

## DESCRIPTION OF FOUR NEW SPECIES OF CLICK BEETLES FROM GREECE WITH INTERESTING NEW RECORDS (COLEOPTERA, ELATERIDAE)

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**Abstract:** Four new species of click-beetles of the genera *Anostirus* Thomson, 1859, *Elathous* Reitter, 1890 and *Agriotes* Eschscholtz, 1829 are described from continental Greece and Lesbos Island. New records for species of the genera *Anostirus* Thomson, 1859, *Agriotes* Eschscholtz, 1829, *Ampedus* Dejean, 1833 and *Cardiophorus* Eschscholtz, 1829 from continental Greece and Paros Island are given. Finally, the female of *Cardiophorus maleates* Platia & Kakiopoulos, 2014 is described and the peculiar sclerites of its bursa copulatrix are figured.

**Key words:** Coleoptera Elateridae, *Anostirus*, *Elathous*, *Agriotes*, *Ampedus*, *Cardiophorus*, new species, new records, Greece.

### Descripción de cuatro nuevas especies de elatéridos de Grecia con nuevas citas interesantes (Coleoptera, Elateridae)

**Resumen:** Se describen cuatro nuevas especies de elatéridos de Grecia continental y de la Isla de Lesbos, de los géneros *Anostirus* Thomson, 1859, *Elathous* Reitter, 1890 y *Agriotes* Eschscholtz, 1829. Se aportan nuevas citas de especies de los géneros *Anostirus* Thomson, 1859, *Agriotes* Eschscholtz, 1829, *Ampedus* Dejean, 1833 y *Cardiophorus* Eschscholtz, 1829, de Grecia continental y de la Isla de Paros. Por último, se describe la hembra de *Cardiophorus maleates* Platia & Kakiopoulos, 2014, con ilustración de los peculiares escleritos de la bolsa copulatrix.

**Palabras clave:** Coleoptera Elateridae, *Anostirus*, *Elathous*, *Agriotes*, *Ampedus*, *Cardiophorus*, especies nuevas, citas nuevas, Grecia.

**Taxonomy / Taxonomía:** *Anostirus pseudozenii* n. sp., *Elathous melanarius* n. sp., *Agriotes aegaeus* n. sp., *Agriotes roberi* n. sp.

## Introduction

The study of new material of click-beetles, recently collected by one of the authors (G. Kakiopoulos) and by a Swedish colleague in the continental Greece and in the islands of Lesbos and Paros give us the opportunity to describe four new species of the genera *Anostirus*, *Elathous* and *Agriotes* and to update the distribution of other four species belonging to the genera *Anostirus*, *Agriotes*, *Ampedus* and *Cardiophorus*. The female of *Cardiophorus maleates* Platia & Kakiopoulos, 2014, not disposable at the moment of the description is examined. The sclerites of the bursa copulatrix with the intermediate piece very poorly sclerified shows that it is systematically isolated from all the Greek known species.

## 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 material studied is preserved in: CKA, Kakiopoulos coll., Athens, CKK, Krolík coll., Kluczborka (Poland) and CPG, Platia coll., Gatteo (Italy).

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

The abbreviations of countries, given by “distribution” follows Cate (2007).

Some contributions used for realization this work have been Cechovský & Platia (1991), Chassain (1984, 1985), Platia (2003), Platia & Gudenzi (2002).

## Results

### Tribe PROSTERNINI Gistel, 1848

#### *Anostirus pseudozenii* n. sp.

Fig. 1, 1a, 9, 9a, 19.

**MATERIAL EXAMINED.** Holotype male - Greece: Boeotia, Elikon mountain, near Elikon village, 900 m, 12.IV.2008, G. Kakiopoulos. (CKA).

**DIAGNOSIS.** Among the Greek species it can be compared with *A. jarmilae* Cechovsky & Platia, 1991 from Taygetos but it is easily separated by the smaller body, elytra entirely unicoloured, aedeagus constricted before the apex.

**DESCRIPTION.** Male. Bicoloured; head, pronotum, scutellum, underbody, antennae and legs black; elytra entirely red-orange; covered with dense, blackish on head and pronotum, fulvous on elytra, pubescence.

