, Zabid (14°09'N, 43°31'E), 325 m, 22.III.2007, S. Kadlec (NMPC). 2 Paratypes ♀ - same data as Ht; W Yemen, 10 km W Al Mansurah (14°43'N, 43°12'E), 110 m, 8.IV.2007, S. Kadlec (CPG; NMPC).

DIAGNOSIS. A species allied to *A. holzschuhi* Platia & Schimmel, 1997 for the presence of a tubercle at base of pronotum, it can be separated for the smaller size, the pronotum as long as wide and the shorter elytra compared to the pronotum.

DESCRIPTION. Male. Moderately shiny; yellow-ferruginous, blackish on the pronotal disk and the great part of elytra; antennae and legs yellowish; covered with dense, recumbent, yellow-golden vestiture.

Head with eyes a little narrower than the anterior margin of pronotum, frons flat, punctuation double, very dense and fine punctures mixed with more sparse and larger.

Antennae short, not reaching for about two articles the apicis of posterior angles of pronotum, very slightly serrate from fourth article on; second and third articles subcylindrical with the third 1.4x longer than second, taken together 1.2 x longer than fourth; fourth and following subtriangular more twice longer than wide, last as long as penultimate, ellipsoidal constricted at the apical third.

Pronotum 1.07x longer than wide, widest at middle and at apicis of the posterior angles, convex, with a median pointed tubercle at the basal slope; sides moderately arcuate, from middle gradually narrowing anteriad, subparallel posteriad, posterior angles acuminate, just divergent with a short and raised carina subparallel to the lateral margins; punctuation double and rather uniformly distributed on all the surface, very fine and dense punctures mixed more or less regularly with larger punctures.

Scutellum shield-shaped, flat, finely punctured, ridged at base and nearly vertically sloping.

Elytra short, 1.93x longer than pronotum and as wide as it, convex; sides subparallel from base to behind the middle then suddenly narrowing to the apicis; striae regularly marked and punctured, interstriae flat with finer punctures.

Tarsal articles regularly decreasing in length, simple. Aedeagus as in fig. 2, 2a (length 0.95 mm).

Female. Colour lighter, pronotum entirely ferruginous or moderately darkened; morphologically nearly indistinguishable from the male.

Bursa copulatrix as in fig. 8, 8a.

Size. Length 5.7-5.8 mm; width 1.68 mm.

ETYMOLOGY. The name is derived from the country where the species was collected: Yemen.

Aeoloides filipponei Platia & Schimmel, 1997

Fig. 9, 9a.

MATERIAL EXAMINED. 2 specm. (♂♀) - Oman: Dhofar, Jabal al Qamar, 5 km NE Dhalqut (16°43'22.48"N, 53°16'27.26"E), 22.IX.2011, R. Ambrus (CAP; CPG).

REMARKS: Bursa copulatrix with sclerites as in fig. 9, 9a.

DISTRIBUTION. Saudi Arabia; Yemen (Cate, 2007). **New to Oman.**

Tribe Megapenthini Gurjeva, 1973

Procræterus ambrusi n. sp.

Fig. 3, 3a, 13, 17, 20.

MATERIAL EXAMINED. Holotype ♂ - Oman: Dhofar, Jabal al Qamar, 5 km NE Dhalqut (16°43'22.48"N, 53°16'27.26"E), 22.IX.2011, R. Ambrus (CPG). 9 Paratypes ♂ - same data as HT; 10 km W Dhalqut (16°42'9. 90"N, 53°11'40.56"E), 20.IX.2011, R. Ambrus (CAP; CPG).

DIAGNOSIS. First species of the genus *Procræterus* from the Arabian Peninsula.

DESCRIPTION. Male. Moderately shining; bicoloured; head, pronotum, base of elytra, scutellum, first three articles of antennae, legs, prosternum and propleura red-ferruginous, the great part of elytra, thorax and abdomen blackish; covered with fine, yellow-golden, recumbent, vestiture.

Head with eyes as wide as the anterior margin of pronotum, frons moderately convex on the vertex, flat at the anterior margin, punctures strongly umbilicate and contiguous.

