

## ARTIGO / ARTÍCULO / ARTICLE

# Contribution to the knowledge of the click-beetles from the Socotra Island (Yemen) (Coleoptera Elateridae).

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**Abstract:** In this contribution, 19 species of click-beetles from Socotra Island, from where only one species, *Calais sulcicollis* (Gahan, 1900) was previously known, are recorded. 17 species belonging to the genera *Aeoloides* Schwarz, *Agrypnus* Eschscholtz, *Gahanus* n. gen., *Propsephus* Hyslop, *Socotrelater* n. gen., *Cardiophorus* Eschscholtz, *Dicronychus* Brullé, *Craspedostethus* Schwarz and *Eudicronychus* Mequignon are described. *Lacon modestus* (Boisduval, 1835), a very widely distributed species, is recorded for the first time. A key to the Cardiophorinae of the island is given.

**Key words:** Coleoptera, Elateridae, Socotra Island, Yemen.

**Resumen:** Contribución al conocimiento de los elatéricos de la Isla de Socotra (Yemen) (Coleoptera Elateridae). En esta contribución se registran 19 especies de la Isla de Socotra, de donde previamente sólo se conocía una especie, *Calais sulcicollis* (Gahan, 1900). Se describen 17 especies pertenecientes a los géneros *Aeoloides* Schwarz, *Agrypnus* Eschscholtz, *Gahanus* n. gen., *Propsephus* Hyslop, *Socotrelater* n. gen., *Cardiophorus* Eschscholtz, *Dicronychus* Brullé, *Craspedostethus* Schwarz and *Eudicronychus* Mequignon. Se registra por primera vez *Lacon modestus* (Boisduval, 1835), especie ampliamente repartida. Se proporciona una clave para los Cardiophorinae de la isla.

**Palabras clave:** Coleoptera, Elateridae, Isla de Socotra, Yemen.

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## Introduction

The study of abundant material from Socotra Island recently sent by the Museum of Natural History of Carmagnola (Turin), the Natural History Museum of Pavia University and the Narodni Museum of Prag, gives me the opportunity to publish an important contribution to the knowledge of the click-beetles of this island where, till now, only one species, *Calais sulcicollis* (Gahan, 1900), was previously known. The results of this study are very interesting because I have recognized within the collected material other 18 species, only being described before one of them, *Lacon modestus* (Boisduval, 1835), widely distributed and already known from all the Arabian Peninsula. Thus, the remaining 17 species, mostly of them belonging to the subfamily Cardiophorinae (*Cardiophorus*, 8 species; *Dicronychus*, 2 species; *Craspedostethus*, 1 species) are all undescribed. Particularly interesting is the presence of two species belonging to two new genera, *Gahanus* n. gen. and *Socotrelater* n. gen., showing the extraordinary peculiarity of the fauna of this island. It's also important to highlight the occurrence of a new species of the genus *Eudicronychus*, rich of species and, till now, only known from the African continent.

## Material and methods

**Measurements** - Body length is measured along the midline from the anterior margin of frons to apex of the elytra; width is measured across the broadest part of the body. Pronotal length is measured along the midline; the width is at the broadest part, usually at hind angles.

**Abbreviations** - The names of institutions, museums and collections providing material for this study are abbreviated as follows: CPG, collection of G. Platia, Gatteo (Italy), NMPC Národní Muzeum, Praha, Czech Republic (Jiří Hájek); MCSNC, Civic Museum of Natural History Carmagnola (Torino, Italy) (Gianfranco Curletti); MSNP, Museum of Natural History of Pavia University (prof. Mauro Fasola).

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

## Results

Subfamily **Agrypninae** Candèze, 1857

Tribe **Agrypnini** Candèze, 1857

***Agrypnus hajeki*** n. sp.

(Figs. 1, 1a, 31)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Alooove Area, Hassan vill. env. (12°31.2'N, 54°07.4'E), 221 m, 9-10.XI.2010, J. Hajek (NMPC).

**Diagnosis.** A species comparable with *A. dhofarensis* Platia, 2008 from Oman for the same characters about the vestiture of body and the genitalia, it can be distinguished for the longer antennae reaching the apicis of posterior angles of pronotum and the shape of pronotum strongly arcuate at middle and longly sinuate before the posterior angles.

### Description.

**Male.** Moderately shiny; entirely dark brown with rufous shadings at base, posterior angles of pronotum and elytral suture; first article of antennae, femura and tibia fuscous, the remaining parts lighter yellow-ferruginous; covered with regularly distributed whitish, short, recumbent scales.

Head with eyes just narrower than the anterior margin of pronotum, frons triangularly impressed from middle to the anterior margin, the latter obsolete and merged with clypeus; puncturation coarse, punctures deep, moderately umbilicate with very short intervals or contiguous.

Antennae reaching the apicis of posterior angles of pronotum, serrated from fourth article on; second article, subcylindrical about twice longer than wide; third conical, as long as wide and 1,6x shorter than second; second and third taken together, as long as fourth; fourth-tenth, triangular, 1,5x to twice longer than wide; last, longer than penultimate, subellipsoidal.

Pronotum 1,1x wider than long, widest at middle and at the apicis of posterior angles, strongly convex on disk, rather abruptly sloping at sides and base with a trace of a very superficial mid-longitudinal depression at basal sloping; sides strongly arcuate, from middle forwards and backwards narrowing to anterior and posterior angles, the latter divergent, acuminate at apex and directed outwards, with a short and fine carina; puncturation coarse and regularly distributed, punctures deep, simple, with shorter and more or less shagreened intervals, at sides often contiguous.

Scutellum as long as wide, gently sinuate at sides in the first half, moderately convex, coarsely punctured. Elytra 2,48x longer than pronotum, just wider than it, moderately convex; sides subparallel

from base to behind the middle than gradually narrowing to the apices, these moderately divaricate; striae coarsely and deeply punctured, interstriae flat with denser and finer punctures.

Aedeagus as in figs. 1, 1a (length: 1,68 mm).

Female unknown.

Size. Length: 10 mm; width: 3,5 mm.

**Etymology.** The species is dedicated to Dr. Jiří Hájek, co-ordinator of the project for the Fauna of Socotra and collector of the species.

*Lacon modestus* (Boisduval, 1835)

(Fig. 32)

**Material examined.** 1 specm. ♂ - **Yemen**, Socotra Isl., Shuab Loc., Coast Line, Mangrove, I.G. 31.268, 24.III.2009, A. Saldaitis (NMPC).

**Distribution.** A: IN JA (Iwo-jima) OM QA SA TAI AFR AUR NTR ORR (Cate, 2007); UAE (Platia, 2007); IS (Platia, 2010). **New to Yemen and Socotra Isl.**

Tribe **Hemirhipini** Candèze, 1857

*Calais sulcicollis* (Gahan, 1900)

(Figs. 2, 2a, 18, 18a, 26, 27, 28)

**Material examined.** 46 specm. (♂♀) - **Yemen**, Socotra Isl., Firmihin plateau, *Dracaena* tree forest (12°28'465"N, 54°00'89830"E), 22-25.VI.2009, V. Hula; Khayrha Mts. N slopes, Qalansiyah env. (12°38'50"N, 53°27'45"E), 85-592 m, 9-10.XII.2003, D. Král; Noged plain, Qaareh (waterfall) (12°20'10"N, 53°37'56"), 57 m, 5-6.XII.2003, D. Král, P. Kabátek; Wadi Ayhaft (12°36'38"N, 53°58'49"E), 190 m, 24-26.XI.2003, P. Kabátek, ex. larvae; Hadiboh env. (12°65'02"N, 54°02'04"E), 10-100 m, 2.XI-12.XII.2003, P. Kabátek; Homhil protected area (12°34'27"N, 54°18'32"E), 364 m, 28-29.XI.2003, P. Kabátek; Firmihin (12°28'27"N, 54°0'54"E), 400-500 m, 6-7.II.2010, at light, L. Purchart & J. Vybiral; Zehmon area (12°20'58"N, 54°06'39"E), 270-350m, 3-4.II.2010, at light, L. Purchart & J. Vybiral; Kesa env. (12°39'37"N, 53°26'42"E), 220-230 m, 28-29.I.2010, L. Purchart; Shibon, Wadi Zirik, 16.VI.2009, V. Hula; Wadi Ayhaft (12°36.5'N, 53°58.9'E), 7-8.XI.2010, J. Hajek. (CPG; NMPC).