Head with eyes a little wider than the anterior margin of pronotum, frons flat with coarse puncturation, punctures of variable size, simple or slightly umbilicate with very short intervals or contiguous, anterior margin at middle obsolete, merged with clypeus.

Antennae exceeding of nearly three articles the apices of posterior angles of pronotum, serrated from third article on;

second article small, subcylindrical as long as wide; third article with lamella a little shorter than its length; fourth article with lamella as long as its length; fifth-tenth articles a little longer than their length; last article simple longer than penultimate, moderately constricted at the apical third.

Pronotum as long as wide, widest at the apices of the posterior angles, moderately and regularly convex with a short, impressed, mid-longitudinal line on the basal slope; sides arcuate, sinuate before the posterior angles, the latter with apex truncate and divergent, not carinate; lateral margins complete and totally visible in a dorsal view; puncturation rather uniformly distributed, punctures deep, simple, of variable sizes with variable and very short, shiny intervals.

Scutellum shield-shaped, longer than wide, ridged at base, sinuate at sides in the first half with surface flat in the first half and impressed in the second half, irregularly punctured.

Elytra 2.78x longer than pronotum and wider than it, convex; widest at middle; sides subparallel from base to the middle then gradually narrowing to the apices; striae well marked and regularly punctured; third interstria slightly convex only at base; all other nearly flat and finely punctured.

Aedeagus as in fig. 1, 1a (length 1.62 mm).

Size. Length 7.5 mm; width 2.3 mm.

Female unknown.

**ETYMOLOGY.** As this insect was in collection Kakiopoulos for several years under the wrong name "*A. zenii*".

**ECOLOGICAL NOTES.** Open area on *Abies* forest, in *Pyrus* sp. flowers.

***Anostirus sulphuripennis* (Germar, 1843)**

Fig. 20.

**MATERIAL EXAMINED.** 1 female - Greece: Thessalia, Trikala env., 16.VI., Sabbadini & Pesarini. (CPG).

**DISTRIBUTION.** AU FR IT GE RO SL SZ (Cate, 2007); Czech rep (Mertlik, 2014, maps). New to Greece.

**Tribe DENDROMETRINI Gistel, 1848**

***Elathous melanarius* n. sp.**

Fig. 2, 2a, 10, 15, 21.

**MATERIAL EXAMINED.** Holotype male- Greece: Attica, Gerania mountain, 850 m, 1.IX.2013, G. Kakiopoulos (CKA).

**DIAGNOSIS.** A species allied to *E. brucki* (Candèze, 1878) for the colour and size, it can be separated for the shape of frons less impressed with the anterior margin distinctly emarginate at middle, the lateral margins of pronotum obsolete after the middle, the apices of paramera of the genitalia.

**DESCRIPTION.** Male. Entirely black with antennae and legs ferruginous; covered with short and dense yellow-fulvous pubescence.

Head with eyes just narrow than the anterior margin of pronotum; frons triangularly impressed from the middle to the anterior margin, this thickened, protruding above the clypeus, moderately arcuate and deeply emarginate at middle, coarsely punctured, punctures clearly umbilicate with very short and shiny intervals.

Antennae short just exceeding the middle of pronotum and moderately serrated from fourth article on; second article subcylindrical, 1.5x longer than wide, third subconical, a little

longer than second and twice longer than wide; second and third together nearly twice than fourth; fourth-sixth triangular, just longer than wide, seventh-tenth slenderer, last longer than penultimate, ellipsoidal.

Pronotum as long as wide, widest behind the middle and at the apices of posterior angles, strongly convex, abruptly sloping at sides and base with a vestige of mid-longitudinal impressed line at basal slope; sides regularly arcuate, sinuate before the posterior angles, the latter short, truncate, divergent, shortly carinate, carina directed inside; lateral margins obliterated after the middle; puncturation moderate; punctures on the disk deep, simple, with intervals on average equal or larger than their own diameters, a little denser and slightly umbilicate towards the sides.

Scutellum shield-shaped, as long as wide, sinuate at sides, longitudinally convex and densely punctured.