Antennae not reaching the apicis of posterior angles of pronotum serrated from fourth article on; second article subcylindrical, as long as wide, third subcylindrical 1.5x longer than second, second and third taken together as long as fourth; fourth-tenth triangular, with a very fine mid-longitudinal carina, fourth longer than following and twice longer than wide, the following less elongate; last longer than penultimate, subellipsoidal asymmetrically constricted at the apex.

Pronotum as long as wide or just longer than wide, widest at the apicis of the posterior angles, regularly convex, nearly vertically sloping at sides and base; sides from the apicis of posterior angles to the anterior margin regularly narrowing, posterior angles acuminate, not divergent, with a short carina directed inside, lateral margin complete from base to the anterior margin; punctuation uniformly distributed on all the surface, punctures umbilicate and contiguous.

Scutellum shield-shaped, longer than wide, rather pointed to the apex, moderately convex, punctured.

Elytra 2.4x longer than pronotum and as wide as it, convex; sides subparallel in the first half then gradually narrowing to the apicis, striae well marked and punctured, interstriae flat punctured and with rough surface.

Female unknown.

Male genitalia as in fig. 3, 3a (length 0.87 mm).

Size. Length 6.2-7 mm; width 1.62-1.75 mm.

ETYMOLOGY. The species is dedicated to the collector R. Ambrus that kindly sent me the species for study.

Subfamily Cardiophorinae Candèze, 1859

Cardiophorus niger n. sp.

Fig. 4, 4a, 21.

MATERIAL EXAMINED. Holotype ♂ - Yemen: Jabal Bura', NEE Al Hudaydah (14°52'N, 43°24'E), 261-600 m, 9-11.IV.2007, S. Kadlec (NMPC). 1 Paratype ♂ - same data as Ht (CPG).

DIAGNOSIS. Easily separated by the known species of the region by the black-piceous colour of body.

DESCRIPTION. Male. Moderately shiny; entirely black-piceous with antennae and legs brownish; covered with short, dense yellowish vestiture.

Antennae reaching the apicis of posterior angles of pronotum feebly serrated from third article on; second article subcylindrical, twice longer than wide and a little shorter than third; third-tenth subtriangular, subequal in length, last subellipsoidal, as long as penultimate, moderately constricted at the apical third.

Pronotum as long as wide, widest at middle, strongly and regularly convex, sides arcuate, from middle regularly narrowing anterior and posteriorly, posterior angles short, truncate, not divergent, shortly carinate; lateral suture-like obliterated after the middle; punctuation rather uniformly distributed, punctures approximately of the same diameters, deep, simple, with shortest shining interstices.

Scutellum heart-shaped, as long as wide, emarginate at middle of base, longitudinally impressed, finely punctured.

Elytra 2.48x longer than pronotum and as wide as it, convex, suboval, sides widest at the middle; striae well marked and punctured, interstriae flat, very finely punctured.

Aedeagus as in fig. 4, 4a (length 0.875 mm).

Claws simple.

Female unknown.

Size. Length 5.87-6.25 mm; width 1.75-1.87 mm.

ETYMOLOGY. The name is derived from the black coloration of the body.

Dicronychus bicoloratus n. sp.

Fig. 5, 5a, 10, 10a, 22, 23.

MATERIAL EXAMINED. Holotype ♂ - Yemen : 20 km W Lawdar (13°53'N, 45°48'E), 1101 m, 26-27.III.2007, S. Kadlec (NMPC). 3 Paratypes (2 ♂, 1 ♀) pass 20 km E Najd an Nasharmah (13°19'N, 44°07'E), 1834 m, 24.III.2007, S. Kadlec; Jabal Bura', NEE Al Hudaydah (14°52'N, 43°24'E), 261-600 m, 9-11.IV.2007, S. Kadlec; Jabal Bura' valley forest N:P. (14°52'N, 43°24'E) 240-350 m, 4.XI.2010, J. Hajek, at light. (CPG; NMPC).