**Notes.** Till now, the only species of elaterid known from Socotra Island (Gahan, 1900). The species is very variable in the colour of body and size. In the specimens that we have examined the size is variable from 15 to 30 mm. The male genitalia and the sclerotized parts of bursa copulatrix are figured for the first time.

Tribe **Oophorini** Gistel, 1848

*Aeoloides gubbahensis* n. sp.

(Figs. 3, 3a, 29)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Gubbah vill. env. (12°36'35"N, 53°46'56"E), 7 m, 23.XI.2003, D. Král (NMPC); 10 Paratypes (♂) - same data as HT, D. Král, P. Kabátek (CPG; NMPC).

**Diagnosis.** A species closely related to *A. grisescens* (Germar, 1844) for the general shape, size and colour, it can be distinguished for the more elongated pronotum and its coarser puncturation, and the longer antennae, with the second and third articles subcylindrical, small and, taken together, notably

shorter than fourth.

**Description.**

Male. Moderately shiny; entirely dark brown with antennae and legs yellow-ferruginous; covered with dense, fine, recumbent, yellowish vestiture.

Head with eyes just narrower than the anterior margin of pronotum, frons flat, anterior margin complete, subarcuate and just protruding above the clypeus; puncturation double and regularly distributed, larger punctures are regularly mixed with much more fine punctures.

Antennae reaching or just exceeding the apicis of posterior angles of pronotum, serrated from fourth articles on; all the articles with a feeble mid-longitudinal carina; second and third articles, subcylindrical, small and, taken together, notably shorter than fourth; fourth-tenth, subtriangular; fourth, longer than the following and more than twice longer than wide; fifth-tenth, shorter, only twice longer than wide; last, just longer than penultimate, subellipsoidal, moderately constricted before the apex.

Pronotum as long as wide, widest at the apicis of posterior angles, convex; sides subparallel or moderately arcuate, posterior angles elongate, acuminate, just divergent, bicarinate, outer carina more apparent, longer, raised and directed gradually inwards, inner carina very short, departing from the apex and subparallel; puncturation regularly distributed on the surface, double, larger punctures are regularly mixed with much more fine punctures.

Scutellum shield-shaped, flat, very finely punctured. Elytra 2,3-2,4x longer than pronotum, moderately convex, sides very gradually and regularly narrowing from the base to the apicis; striae deeply punctured, interstriae flat to moderately convex with dense and finer punctures.

Tarsal articles simple and regularly decreasing in length.

Aedeagus as in figs. 3, 3a (length: 1,46 mm).

Female unknown.

Size. Length: 9,3-10,8 mm; width: 2,62-2,87 mm.

**Etymology.** The name is derived from the Gubbah village, the locality where all the specimens were collected.

*Gahanus* n. gen.  
(Figs. 4, 4a, 30)

Type-species: *Gahanus socotranus* n. sp.

**Diagnosis.** Body rather flattened, head capsule flattened, frons from the middle forwards irregularly impressed with anterior margin obsolete or just visible, merged with clypeus. Antennae strongly serrated from the third article on; second article small, subcylindrical, as long as wide; third-tenth, strongly serrated, triangular, wider than long; last, longer than penultimate, ellipsoidal, asymmetrically constricted at the apical third.

Pronotum quadrangular, 1,2x wider than long, widest at the apicis of the posterior angles, moderately convex, rather depressed on the central part of the disk with a trace of a mid-longitudinal depression and two shallow, symmetrical, punctiform depressions at the anterior third; punctures coarse, deep, more or less umbilicate; sides subparallel narrowing before the anterior margin, sinuate just before the posterior angles, the latter acute, divergent with a short carina directed inwards; lateral margins forming a narrow channel at sides of pronotum, totally visible in a dorsal view.

Scutellum shield-shaped, flat, sparsely punctured. Elytra 3x longer than pronotum and as wide as it, rather depressed on the disk; sides subparallel for about the two thirds of its length, then gradually tapering to the apicis; striae well impressed, interstriae moderately convex, densely punctured.

Wings regularly developed able to fly.

Tarsi with articles simple, regularly decreasing in length; claws simple, with a seta on each base.

Prosterno-pleural sutures closed along their entire length; prosternal lobe very slightly arcuate, short, just exceeding the inner anterior extremities of propleura.

Prosternal process elongate, very gradually sloping behind the procoxal cavities, pointed at apex.

Sides of mesocoxal cavity gently declivous; mesocoxae open to mesepimeron and mesepisternum.

Last segment of maxillary palpi subcylindrical.

Male genitalia (Figs. 4, 4a), with median lobe a little longer than paramera, these ones with an apical, rounded tooth and very short setae.

**Etymology.** Dedicated to the entomologist C.J. Gahan, describer of the first species of click-beetle from Socotra Island.

*Gahanus socotranus* n. sp.  
(Figs. 4, 4a, 30)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Diksam Canyon, 23.III.2009, I.G. 31.268, A. Saldaitis (IRSNB). 1 Paratype ♂ - same data as HT (NMPC).

**Description.**

Male. Moderately shiny; entirely blackish with undefined rufous shades; antennae and legs ferruginous; covered with moderate, very short, recumbent, yellow-fulvous vestiture.

Frons from the middle forwards irregularly impressed, anterior margin obsolete or just visible, merged with clypeus; punctures coarse, umbilicate, contiguous.

Antennae short, not reaching for about two articles the apices of posterior angles of pronotum, strongly serrated from the third article on; second article small, subcylindrical, as long as wide; third-tenth, strongly serrated, triangular, of approximately the same length, wider than long; last, longer than penultimate, ellipsoidal, asymmetrically constricted at the apical third.

Pronotum quadrangular, 1,2x wider than long, widest at the apices of the posterior angles, moderately convex, rather depressed on the central part of disk with a trace of a mid-longitudinal depression and two shallow, symmetrical, punctiform depressions at the anterior third; sides subparallel, narrowing before the anterior margin, sinuate just before the posterior angles, the latter acute, divergent with a short carina directed inwards; lateral margins forming a narrow channel at sides of pronotum, totally visible in a dorsal view; punctures coarse, deep, moderately umbilicate, with shortest interval on the disk, gradually denser to contiguous at the lateral extremities.

Scutellum shield-shaped, flat, sparsely punctured. Elytra 3x longer than pronotum and as wide as it, rather depressed on the disk; sides subparallel for about the two thirds of its length, then gradually tapering to the apices; striae well impressed, interstriae moderately convex, densely punctured.

Aedeagus as in figs. 4, 4a (length: 1,68 mm).

Size. Length: 9-9,2 mm; width: 2,55-2,6 mm.

Female. Unknown.

**Etymology.** The name is derived from Socotra, the island where the species was collected.

Subfamily **Dendrometrinae** Gistel, 1848

Tribe **Dendrometrini** Gistel, 1848

*Socotrelater* n. gen.  
(Figs. 19, 46)

Type-species: *Socotrelater ferrugineus* n. sp.

**Diagnosis.** Body very convex; head flattened, frons flattened with a vestige of anterior margin touching the clypeus, space frontal-clypeal apparent. Antennae very short, serrated from third article on; second article subcylindrical, as long as wide; third-tenth subtriangular, transversally dilated; third, ninth, tenth as long as wide; fourth-eighth, wider than long; last, longer than penultimate, regularly ellipsoidal.

Pronotum as long as wide, widest at middle of the sides, strongly convex, abruptly sloping at sides and base with a trace of mid-longitudinal depression before the basal slope; sides subparallel tapering at anterior third; posterior angles rather acute, convergent at apical extremity, briefly bicarinate, with the inner carina just visible; puncturation irregular on all the surface, moderate and sparse, punctures very variable in diameters, simple or vaguely umbilicate with intervals on average larger than their own diameters, at base nearly obsolete.

Scutellum shield-shaped, flat, ridged at base, rounded apically, punctured.

Elytra 2,4x longer than pronotum and as wide as it, very convex on disk, nearly vertically sloping at sides, more gradually towards the apicis; sides widest at middle; striae coarsely and deeply punctured, interstriae moderately convex, more finely and sparsely punctured and surface slightly shagreened.

Wings regularly developed, able to fly.

Tarsi with articles simple, with second, third and fourth regularly decreasing in length; claws simple.