Elytra 2.6x longer than pronotum and as wide it, convex; sides subparallel from base to behind the middle then gradually narrowing to the apices; striae well marked and punctured; third interstria more convex at base, all the other moderately convex and densely punctured.

Aedeagus as in fig. 2, 2a (length 1.56 mm).

Size. Length 12.5 mm; width 3.8 mm.

Female unknown.

**ETYMOLOGY.** The name is related to the completely black colour of the insect.

**ECOLOGICAL NOTES.** On *Abies* sp. twigs.

***Agriotes aegeus* n. sp.**

Fig. 3, 3a, 11, 16, 22.

**MATERIAL EXAMINED.** Holotype male - Greece: Aegean islands, Lesbos, near Molyvos village, 16.VI.2001, G. Kakiopoulos. (CKA). 1 Paratype male - same data as Ht. (CPG).

**DIAGNOSIS.** Species of the *nuceus*-group it can be compared with *A. heydeni* Schwarz for the second and third antennal segments taken together shorter than fourth but it separated by the smaller size, the posterior angles of pronotum less divergent, the male genitalia.

**DESCRIPTION.** Male. Entirely yellow-ferruginous covered with very dense, yellow-golden pubescence.

Head with eyes a little narrower than the anterior margin of pronotum, frons flat, anterior margin straight, suprantergital carinae reaching the anterior margin; punctures coarse, umbilicate with very short intervals or contiguous.

Antennae exceeding by about three articles the apices of posterior angles of pronotum, serrated from fourth article on; second article subcylindrical, third subconical, subequal in length, taken together, 1.26x shorter than fourth; fourth-sixth subtriangular, on average 2.5x longer than wide, seventh-tenth slenderer with subparallel sides, last longer than penultimate, pointed at apex.

Pronotum 1.15x wider than long, widest at the apices of posterior angles, moderately convex with a vestige of mid-longitudinal impressed line at basal slope; sides subparallel at middle, slightly dilated before the anterior margin, sinuate before the posterior angles, the latter long, acuminate, divergent, with a very feeble carina parallel to the lateral margins, these shortly obliterated at the middle; puncturation rather uniformly distributed; punctures on the disk deep, simple or slightly umbilicate with very short intervals, gradually denser

towards the sides becoming umbilicate and contiguous at the lateral extremities.

Scutellum shield-shaped, ridged at base, moderately sinuate at sides, flat and densely punctured.

Elytra 3.1-3.2x longer than pronotum and just wider than it, convex; sides subparallel from base to just behind the middle then gradually tapering to the apices; striae well marked and punctured; interstriae flat very densely and more finely punctured.

Aedeagus as in fig. 3, 3a (length 1.43 mm) (Ht)

Size. Length 11.8-12.7 mm; width 3.18-3.25 mm.

Female unknown.

**ETYMOLOGY.** Which shows the area of the capture (Aegean Sea).

**ECOLOGICAL NOTES.** On flowers of Umbelliferae.

***Agriotes roberi* n. sp.**

Fig. 4, 4a, 13, 23.

**MATERIAL EXAMINED.** Holotype male - Greece: Aegean islands, Lesvos, Kapi, 26.V.2014, R. Rober (CPG).

**DIAGNOSIS.** Species allied to *Agriotes colonnellii* Guglielmi & Platia, 1985 from Turkey for the very similar shape of male genitalia it can be separated by the smaller body, second and third antennal segments subequal in length, moderately convex pronotum.

**DESCRIPTION.** Male. Entirely blackish with rufous shadings at the base and posterior angles of pronotum, base of elytra and scutellum; antennae and legs ferruginous; covered with dense yellow-fulvous pubescence.

Head with eyes a little narrower than the anterior margin of pronotum, frons convex on the vertex, flat before the anterior margin, suprantennal carinae not reaching the anterior margin, punctures coarse, umbilicate, contiguous.

Antennae short, not reaching for about two articles the apices of posterior angles of pronotum, moderately serrated from fourth article on; second and third articles subcylindrical and subequal in length, taken together, 1.8x longer than fourth; fourth-tenth subtriangular, on average twice longer than wide, last longer than penultimate, subellipsoidal.