DIAGNOSIS. Very similar for the size and colour pattern to *D. larseni* Platia & Schimmel, 1997, it can be immediately separated by the simple punctuation of pronotum.

DESCRIPTION. Male. Moderately shiny; bicoloured; pronotum, prothorax, middle of scutellum, first third of elytra, sometimes except the first interstriae, yellow-ferruginous; head, the great part of elytra, prosternal process, metathorax and abdomen blackish; covered with short, dense, yellow-fulvous vestiture.

Antennae not reaching for about one article the apicis of the posterior angles of pronotum, moderately serrated from

third article on; second article subconical just shorter than third, third-tenth subtriangular, on average twice longer than wide, last longer than penultimate, subellipsoidal, constricted at the apical third.

Pronotum 1.14x wider than long, widest at the middle, convex; sides arcuate, from middle regularly narrowing anterior half, gently sinuate before the posterior angles, the latter short, truncate, carinate, lateral suture-like regular and complete; punctuation uniformly distributed, punctures fine, approximately of the same size with very short shining interstices.

Scutellum heart-shaped, deeply emarginate at middle of base, feebly impressed, finely punctured.

Elytra 2.3x longer than pronotum and as wide as it, convex, subovate, widest at middle; striae well marked and punctured, interstriae flat with very fine punctures.

Claws feebly toothed at the first half.

Aedeagus as in fig. 5, 5a (length 0.85 mm).

Female. Very similar to the male, only with a little shorter antennae.

Bursa copulatrix with sclerites as in the fig. 10, 10a.

Size. Length 5.8-6.4 mm; width 1.81- 2.06 mm.

ETYMOLOGY. The name is derived from the bicoloured body.

Dicronychus unimaculatus n. sp.

Fig. 6, 6a, 24.

MATERIAL EXAMINED. Holotype ♂ - SW Yemen: Wadi Zabid E, Zabid (14°09'N, 43°31'E), 325 m, 22.III.2007, S. Kadlec (NMPC). 3 Paratypes ♂ - W Yemen, Jabal Bura', NEE Al Hudaydah (14°53', 43°26'E), 557 m, 19-21.III.2007, S. Kadlec; W Yemen, 10 km W Al Mansuriah (14°43'N, 43°12'E), 110 m, 8.IV.2007, S. Kadlec. (CPG; NMPC).

DIAGNOSIS. Allied in the general shape and colour to *D. buettikeri* Platia & Schimmel, 1997 it can be separated for the size on average smaller and particularly for the finer punctuation of pronotum.

DESCRIPTION. Male. Moderately shiny; bicoloured; head, pronotum, scutellum, elytral disk from behind the scutellum to nearly the apicis, blackish; the remaining part of elytra, antennae and legs yellowish; covered with a dense, yellow-golden, recumbent vestiture.

Head with eyes as wide as anterior margin of pronotum, frons flat, densely punctured with punctures approximately of the same size.

Antennae not reaching for about two articles the apicis of posterior angles of pronotum, feebly serrated from third article on, second article subconical, about twice longer than wide and a little shorter than third; third-tenth subequal in length, subtriangular, on average twice longer than wide, last as long as penultimate, subellipsoidal, constricted at the apical third.

Pronotum as long as wide, widest at the middle, strongly and regularly convex; sides arcuate from the middle to the posterior angles regularly and gradually narrowing; posterior angles short, truncate, not divergent, shortly carinate; lateral suture-like nearly complete from base to the anterior margin; punctuation dense and regularly distributed and double; four-five very fine punctures are regularly mixed with larger, about of double diameters punctures.

Scutellum heart-shaped, as long as wide, emarginate at the middle of base, concave and finely punctured.

Elytra 2.2x longer than pronotum and as wide as it, convex; sides from base to near the middle subparallel then regularly narrowing to the apicis; striae well marked and deeply punctured, interstriae flat with finer punctures.

Posterior half of prosternum with impressed v-shaped lines.

Claws feebly toothed at the first half.

Aedeagus as in fig. 6, 6a (length 0.925 mm).

Size. Length 5.3- 5.9; width 1.62-1.87 mm.