Prosterno-pleural sutures very shiny, shortly and shallowly open in front; prosternal lobe, nearly straight, shorter than the inner anterior extremities of propleura.

Prosternal process elongate, immediately and abruptly sloping behind the procoxal cavities, subparallel to the body at the apical third and briefly emarginate at the extremity. Sides of mesocoxal cavity gently declivous; mesocoxae open to mesepimeron and mesepisternum.

Last segment of maxillary palpi subcylindrical.

Bursa copulatrix sclerified as in fig. 19.

***Socotrelater ferrugineus* n. sp.**

(Figs. 19, 46)

**Material examined.** Holotype ♀ - **Yemen**, Socotra Isl., Diksam plateau, Diksam lake (12°31'23"N, 53°57'12"E), 1000 m, 12.V.2004, A. Reiter (NMPC).

**Description.**

Female. Moderately shiny; entirely ferruginous with undefined darkish shadings at base of pronotum, around the scutellum and base of elytra; covered with moderate, yellowish, partially erect on elytra, vestiture.

Frons flat, anterior margin just visible touching clypeus; punctures of variable diameters, umbilicate with variable intervals or contiguous.

Antennae very short, serrated from third article on; second article subcylindrical, as long as wide; third-tenth subtriangular, transversally dilated; third, ninth, tenth, as long as wide; fourth-eighth, wider than long; last, longer than penultimate, regularly ellipsoidal.

Pronotum as long as wide, widest at middle of the sides, strongly convex, abruptly sloping at sides and base with a trace of mid-longitudinal depression before the basal slope; sides subparallel tapering at anterior third, posterior angles rather acute, convergent at apical extremity with a very short and just visible carina; puncturation irregular on all the surface, moderate and sparse, punctures very variable in diameters, simple or vaguely umbilicate with intervals on average larger than their own diameters.

Scutellum shield-shaped, flat, ridged at base, rounded apically, punctured.

Elytra 2,4x longer than pronotum and as wide as it, very convex on disk, nearly vertically sloping at sides, more gradually towards the apicis; sides widest at middle; striae coarsely and deeply

punctured, interstriae moderately convex, more finely and sparsely punctured and surface slightly shagreened.

Bursa copulatrix sclerified as in fig. 19.

Male unknown.

Size. Length: 8,8 mm; width: 2,7 mm.

**Etymology.** The name is derived from the ferruginous colour of the body of the species.

Subfamily **Elaterinae** Leach, 1815

Tribe **Dicrepidiini** Thomson, 1858

*Propsephus insularis* n. sp.

(Figs. 5, 5a, 33)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Wadi Ayhaft (12°36'38"N, 53°58'49"E), 190 m, 26.XI.2003, P. Kabátek (NMPC). 1 Paratype ♂ - same data as HT (CPG).

**Diagnosis.** The genus *Propsephus* Hyslop includes a very high number of species in the Ethiopian region. Only two species are known from Yemen (Wurst *et al.*, 2001). This one from Socotra is easily distinguished for the moderate size, shape of frons and longer antennae.

#### **Description.**

**Male.** Moderately shining; entirely yellow-ferruginous covered with dense, partially erect on all the body, yellow-fulvous, vestiture.

Head with eyes as wide as anterior margin of pronotum, frons flat, anterior margin obsolete, merged with clypeus; puncturation coarse, punctures clearly umbilicate, variable in diameters, with shortest intervals to contiguous.

Antennae exceeding by three articles the apicis of posterior angles of pronotum; second article, small, cylindrical, as long as wide; third, triangular, twice longer than second and nearly as long as wide, sculptured as the following; second and third, taken together, clearly shorter than fourth; fourth-tenth, subtriangular; fourth-sixth, twice longer than wide; seventh-tenth, slender, also 3x longer than wide; last, longer and narrower than penultimate, with subparallel sides constricted at apical third.

Pronotum 1,4-1,5x wider than long, widest at the apicis of posterior angles, trapezoidal, rather depressed on the disk; gradually sloping at sides and base; sides from base to apex nearly regularly narrowing, posterior angles divergent, rather acuminate with a feeble carina, very few apparent, directed inside; lateral margins fine and interrupted at the anterior third; puncturation uneven, on the disk punctures deep, simple or moderately umbilicate with variable intervals, smaller than their own diameters to larger, gradually denser towards the sides, umbilicate and contiguous to the extremities.

Scutellum shield-shaped, flat, densely punctured. Elytra 3,6-3,8x longer than pronotum and as wide as it, convex, sides subparallel for about the two thirds of its length then gradually narrowing to the apicis; striae punctured, interstriae flat and finely punctured at base, subconvex and coarsely punctured from behind the scutellum.

Second article of tarsi with a short and narrow lamella reaching the middle of third article, not visible in a dorsal view; third article with a similar narrow lamella just reaching the apex of fourth article.

Aedeagus as in figs. 5, 5a (length: 1,68 mm).

Female unknown.

Size. Length: 10-11 (HT) mm; width: 3-3,2 (HT) mm.

**Etymology.** The name is derived from the island (Socotra) where the species was collected.

Subfamily **Cardiophorinae** Candèze, 1860

***Cardiophorus bezdeki*** n. sp.

(Figs. 6, 6a, 34)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Homaq, TR5 large, WP172-176, 11.X.2007 (MCSNC). 18 Paratypes ♂ - (7♂) same data as HT; (3♂) Homaq, TR6 small, WP 177-178, 11.X.2007; (3♂) Homaq, TR6 large, WP 177-178, 11.X.2007; (3♂) Steroh, TR9 large, WP197-198, 11.X.2007; Wadi Egiya, TR34 large, WP2, 8.XI.2007 (MSNP; MCSNC; CPG).

66 Paratypes ♂ - Noged plain, Sharet Halma vill. env. (12°21.9'N, 54°05.3'E), (sands dunes), 20 m, 10-11.XI.2010, J. Bezdek, P. Hlavac, L. Purchart; Wadi Dehlme (12°26'43"N, 54°16'54"E), 10 m, sandy beach, at light, L. Purchart & J. Vybiral (NMPC; CPG).

**Description.**

**Male.** Moderately shiny; entirely yellow ochraceous to a little darker, covered with dense yellow-golden vestiture.

Head with eyes as wide as anterior margin of pronotum, frons flat to just depressed at anterior margin, the latter regularly thickened, arcuate and moderately protruding above clypeus; punctures irregularly distributed, simple or umbilicate, variable in diameters with shortest intervals or contiguous,

Antennae exceeding the apicis of posterior angles of pronotum by about 3-3,5 articles, feebly serrated from third article on; second article, conical, twice longer than wide; third-tenth, triangular, gradually slenderer from third; third, 1,5x longer than second and just shorter than following; fourth-tenth, about 3x longer than wide; last, as long as penultimate, constricted at apical third.

Pronotum as wide as long to just wider than long, widest at middle, convex; sides arcuate, from middle to base more or less regularly narrowing, posterior angles not or feebly divergent, truncate at apicis, with a very short carina; puncturation few apparent and very variable, irregularly distributed with punctures simple, flat or often with rough surface, on average with intervals larger than their own diameters.

Scutellum heart-shaped, as long as wide, emarginate at middle of base, moderately impressed at middle.

Elytra 2,7-2,8x longer than pronotum and wider than it, moderately convex; sides from base to middle subparallel, then regularly narrowing to the apicis; striae regularly impressed and punctured, interstriae flat to subconvex with finer puncturation.

Wings regularly developed, able to fly.

Claws simple.

Aedeagus as in figs. 6, 6a (length: 0,75 mm) (HT).

Female unknown.

Size. Length: 3,75- 5,5 mm (HT: 4,2 mm); width: 1-1,6 mm (HT: 1,3 mm).

**Etymology.** Dedicated to Prof. J. Bezdek, one of the responsible of the project on Socotra fauna, who contacted me for this study.

***Cardiophorus kabateki*** n. sp.

(Figs. 7, 7a, 20, 20a, 35)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Qalansia, TR32 large, WP3, 8.XI.2007 (MCSNC). 46 Paratypes (♂♀) - same data as HT; Qalansia, TR30 large, small, WP6, 4.XI.2007; Qalansia, TR33 large, small, WP76, 8.XI.2007; Qalansia, TR31 large, WP74, 8.XI.2007; Qalansia, TR31 small, WP74, 8.XI.2007; Qalansia, TR32 small, bottle 19, 8.XII.2007; Steroh, TR10 small, WP 220-208, 11.X.2007; Wadi Ayahft, TR14 small, WP31-32, 27.X.2007; Wadi Ayahft, TR11 large, WP25-26, 30.X.2007 (MSNP);



MCSNC; CPG).