Pronotum as long as wide, widest at the apices of posterior angles of pronotum, convex, with a vestige of a mid-longitudinal depressed line on the basal slope; sides subparallel from middle to the posterior angles, the latter long, acuminate, slightly divergent, with a carina directed inside, lateral margins fine but complete; puncturation uniformly distributed, punctures on the disk lighter, deep, simple or very slightly umbilicate with very short intervals, gradually denser towards the sides, umbilicate and contiguous at the lateral extremities.

Scutellum shield-shaped, flat, ridged at base, densely punctured.

Elytra 2.5x longer than pronotum and as wide as it, convex; sides from base to the apices regularly and very gradually tapering; striae well marked and punctured; interstriae flat, densely punctured with wrinkled surface.

Aedeagus as in fig. 4, 4a (length 1.12 mm).

Size. Length 9.35 mm; width 2.5 mm.

**ETYMOLOGY.** Dedicated to the collector, the swedish colleague Rolf Rober, for his kindness to send me the specimen.

***Agriotes furlani* Platia, 2003**

Fig. 5, 5a, 12, 17.

**MATERIAL EXAMINED.** 1 specm. male - Greece: Aegean islands, Lesvos, near Molyvos village, 16.VI.2001, G. Kakiopoulos. (CKA).

**NOTES:** Aedeagus as in fig. 5, 5a (length 1.52 mm).

Described from Turkey. New to Greece.

***Ampedus anatolicus* Platia & Gudenzi, 2002**

Fig. 6, 6a, 14, 24.

**MATERIAL EXAMINED.** 2 spcm. males - Greece: Chamilo env., 45 km N of Alexandroupoli, Thrace Prov., 750 m, 10.V.2008, R. Krolik. (CPG; CKK).

**NOTES:** Aedeagus as in fig. 6, 6a (length 1.3 mm).

Described from Turkey. New to Greece.

**Tribe CARDIOPHORINI Candèze, 1859**

***Cardiophorus maleates* Platia & Kakiopoulos, 2014**

Fig. 8, 8a, 25.

**MATERIAL EXAMINED.** 4 spcm. (1 male, 3 females) - Greece: SE Peloponnesos, 10 km S of Nepapolis, loc. "Apolithomeno dasos", 12-13.IV.2014, G. Kakiopoulos. (CKA; CPG). Described on a male specimen of the same locality.

**DESCRIPTION.** Female. Identical to the male, the yellowish colour of elytra limited to the fifth and sixth interstriae can be continue from base to apex of elytra.

Bursa copulatrix a little sclerified as in fig. 8, 8a.

Length 6.1- 6.7 mm ; width 2-2.18 mm.

**ECOLOGICAL NOTES.** A short description of the habitat of *C. maleates*:

This is a small plateau, about 500 meters in diameter, at an altitude of about 50 meters, completely dry and very hot, with sandy soil and many stones, near the sea, at the foot of a rocky hill (peak altitude about 400 meters).

The vegetation consists of several spiny bushes of *Genista*, some *Cistus*, few trees of *Ceratonia*, occasional tufts of grass and some olive-trees.

It is one of those places, that after 15 May and throughout the summer, there is almost no insect ...

All the rest Coleoptero-fauna that we met (mainly Curculionidae, 14 different species), seems to be adapted to the dry and warm environmental conditions.

We think that *C. maleates* is nocturnal, in the context of such adjustment, so the day is hiding under stones.

***Cardiophorus platiai* Chassain, 1985**

Fig. 7, 7a, 26.

**MATERIAL EXAMINED.** 4 spcm. males - Greece: Paros Island (Cyclades), near Leukes village, about 600 m, 28.IV.2014, G. Kakiopoulos. (CKA; CPG).

**NOTES:** Aedeagus as in fig. 7, 7a with dilated apex (length 1 mm).

Described from Santorin Island. New to Paros Island.

On herbaceous plants.