Female unknown.

ETYMOLOGY. The name is derived by the single spot on elytra.

***Dicronychus buettikeri* Platia & Schimmel, 1997**

Material examined. 5 specm. - Oman: Dhofar, Jabal al Qamar, 20 km NW Dhalqut ($16^{\circ}42'39.31''N$, $53^{\circ}9'12.60''E$), 21.IX.2011, R. Ambrus (CAP; CPG).

Distribution. Saudi Arabia ; Yemen (Cate, 2007). **New to Oman.**

***Craspedostethus punctulatus* n. sp.**

Fig. 7, 7a, 14, 25.

MATERIAL EXAMINED. Holotype ♂-E Yemen: Jabal al Fatk, Hawf NE Al Gaydah ($16^{\circ}39'N$, $53^{\circ}03'E$), 191 m, 2.IV.2007, S. Kadlec (NMPC). 2 Paratypes ♂ same data as HT (CPG; NMPC).

DIAGNOSIS. Easily separated from the known species of the region for the coarse punctuation of pronotum.

DESCRIPTION. Male. Moderately shiny; entirely ferruginous or yellow-ferruginous, covered with dense, yellow-golden, recumbent vestiture.

Head with eyes just narrower than the anterior margin of pronotum, frons flat with irregular double punctuation, finer and larger punctures of variable diameters are irregularly mixed.

Antennae reaching the apicis of the posterior angles of pronotum moderately serrated from the fourth article on; second article subcylindrical, third subconical, subequal in length and taken together as long as fourth; fourth-tenth subtriangular, on average less twice longer than wide; last longer than penultimate, subellipsoidal and asymmetrically constricted at the apical third.

Pronotum 1.12x wider than long, widest at the middle, regularly convex; sides arcuate, from middle to base regularly narrowing, posterior angles short, truncate not divergent with a long carina reaching about the middle of the sides; punctuation coarse, double; very fine and little apparent punctures are mixed more or less regularly with larger, deep, simple punctures.

Scutellum shield-shaped, as long as wide, slightly emarginate at the middle of base, moderately concave and very finely punctured.

Elytra 2.55x longer than pronotum and just wider than it, moderately convex; sides subparallel from base to the middle then regularly narrowing to the apicis; striae regularly marked and deeply punctured; interstriae flat, finely punctured.

Aedeagus as in fig. 7, 7a (length 0.8 mm).

Female unknown.

Size. Length 5.3-6 mm; width 1.65-1.9 mm.

ETYMOLOGY. The name is derived from the coarse punctuation of the pronotum.