58 Paratypes (♂♀) - Wadi Ayahft (12°36.5'N, 53°58.9'E), 200 m, 7-8.XI.2010, P. Hlavac, J. Bezdek; Qalansiyah env., Ditwah (lagoon) (12°41'42"N, 53°30'08"E), 23 m, 9.XII.2003, D. Král; Gubbah vill. env. (12°36'35"N, 53°46'56"E), 7 m, 23.XI.2003, D. Král; Aloove Area, Hassan vill. env. (12°31.2'N, 54°07.4'E), 221 m, 9-10.XI.2010, J. Hajek; Hadiboh env. (12°65'02"N, 54°02'04"E), 10-100 m, 12.XII.2003, P. Kabátek; 21.XI-12.XII.2003, J. Farkac; Dixam plateau, Wadi Esgego (12°28'09"N, 54°00'36"E), 300 m, 2-3.XII.2003, P. Kabátek; Dixam plateau, Firmihin area (12°47'40"N, 54°01'53"E), 428 m, 3.XII.2003, J. Farkac; Qaariah vill. env. (12°38'05"N, 54°12'39"E), 11 m, 28.XI.2003, P. Kabátek; Homhil protected area (12°34'27"N, 54°18'32"E), 364 m, 28-29.XI.2003, P. Kabátek, D. Král, J. Farkac; Haghier Mts., Skant (12°34.557'N, 54°01.514"E), 7-8.VI.2010, V. Hula & J.Niedobová; Wadi Ayhaft (12°36'38"N, 53°58'49"E), 190 m, 24-26.XI.2003, D. Král; Suq, E env. (12°40'02"N, 54°03'45"E), 20-170 m (sand dunes), 22.XI.2003, J. Farkac; Ba'a vill. env. (12°32'19"N, 54°10'41"E), 234 m, 5.XII.2003, J. Farkac; Shabab area, Baa vill. env., 9.XI.2010, J. Bezdek (NMPC; CPG).

### Description.

Male. Moderately shiny; colour variable, the great part of specimens (HT included) are bicoloured: entirely blackish with antennae, legs and base of elytra around the scutellum, yellow to yellow ferruginous; very rarely the elytra become entirely blackish and, at the end, a series of 17 specimens from different localities are lighter with head and pronotum ferruginous, darkened on the disk and elytra lighter, entirely ferruginous; covered with yellow, yellow-fulvous vestiture.

Head with eyes just narrower than anterior margin of pronotum, frons flat, moderately impressed at the anterior margin, the latter thickened, more or less arcuate and just protruding above the clypeus; puncturation coarse, punctures umbilicate and contiguous.

Antennae reaching or just exceeding the apicis of posterior angles of pronotum, very feebly serrated from third article on; second article, subcylindrical, 2,8x longer than wide and just shorter than fourth; fourth-tenth, subtriangular, on average 2,7x longer than wide; last, subellipsoidal, as long as penultimate.

Pronotum as long as wide, widest at middle, strongly and regularly convex, abruptly sloping at asides and base; sides strongly and regularly arcuate, posterior angles truncate, not divergent, with short carina directed inside; puncturation rather uniformly distributed, punctures on average with the same diameters, simple or very vaguely umbilicate, on the disk with very short intervals.

Scutellum heart-shaped, a little wider than long, emarginate in the middle of base, moderately impressed.

Elytra 2-2,2x longer than pronotum, as wide as it, convex and ovaliform, widest at middle; striae well impressed and punctured; interstriae flat to moderately convexed and finely punctured.

Wings very reduced unable to fly.

Claws simple.

Aedeagus as in figs. 7, 7a (length: 0,975 mm) (HT).

Female. Extremely similar to the male, only antennae just shorter.

Bursa copulatrix as in figs. 20, 20a.

Size. Length: 5,2-7 mm; width: 1,8-2,18 mm.

**Etymology.** Dedicated to Mr. P. Kabátek, collector of many species studied in this paper.

### *Cardiophorus krali* n. sp.

(Figs. 8, 8a, 36)

**Material examined.** Holotype ♂ - Yemen, Socotra Isl., Thar, TR77 large, WP 38-39, 5.III.2008 (MCSNC). 1 Paratype ♂ - Thar, TR78 large, WP40-41, 5.III.2008 (CPG).

### Description.

Male. Moderately shiny; entirely blackish with reddish shadings at base and along the elytral suture; antennae and legs yellowish; covered with fine, dense, yellow-golden vestiture.

Head with eyes a little narrower than anterior margin of pronotum, frons flat, anterior margin regularly thickened and arcuate, just protruding above clypeus, punctures moderate, deep, simple or vaguely umbilicate with very short intervals.

Antennae nearly reaching the apicis of posterior angles of pronotum, moderately serrated from third article on; second, subcylindrical, 2,5x longer than wide and just shorter than third; third-seventh, subtriangular, slenderer, about 2,4x longer than wide; eight-tenth, less than twice longer than wide; last, as long as penultimate, regularly ellipsoidal.

Pronotum 1,09-1,1x wider than long, widest at middle, strongly convex, abruptly sloping at base and sides; sides from middle to posterior apicis regularly narrowing, the latter not divergent, short, truncate with short carina; puncturation uniformly distributed, punctures on average of the same size, deep, simple, with very short heart-shaped, as long as wide, feebly emarginated at middle of base, moderately impressed at middle.

Elytra 2,1x longer than pronotum and as wide as it, moderately convex, ovaliform, widest at middle; striae well impressed and punctured; interstriae flat, sparsely punctured.

Wings absent.

Aedeagus as in figs. 8, 8a (length: 0,66 mm) (HT).

Female unknown.

Size. Length: 3,7 (HT)-4 mm; width: 1,2 (HT)-1,3 mm.

**Etymology.** Dedicated to Mr. D. Kral, collector of many species studied in this paper.

### *Cardiophorus purcharti* n. sp.

(Figs. 9, 9a, 21, 21a, 37)

**Material examined.** Holotype ♂ - Yemen, Socotra Isl., Zehmon area (12°20'58"N, 54°06'39"E), 270-300m, 16-17.VI.2010, V. Hula (NMPC). 303 Paratypes (♂♀) - same data as HT; Qualenthiah env., slopes 5 km SE from Quaysoh (12°39.691'N, 53°26.658'E), 4-5.VI.2010, V. Hula & J.Niedobová; Wadi Zirik (12°29.584'N, 53°59.475'E), 12.VI.2010, V. Hula & J.Niedobová; Wadi Zirik (12°29'35"N, 53°59'28"E), 650-670 m, 16.VI.2009, L. Purchart; Kesa env. (12°39'37"N, 53°26'42"E), 220-230 m, 28-29.I.2010, L. Purchart; Firmihin plateau, *Dracaena* tree forest (12°28'465"N, 54°00'89830"E, 22-25.VI.2009, V. Hula; Firmihin plateau (12°28'46"N, 54°00'89"), 400-500 m, 18-19.VI.2010, V. Hula & J.Niedobová; Dixam plateau, Firmihin (*Dracaena* forest)(12°28'6"N, 54°01'1"E), 490 m, 15-16.XI.2010, J. Hajek; Firmihin (12°28'27"N, 54°0'54"E), 22-25.VI.2009, L. Purchart & J. Vybiral; Dixam plateau, Firmihin (*Dracaena* forest) (12°28.6'N, 54°01.1'E), 490 m, 15-16.XI.2010, J. Bezdek, P. Hlavac; Shibhon (12°28'8807"N, 53°59'57520"E), 680m, 13.VI.2009, V. Hula, L. Purchart; Wadi Ayhaft (12°36.5'N, 53°58.9'E), 7-8.XI.2010, J. Hajek; 24-26.XI.2003, J. Farkac; Al Haghier Mts., Wadi Madar (12°33.2'N, 54°00.4'E), 1180-1230 m, 12-14.XI.2010, J. Hajek; Noged plain, Sharet Halma vill. env. (12°21.9'N, 54°05.3'E), (sands dunes), 20 m, 10-11.XI.2010, J. Bezdek; Noged plain, Wadi Ireeh (12°23'11"N, 53°59'47"), 95 m, J. Farkac; Wadi Ayhaft (12°36'38"N, 53°58'49"E), 190 m, 26.XI.2003, P. Kabátek; Wadi Ayhaft (12°36'38"N, 53°58'49"E), 190 m, 24-26.XI.2003, D. Král; Wadi Ayhaft (12°36.5'N, 53°58.9E), 200 m, 7-8.XI.2010, J. Bezdek; Hadiboh env. (12°65'02"N, 54°02'04"E), 10-100 m, 12.XII.2003, P. Kabátek; 21.XI-12.XII.2003, J. Farkac; Khayrha mts. N slopes, Qalansiyah env.(12°38'50"N, 53°27'45"E), 85-592 m, 9-10.XII.2003, P. Kabátek; Homhil protected area (12°34'27"N, 54°18'32"E), 364 m, 28-29.XI.2003, D. Král, P. Kabátek, J. Farkac; Dixam plateau, Wadi Zeeriq (12°31'08"N, 53°59'09"E), 750 m, 3.XII.2003, D. Král; Dixam plateau, Wadi Esgego (12°28'09"N, 54°00'36"E), 300 m, 2-3.XII.2003, D. Král, P. Kabátek, J. Farkac; Qaariah vill. env. (12°38'05"N, 54°12'39"E), 11 m, 28.XI.2003, P. Kabátek; Dgisfu valley (12°28.444'N, 54°08.596 E), 2.VI.2010, V. Hula & J.Niedobová; Dixam plateau, Shirhin area