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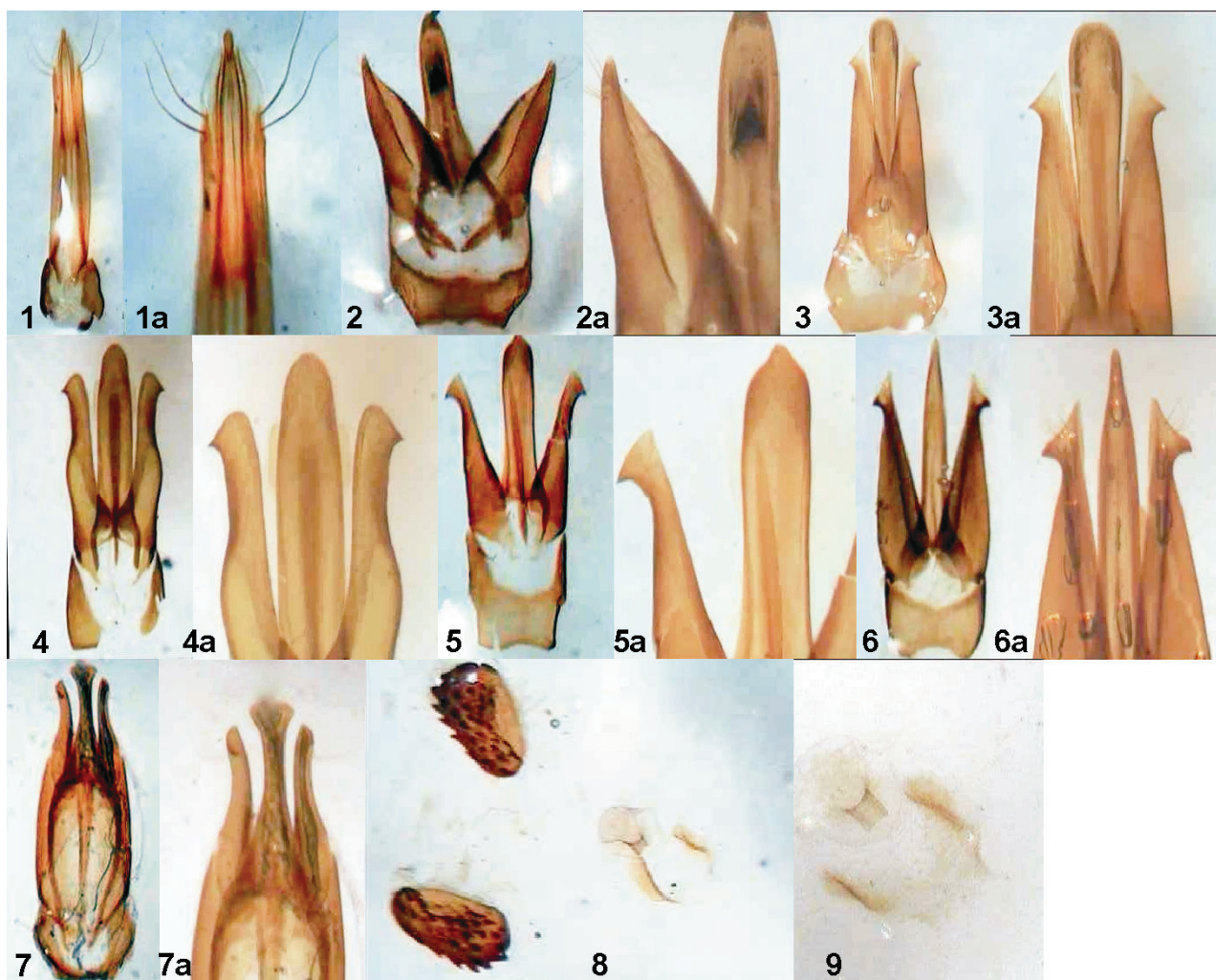


Fig. 1-7. Male genitalia in dorsal view. 1, 1a. *Anostirus pseudozenii* n.sp.; 2, 2a. *Elathous melanarius* n. sp.; 3, 3a. *Agriotes aegaeus* n.sp.; 4, 4a. *Agriotes roberi* n. sp.; 5, 5a. *Agriotes furlani* Platia; 6, 6a. *Ampedus anatolicus* Platia & Gudenzi; 7, 7a. *Cardiophorus platiai* Chassain. Fig. 8. Sclerites of bursa copulatrix. 8, 8a. *Cardiophorus maleates* Platia & Kakiopoulos.