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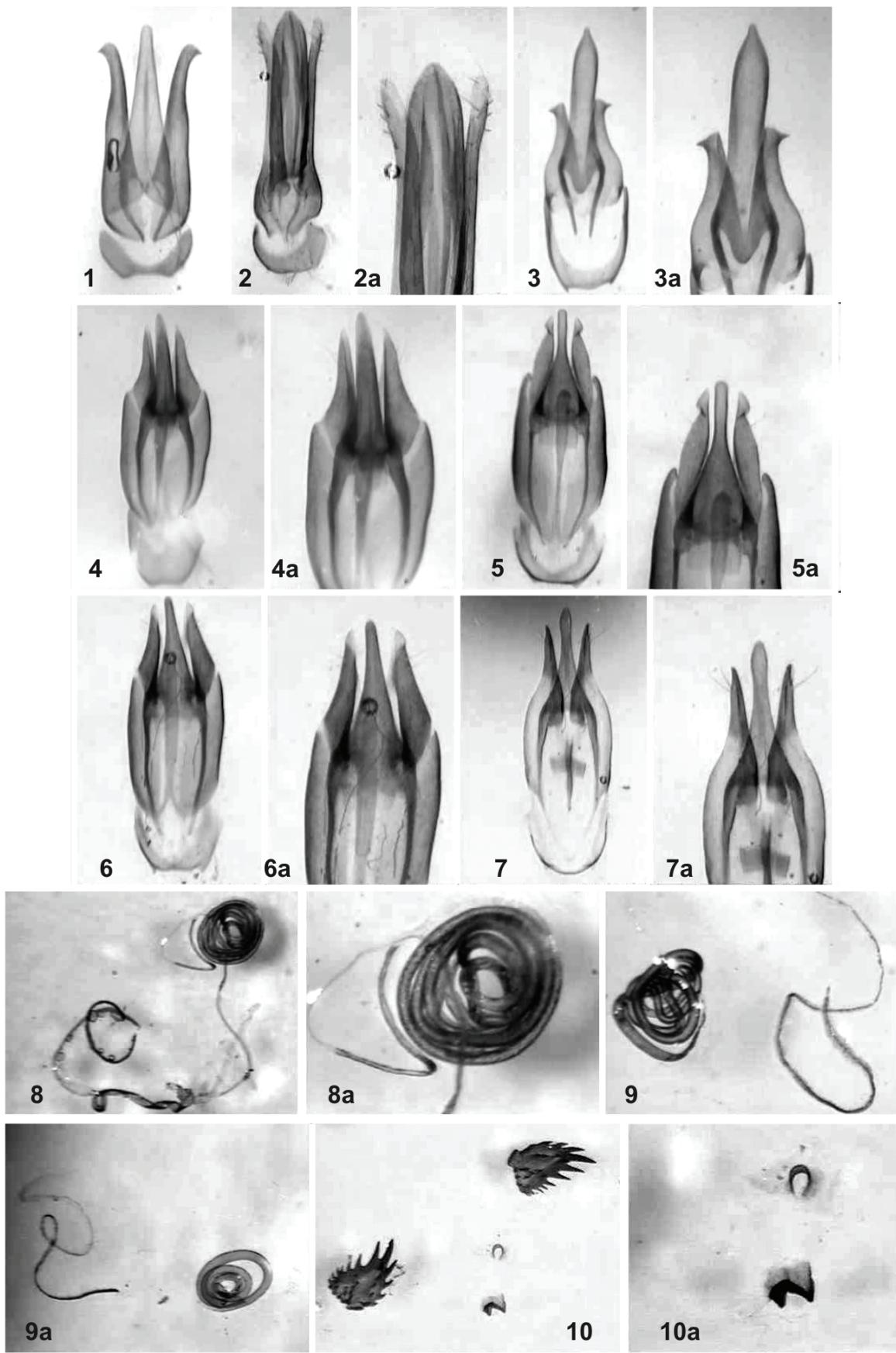


Fig. 1-7. Male genitalia in dorsal view. 1. *Saudilacon kadleci* n. sp.; 2, 2a. *Aeoloides yemenita* n. sp.; 3, 3a. *Prohraerus ambrusi* n. sp.; 4, 4a. *Cardiophorus niger* n. sp.; 5, 5a. *Dicronychus bicoloratus* n. sp.; 6, 6a. *Dicronychus unimaculatus* n. sp.; 7, 7a. *Craspedostethus punctulatus* n. sp. **Fig. 8-10.** Sclerites of bursa copulatrix. 8, 8a. *Aeoloides yemenita* n. sp.; 9, 9a. *Aeoloides filipponei* Platia & Schimmel; 10, 10a. *Dicronychus bicoloratus* n. sp.