(12°31'08"N, 53°59'09"E), 812 m, 1-2.XII.2003, P. Kabátek; Wadi Faar (12°43'30"N, 54°19'50"E), 89 m, 1.IV.2001, V. Bejcek & K. Stastny (NMPC; CPG).

#### Description.

Male. Moderately shiny; colour rather variable, entirely blackish, very often with posterior angles of pronotum, base of elytra, sometimes including the humera, elytral suture and scutellum reddish, more rarely entirely ferruginous; antennae and legs always yellowish; covered with dense, yellow-fulvous vestiture.

Head with eyes just narrower than anterior margin of pronotum, frons flat, just impressed at anterior margin, the latter moderately thickened, arcuate and just protruding above the clypeus; puncturation coarse, punctures of variable diameters, moderately umbilicate, with very short intervals or contiguous.

Antennae reaching or just exceeding the apicis of posterior angles of pronotum, moderately serrated from third article on; second, subcylindrical, 2,3x longer than wide and just shorter than fourth; fourth-tenth, subtriangular, on average 2,2x longer than wide; last, as long as penultimate, subellipsoidal.

Pronotum as long as wide or just wider, widest at middle, convex, gradually sloping at sides, abruptly sloping at base; sides moderately arcuate, from middle to base gradually narrowing; posterior angles short, truncate, not divergent, briefly carinate; puncturation moderate, punctures on average of the same diameters, rather uniformly distributed, at base generally finer and sparser, on disk simple with very short intervals and gradually denser to the sides.

Scutellum heart-shaped, as long as wide, deeply emarginate at middle of base and impressed at middle.

Elytra 2,5-2,6x longer than pronotum and as wide as it, moderately convex; sides subparallel for about the two-thirds of its length, then gradually narrowing to the apicis; striae regularly impressed and finely punctured; interstriae flat with finer punctures.

Wings well developed and able to fly.

Claws simple.

Aedeagus as in figs. 9, 9a (length: 1,02 mm) (HT).

Female. Size on average larger, body more parallel and shorter antennae.

Bursa copulatrix sclerified as in figs. 21, 21a.

Size. Length: 5,8-7,8 mm; width: 1,75-2,43 mm.

**Etymology.** Dedicated to Mr. L. Purchart, collector of many species studied in this paper.

*Cardiophorus hlavaci* n. sp.

(Figs. 10, 10a, 22, 22a, 38)

**Material examined.** Holotype ♂ - Yemen, Socotra Isl., Gubbah vill. env. (12°36'35"N, 53°46'56"E), 7 m, 23.XI.2003, D. Král (NMPC). 7 Paratypes (6♂, 1♀) - Haghier Mts., Skant (12°34.557'N, 54°01.514'E), 7-8.VI.2010, V. Hula & J.Niedobová (NMPC; CPG).

#### Description.

Male. Moderately shiny; entirely blackish with sometimes the anterior margin of frons, anterior margin of pronotum, apicis of posterior angles of pronotum, base of elytra around the scutellum and middle of this, base of propleura, reddish; in two specimens the entire elytra are lighter than head and pronotum; antennae and legs yellow-ferruginous; covered with dense, recumbent, yellowish vestiture.

Head with eyes a little narrower than anterior margin of pronotum, frons flat, just impressed at the anterior margin, the latter moderately thickened, subarcuate, just protruding above the clypeus; puncturation coarse, punctures strongly umbilicate, of variable diameters, with very short intervals or contiguous or forming areas of confluent punctures.

Antennae exceeding by about 2,5 articles the apicis of posterior angles of pronotum; feebly serrated from third article on: second article, subcylindrical, 2,2x longer than wide and just shorter than third; third-tenth, subtriangular, third shorter than following; fourth-tenth, gradually slenderer and the last with subparallel sides; last, longer than penultimate, moderately constricted at apical third.

Pronotum 1,12-1,17x wider than long, widest at middle, very strong convex, at sides abruptly, at base nearly vertically sloping; sides strongly arcuate, from middle gradually narrowing to the apicis of posterior angles, the latter short, truncate, not divergent, shortly carinate, lateral suture-like absent or just traced; puncturation uniformly distributed on all the surface, punctures deep, simple or feebly umbilicate, on average of the same diameters, with very short, smooth intervals.

Scutellum heart-shaped as long as wide or just wider, deeply emarginate at middle of base, flat, finely punctured.

Elytra on average 2,3x longer than pronotum as wide as it, extremely convex, ovaliform, widest at middle; striae well marked and punctured; interstriae flat or moderately convex with finer punctures.

Wings very reduced, not able to fly.

Claws simple.

Aedeagus as in figs. 10, 10a (length: 1,31 mm) (HT).

Female. Easily separated for the larger size, more convex body and shorter antennae, only reaching the apicis of posterior angles of pronotum.

Bursa copulatrix as in figs. 22, 22a.

Size. Male: length: 6,7-7,7 mm; width: 2,43-2,68 mm. Female: length: 9,35 mm; width: 3,25 mm.

**Etymology.** Dedicated to Mr. P. Hlavac, collector of many species studied in this paper.

*Cardiophorus vybirali* n. sp.

(Figs. 11, 11a, 39)

**Material examined.** Holotype ♂ - Yemen, Socotra Isl., Noged plain, Sharet Halma vill. env. (12°21.9'N, 54°05.3'E), 20 m, 10-11.XI.2010, J. Hajek (sand dunes) (NMPC).

**Diagnosis.** Very particular species imitating perfectly in the general shape, colour and aedeagus the two species of *Dicronychus* here described, but with simple claws typical of *Cardiophorus* sp.

**Description.**

Male. Shiny; entirely black with antennae and legs yellow-testaceous; covered with dense, recumbent yellow-golden vestiture.

Head with eyes just narrower than anterior margin of pronotum, frons flat, just impressed at anterior margin, the latter moderately thickened, subarcuate, just protruding above the clypeus, punctures coarse, umbilicate, with very short intervals or contiguous.

Antennae long, exceeding by three articles the apicis of posterior angles of pronotum, feebly serrated from third article on; second article, subconical, less than twice longer than wide; third-tenth, subtriangular; third, 1,6x longer than second and a little shorter than fourth; fourth-sixth; about twice longer than wide; seventh-ninth, slenderer with nearly subparallel sides; last, longer than penultimate, subellipsoidal.

Pronotum 1,14x longer than wide, widest at the anterior third, regularly and strongly convex; sides from the anterior third to base gradually and regularly narrowing; posterior angles short, truncate just divergent, briefly carinate, lateral suture-like apparent and prolonged later in the middle; punctures moderate, feebly raised, on average of similar diameters, with intervals shiny, larger than their own diameters.

Scutellum heart-shaped, a little longer than wide, emarginate in the middle of base and gently impressed in the first half.