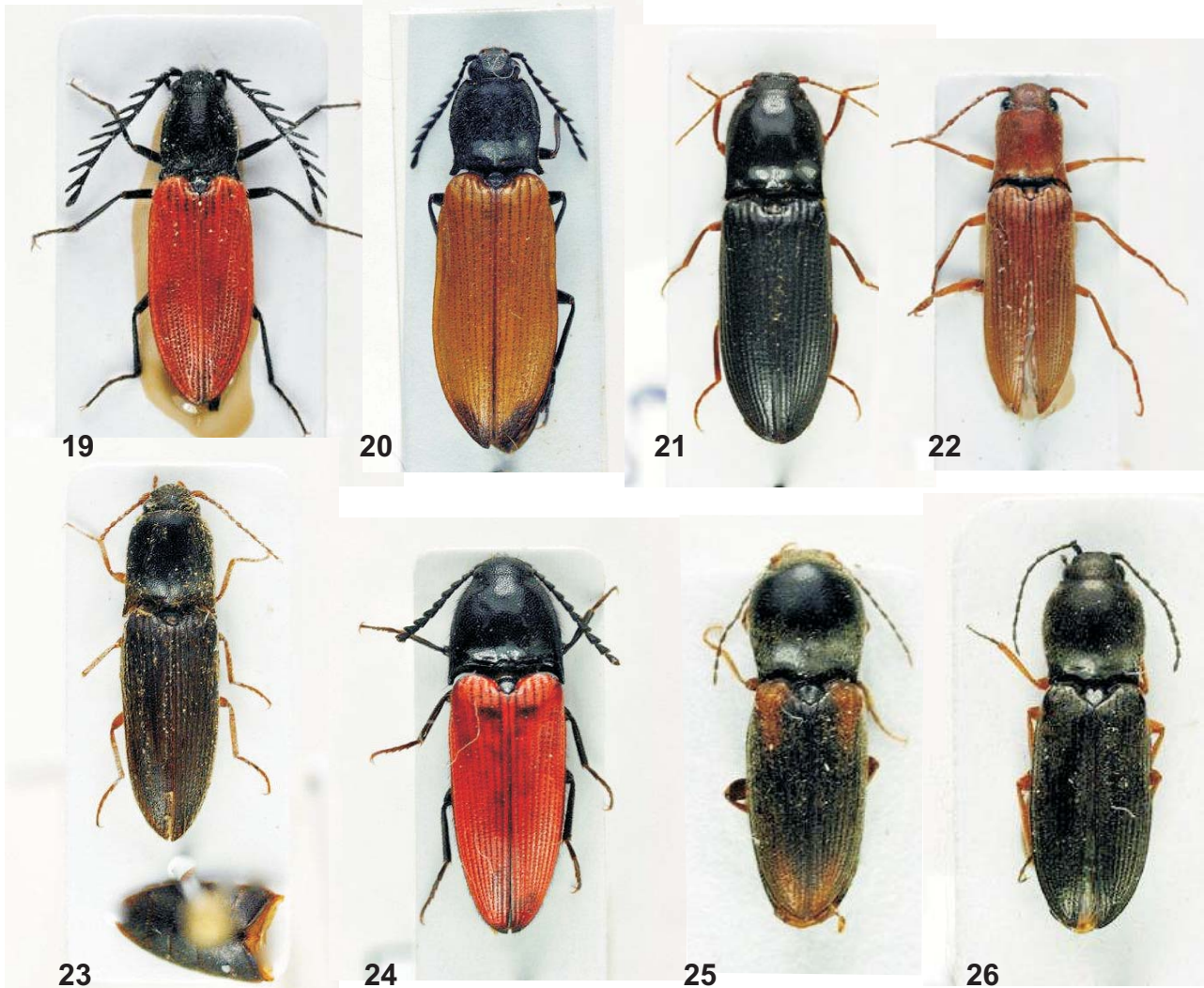
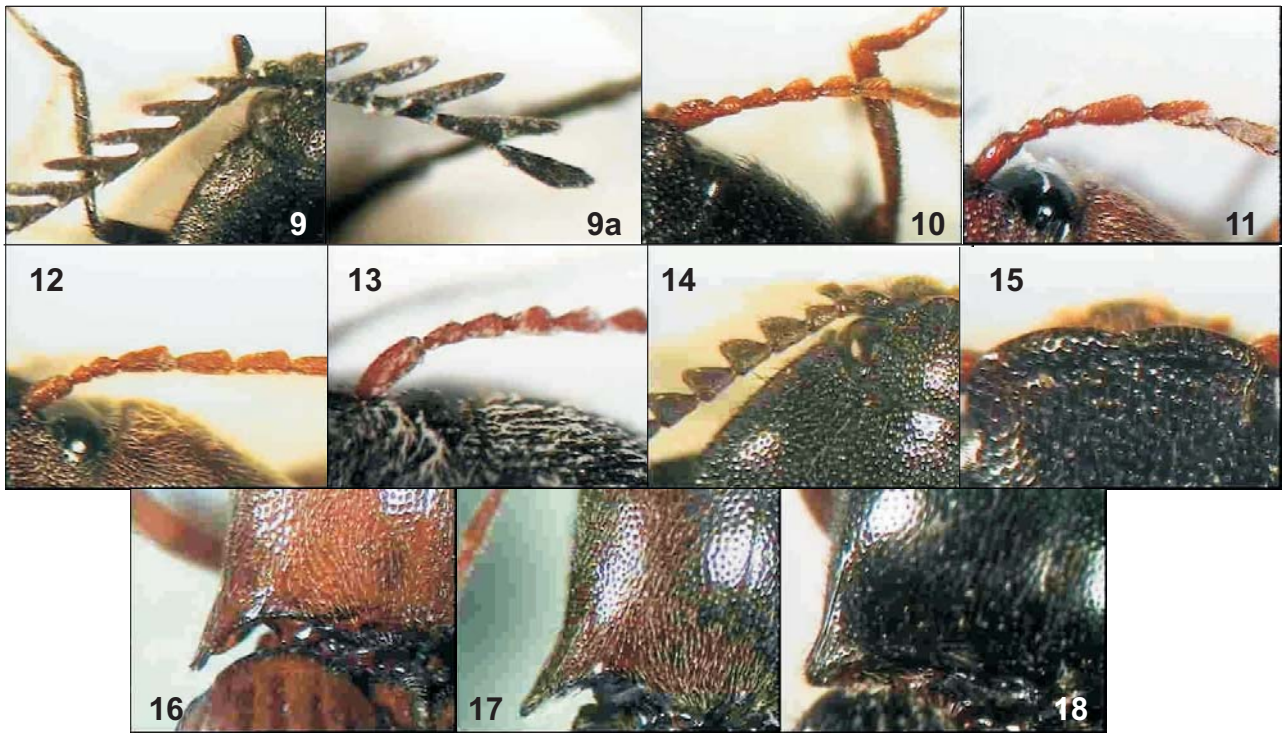