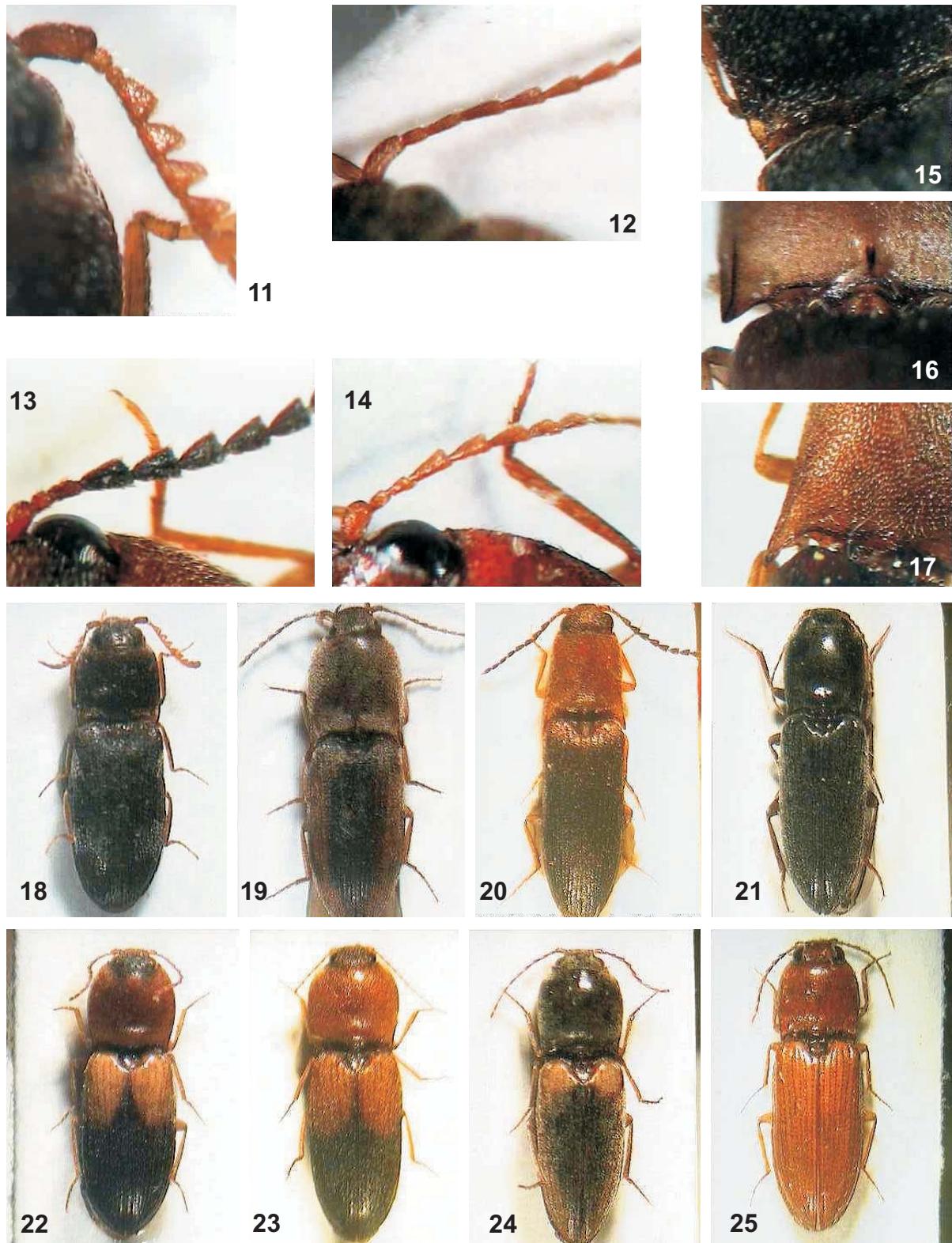


Fig. 11-14. First articles of antennae. **11.** *Saudilacon kadleci* n. sp.; **12.** *Aeoloides yemenita* n. sp.; **13.** *Prograerius ambrusi* n. sp.; **14.** *Craspedostethus punctulatus* n. sp. **Fig. 15-17.** Particular of base and posterior angles of pronotum. **15.** *Saudilacon kadleci* n. sp.; **16.** *Aeoloides yemenita* n. sp.; **17.** *Prograerius ambrusi* n. sp. **Fig. 18-25.** Habitus in total or partial view. **18.** *Saudilacon kadleci* n. sp.; **19.** *Aeoloides yemenita* n. sp.; **20.** *Prograerius ambrusi* n. sp.; **21.** *Cardiophorus niger* n. sp.; **22, 23.** *Dicronychus bicoloratus* n. sp. ♂♀; **24.** *Dicronychus unimaculatus* n. sp.; **25.** *Craspedostethus punctulatus* n. sp.