Elytra 2,4x longer than pronotum, convex, sides subparallel for about the two thirds of its length, then gradually narrowing to the apicis; striae regularly marked and deeply punctured, interstriae subconvex with finer punctures.

Wings able to fly.

Claws simple.

Aedeagus as in figs. 11, 11a (length: 0,70 mm).

Female unknown.

Size. Length: 4,35 mm; width: 1,37 mm.

**Etymology.** Dedicated to Mr. J. Vybiral, collector of many species studied in this paper.

*Cardiophorus hulai* n. sp.  
(Figs. 12, 12a, 23, 23a, 40)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Qualenthiah env., slopes 5 km SE from Quaysoh (12°39.691'N, 53°26.658'E), 4-5.VI.2010, V. Hula & J.Niedobová (NMPC). 18 Paratypes (♂♀) - Zehmon area (12°20'58"N, 54°06'39"E), 270-300m, 16-17.VI.2010, V. Hula; Homhil area (12°34'25"N, 54°18'53"E), 400-510 m, 9-10.II.2010, at light, L. Purchart & J. Vybiral; Wadi Hoq (12°41'32"N, 54°01'35"E), 54 m, 22.XI.2003, P. Kabátek (NMPC; CPG).

**Description.**

**Male.** Moderately shiny; entirely yellowish normally with darkened undefined shadings on head, sometimes on disk of pronotum, base of elytra, around of scutellum; covered with fine, dense, yellow-fulvous vestiture.

Head with eyes just narrower than anterior margin of pronotum, frons moderately convex on vertex, flat or just impressed at anterior margin, the latter regularly arcuate, thickened, just protruding above the clypeus; punctures moderate, on average of the same diameters, simple, with very short intervals.

Antennae reaching or just exceeding the apicis of posterior angles of pronotum, very feebly serrated from third article on; second article, subcylindrical, twice longer than wide, just shorter than fourth; fourth-tenth, subtriangular, slender and subequal in length, about 3x longer than wide; last, as long as penultimate, simmetrically constricted at apex.

Pronotum as long as wide, widest at middle, very and regularly convex; sides moderately arcuate from middle, forwards and backwards, gently sinuate before the posterior angles, the latter short, truncate, not divergent, shortly carinate; lateral suture-like regularly prolonged after the middle; puncturation moderate, rather uniformly distributed except for the basal slope where is more sparse and few apparent; punctures of approximately the same diameters, simple or vaguely umbilicate, on the disk with very short intervals.

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

Elytra 2,5-2,6x longer than pronotum and as wide as it, convex, sides subparallel in the first half then gradually narrowing to the apicis; striae regularly marked and punctured, only to the apicis more superficial; interstriae flat, very finely punctured.

Wings perfectly developed able to fly.

Claws simple.

Aedeagus as in figs. 12, 12a (length: 1 mm) (HT).

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

Bursa copulatrix sclerified as in figs. 23, 23a.

Size. Length: 5,0-6,8 mm; width: 1,5-2,12 mm.

**Etymology.** Dedicated to Mr. V. Hula, collector of many species studied in this paper.

*Cardiophorus niedobovae* n. sp.

(Figs. 13, 13a, 24, 24a, 41)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Zehmon area (12°20'58"N, 54°06'39"E), 270-300m, 16-17.VI.2010, V. Hula (NMPC). 3 Paratypes ♀ - Zehmon area (12°32'17"N, 54°04'12"E), 260-320 m, 20.VI.2009, L. Purchart; Dixam plateau, Firmihin (*Dracaena* forest) (12°28.6'N, 54°01.1'E), 490 m, 15-16.XI.2010, J. Bezdek, P. Hlavac (NMPC; CPG).

**Description.**

Male. Moderately shiny; bicoloured; head, except for the anterior margin, pronotum except for the anterior margin and base, a fusiform spot on elytra departing from behind the scutellum and interrupted before the apicis, blackish; all the remaining parts, included antennae and legs, yellowish; covered with fine, dense, yellow-golden vestiture.

Head with eyes just narrower than anterior margin of pronotum, frons flat, just impressed at the anterior margin, the latter thickened, subarcuate, just protruding above the clypeus; punctures on average of the same diameters, simple or vaguely umbilicate, with very short intervals.

Antennae exceeding by one article the apicis of posterior angles of pronotum, very feebly serrated from third article on; second article, subcylindrical, twice longer than wide, a little shorter than third; third-tenth, subtriangular; third just shorter than following, these slenderer, on average 4x longer than wide; last, as long as penultimate, ellipsoidal.

Pronotum as long as wide, widest at middle, very and regularly convex, abruptly sloping at sides, nearly vertically at base; sides moderately and regularly arcuate, feebly sinuate before the posterior angles, the latter short, truncate, not diverging, briefly carinate, lateral suture-like apparent and prolonged later on the middle; punctures very fine, approximately of the same diameters, simple with intervals on the disk, on average equal to their own diameters.

Scutellum heart-shaped, as long as wide, moderately emarginate at middle of base, flat.

Elytra 2,6x 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, finely punctured.

Wings well developed and able to fly.

Claws simple.

Aedeagus as in figs. 13, 13a (length: 0,87 mm).

Female. The darker colour of head, disk of pronotum and fusiform spot of elytra are more weakened, antennae a little shorter, puncturation of pronotum denser.

Bursa copulatrix sclerified as in figs. 24, 24a.

Size. Length: 5-5,2 mm; width: 1,5-1,6 mm.

**Etymology.** Dedicated to Mrs. J. Niedobova, collector of many species studied in this paper.

*Dicronychus cristianoï* n. sp.

(Figs. 14, 14a, 42)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Wadi egiya, TR 35 small, large, WP89, 5.XI.2007 (MCSNC). 13 Paratypes ♂ - same data as HT; TR34, small, large, WP72, 8.XI.2007 (MSNP; MCSNC; CPG).

**Description.**

Male. Moderately shiny; entirely black or blackish with antennae and legs brown-ferruginous; covered with dense, recumbent, yellow-golden vestiture.

Head with eyes just narrower than the anterior margin of pronotum, frons flat or just impressed from middle to the anterior margin, the latter is moderately thickened, regularly arcuate, at middle touching the clypeus; punctures very coarse, strongly umbilicate, contiguous or confluent.

Antennae exceeding by about three articles the apicis of posterior angles of pronotum, moderately serrated from the third article on; second article, subcylindrical, about twice longer than wide and just shorter than third; third-tenth, subtriangular; third shorter than following and about 2,3x longer than wide; fourth-tenth, gradually slenderer, 2,5-2,7x longer than wide; last, subellipsoidal, a little longer than penultimate.

Pronotum as long as wide, widest at the anterior third, convex, gradually sloping at sides and base; sides from the anterior third regularly and gradually narrowing, feebly sinuate before the apicis, the latter moderately acuminate, just divergent, shortly carinate, lateral suture-like normally developed obsolescent at anterior third; puncturation very coarse and uniformly distributed, punctures umbilicate, contiguous or confluent giving to the surface a dull appearance.

Scutellum heart-shaped, a little longer than wide, slightly emarginate at middle of base, flat with very fine punctures.

Elytra 2,5-2,6x longer than pronotum and just wider than it, moderately convex; sides subparallel from base to behind the middle, then gradually narrowing to the apicis; striae well marked and deeply punctured; interstriae subconvex with finer punctures.

Wings well developed, able to fly.

Claws with a short tooth giving it an apical bifid appearance.

Aedeagus as in figs. 14, 14a (length: 0,75 mm).

Female unknown.

Size. Length: 4,0-5,0 mm; width: 1,25-1,5 mm.

**Etymology.** Dedicated to Mr. Luca Cristiano of the Civic Museum of Natural History of Carmagnola who selected the material collected for the specialists.

*Dicronychus pellae* n. sp.

(Figs. 15, 15a, 43)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Qalansia, TR33 large, WP76, 8.XI.2007 (MCSNC). 20 Paratypes ♂ - same data as HT; TR32 small, bottle 19, 8.XII.2007; TR32 large, WP3, 8.XI.2007; TR31 large, WP74, 8.XI.2007 (MSNP; MCSNC; CPG).

**Description.**

Male. Moderately shiny; entirely black or blackish with antennae and legs brown-ferruginous; covered with dense, recumbent, yellow-golden vestiture.