Fig. 9-14. Antennae in toto or articles. 9, 9a. *Anostirus pseudozenii* n.sp.; 10. *Elathous melanarius* n. sp.; 11. *Agriotes aegaeus* n.sp.; 12. *Agriotes furlani* Platia; 13. *Agriotes roberi* n. sp.; 14. *Ampedus anatolicus* Platia & Gudenzi. Fig. 15. Anterior margin of frons. 15. *Elathous melanarius* n. sp. Fig. 16-18. Apex of posterior angles of pronotum. 16. *Agriotes aegaeus* n.sp.; 17. *Agriotes furlani* Platia; 18. *Elathous melanarius* n. sp. Fig. 19-26. Habitus. 19. *Anostirus pseudozenii* n.sp. 7,5 mm; 20. *Anostirus sulphuripennis* (Germar), female, 11,2 mm; 21. *Elathous melanarius* n. sp., 12,5 mm; 22. *Agriotes aegaeus* n. sp., Ht, 12,7 mm; 23. *Agriotes roberi* n. sp., 9,35 mm; 24. *Ampedus anatolicus* Platia & Gudenzi, 10 mm; 25. *Cardiophorus maleate*s Platia & Kakiopoulos, female, 6,7 mm; 26. *Cardiophorus platiai* Chassain, 6,4 mm.