Head with eyes just narrower than the anterior margin of pronotum, frons flat or just impressed from middle to the anterior margin, the latter is moderately thickened, regularly arcuate, just protruding above the clypeus; punctures very coarse, strongly umbilicate, contiguous or confluent.

Antennae exceeding by about 3,5 segments the apicis of posterior angles of pronotum, moderately serrated from the third article on; second article, subconical, 1,6x longer than wide, and just shorter than third; third-tenth, subtriangular; third, shorter than following and about 2x longer than wide; fourth-tenth, gradually slenderer, 2,3x on average longer than wide; last subellipsoidal, a little longer than penultimate.

Pronotum as long as wide, widest at middle, convex, gradually sloping at sides and base; sides from middle regularly and gradually narrowing, feebly sinuate before the apicis, the latter moderately acuminate, just divergent, shortly carinate, lateral suture-like normally developed obsolescent at anterior third; puncturation very coarse and uniformly distributed, punctures umbilicate, contiguous or confluent giving to the surface a dull appearance.

Scutellum heart-shaped, as long as wide, slightly emarginate at middle of base, flat with very fine punctures.

Elytra on average 2,8x longer than pronotum and just wider than it, moderately convex; sides subparallel from base to behind the middle, then gradually narrowing to the apicis; striae well marked and deeply punctured; interstriae subconvex with finer punctures.

Wings well developed able to fly.

Claws with a short tooth giving it an apical bifid appearance.

Aedeagus as in figs. 15, 15a (length: 0,87 mm).

Female unknown.

Size. Length: 4,5-6 mm; width: 1,37-1,8 mm.

**Etymology.** Dedicated to the Dr. Francesca Pella who contacted me for the study of Socotran material.

*Craspedostethus socotranus* n. sp.

(Figs. 16, 16a, 25, 44)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Homaq, TR4 large, WP179-180, 11.X.2007 (MCSNC). 26 Paratypes (♂♀) - same data as HT (MSNP; MCSNC; CPG).

2 Paratypes - Dixam plateau, Wadi Esgego (12°28'09"N, 54°00'36"E), 300 m, 2-3.XII.2003, P. Kabátek; Qaariah vill. env. (12°38'05"N, 54°12'39"E), 11 m, 28.XI.2003, P. Kabátek (NMPC).

**Diagnosis.** Small species similar to *C. buettikeri* Platia & Schimmel, 1997 from Arabian Peninsula (Platia & Schimmel, 1997) it can be separated by the size on average smaller, longer antennae and slightly convex interstriae of elytra.

**Description.**

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

Frons slightly convex, flat at the anterior margin, the latter thickened, regularly arcuate, protruding above the clypeus; punctures moderate, simple, on average of the diameters, with intervals equal to smaller than their own diameters.

Antennae exceeding by about one article the apicis of posterior angles of pronotum, feebly serrated from fourth article on; second article, subcylindrical, twice longer than wide, a little shorter than third, this subconical, just longer than second and shorter than fourth; fourth-tenth, subtriangular, on average 2,5x longer than wide; last, as long as penultimate, ellipsoidal.

Pronotum 1,1x wider than long, widest just behind the middle, regularly convex, sides arcuate, from behind the middle very gradually narrowing to the apicis, the latter short, not divergent, longely carinate later on the middle; punctures of approximately the same diameters, simple or vaguely umbilicate, on the disk with intervals on average equal to larger than their own diameters.

Scutellum heart-shaped, as long as wide, not emarginate at base, flat, very finely punctured.

Elytra 2,3x longer than pronotum and as wide as it, convex, ovaliform, widest at middle; striae well marked and punctured; interstriae slightly convex with very fine punctures.

Wings well developed, able to fly.

Claws simple.

Aedeagus as in figs. 16, 16a (length: 0,51 mm).

Female. Extremely similar to male only with shorter antennae just reaching the apicis of posterior angles of pronotum.

Bursa copulatrix sclerified as in fig. 25.

Size. Length: 3-3,7 mm; width: 1-1,3 mm.

**Etymology.** The name is derived from Socotra Island where the species was collected.



Key to the known *Cardiophorini* from Socotra

- |   |                        |
|---|------------------------|
| 1. Claws simple .....   | 2                      |
| - Claws toothed .....   | <i>Dicronychus</i>     |
| 2. Posterior angles of pronotum shortly carinate .....                    | <i>Cardiophorus</i>    |
| - Posterior angles of pronotum longely carinate later in the middle ..... | <i>Craspedostethus</i> |

Key to the known *Cardiophorus*

- |   |                          |
|---|--------------------------|
| 1. Wings very reduced or absent unable to fly .....   | 2                        |
| - Wings well developed able to fly .....  | 4                        |
| 2. Size on average larger (♂ 5,2-7,7 mm) .....  | 3                        |
| - Size on average smaller (♂ 3,7-4 mm) .....  | <i>krali</i> n. sp.      |
| 3. Antennae shorter, in the male just reaching, in the female a little shorter, the apicis of posterior angles of pronotum .....    | <i>kabateki</i> n. sp.   |
| - Antennae longer, exceeding by about 2-2,5 articles, in the female only reaching, the apicis of posterior angles of pronotum ..... | <i>hlavaci</i> n. sp.    |
| 4. Elytra unicoloured or without defined spots .....  | 5                        |
| - Elytra bicoloured with a more or less developed fusiform black or darkish spot .....  | <i>niedobovae</i> n. sp. |
| 5. Longer antennae, in the male exceeding by 3-3,5 articles the apicis of posterior angles of pronotum (female unknown) .....       | 6                        |
| - Shorter antennae in the male only reaching the apicis of posterior angles of pronotum, in the female a little shorter .....       | 7                        |
| 6. Colour of body entirely yellowish, yellow-ochraceous .....   | <i>bezdeki</i> n. sp.    |
| - Colour of body entirely black piceous very shiny .....  | <i>vybirali</i> n. sp.   |
| 7. Colour of body variable from entirely blackish (most of specimens) to intermediate forms, very rarely entirely ferruginous ..... | <i>purcharti</i> n. sp.  |
| - Colour of body always yellow-ferruginous .....  | <i>hulai</i> n. sp.      |

Key to the known *Dicronychus*

- |   |                           |
|---|---------------------------|
| 1. Antennae a little longer, pronotum widest in the middle, apex of aedeagus slender .....              | <i>pellae</i> n. sp.      |
| - Antennae a little shorter, pronotum widest at the anterior third; apex of aedeagus more dilated ..... | <i>cristianoii</i> n. sp. |

Subfamily **Eudicronychinae** Girard, 1971<sup>1</sup>

***Eudicronychus socotranus*** n. sp.

(Figs. 17, 17a, 45)

**Material examined.** Holotype ♂ - **Yemen**, Socotra Isl., Qaariah vill. env. (12°38'05"N, 54°12'39"E), 11 m, 28.XI.2003, P. Kabátek (NMPC). 2 Paratypes ♂ - same data as HT (NMPC; CPG).

**Diagnosis.** First species of the genus known out of the continental Africa. Because of the male genitalia features it is strictly allied to *E. orientalis* Girard, 2011 described from Ethiopia and Somaly but it is immediately separated by the larger size and shorter antennae only reaching the apicis of posterior angles of pronotum.

**Description.**

Male. Moderately shiny; head and pronotum except for the base, castaneous, darker than the rest of the of body, ferruginous with blackish shadings; antennae and legs ferruginous; covered with long, semierect at sides of body, fulvous vestiture.

Head with eyes as wide as anterior margin of pronotum, frons convex on vertex with trace of a very short mid-longitudinal carina, flat or just impressed at middle, flat near the anterior margin, the latter complete, nearly straight, just protruding above the clypeus; puncturation coarse, punctures more or less clearly umbilicate, with very short shiny intervals or contiguous.

Antennae reaching the apicis of posterior angles of pronotum, serrated from third article on; second small, subcylindrical, as long as wide; third-tenth, triangular, a little longer than wide; last, longer than penultimate, subellipsoidal, abruptly constricted at apical third.

Pronotum trapezoidal, 1,3x wider than long, widest at the apicis of posterior angles, sides nearly regularly narrowing from base to apex, posterior angles diverging, truncate at apicis, with a feeble carina directed inwards; disc convex with a moderate and mid-longitudinal carina of variable length, short and limited before the basal slope in HT and one PT, prolonged to the middle in the second PT; punctures uniformly distributed, deep, more or less umbilicate, with very short shiny intervals on disc, a little denser towards the sides.

Scutellum shield-shaped, elongate, flat, punctured.

Elytra 3,36x longer than pronotum and as wide as it, convex, with sides gradually narrowing from base to the apicis; striae punctured; interstriae flat at base, convex from behind the scutellum to the apicis, densely and roughly punctured.

Aedeagus as in figs. 17, 17a (length: 2,12 mm).

Female unknown.

Size. Length: 13,5-15 mm; width: 3,85-4,30 mm.

**Etymology.** The name is derived from Socotra Island where the species was collected.

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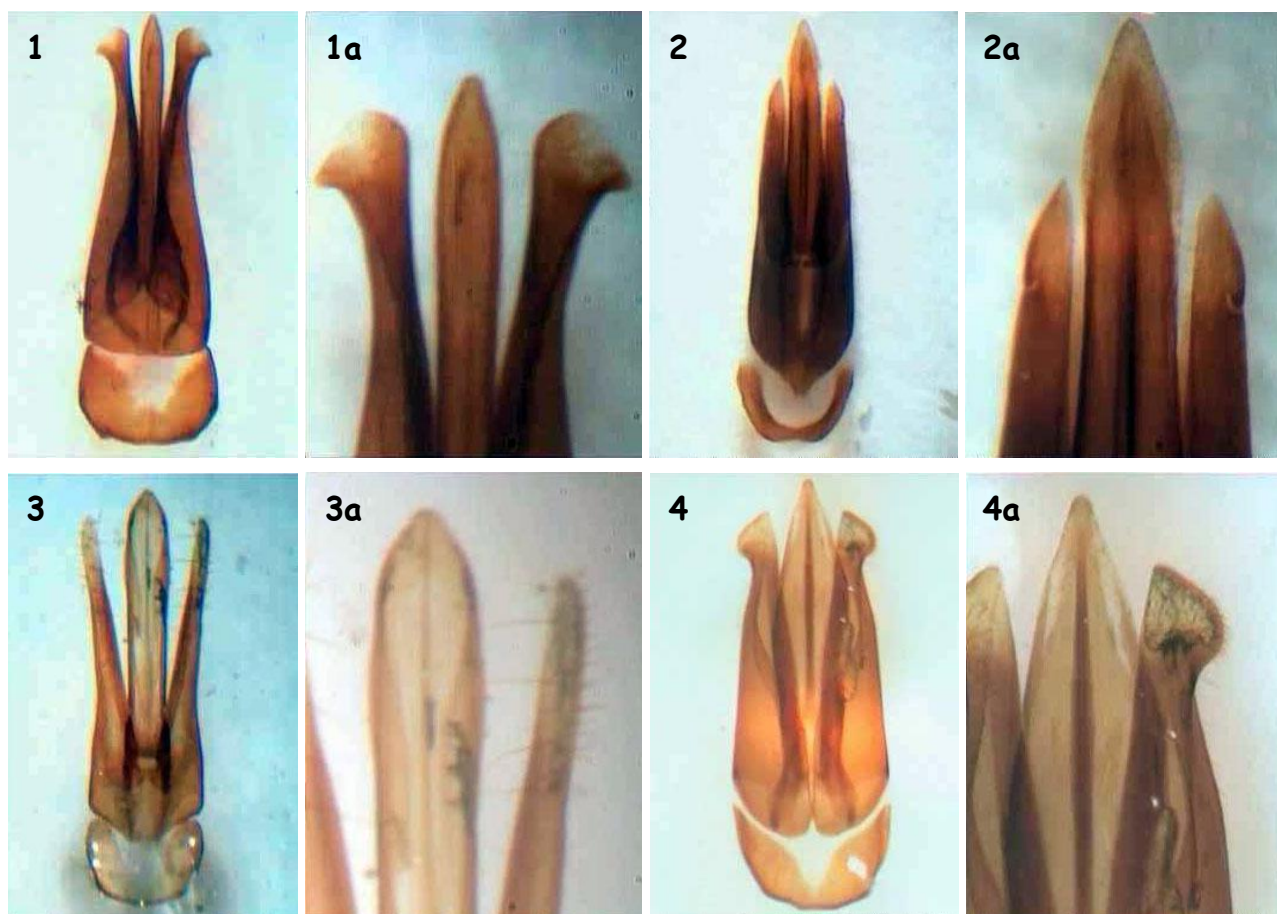
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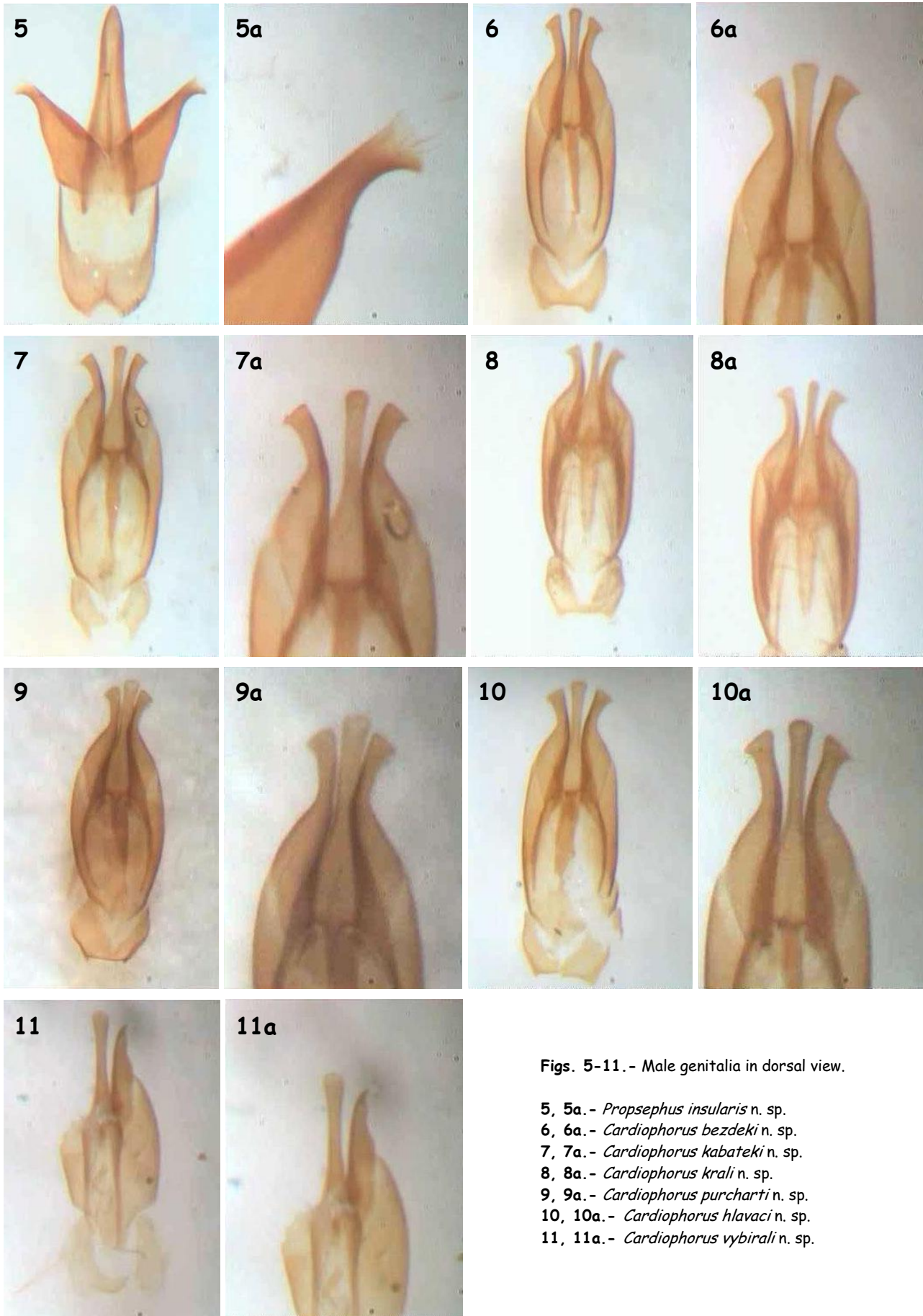
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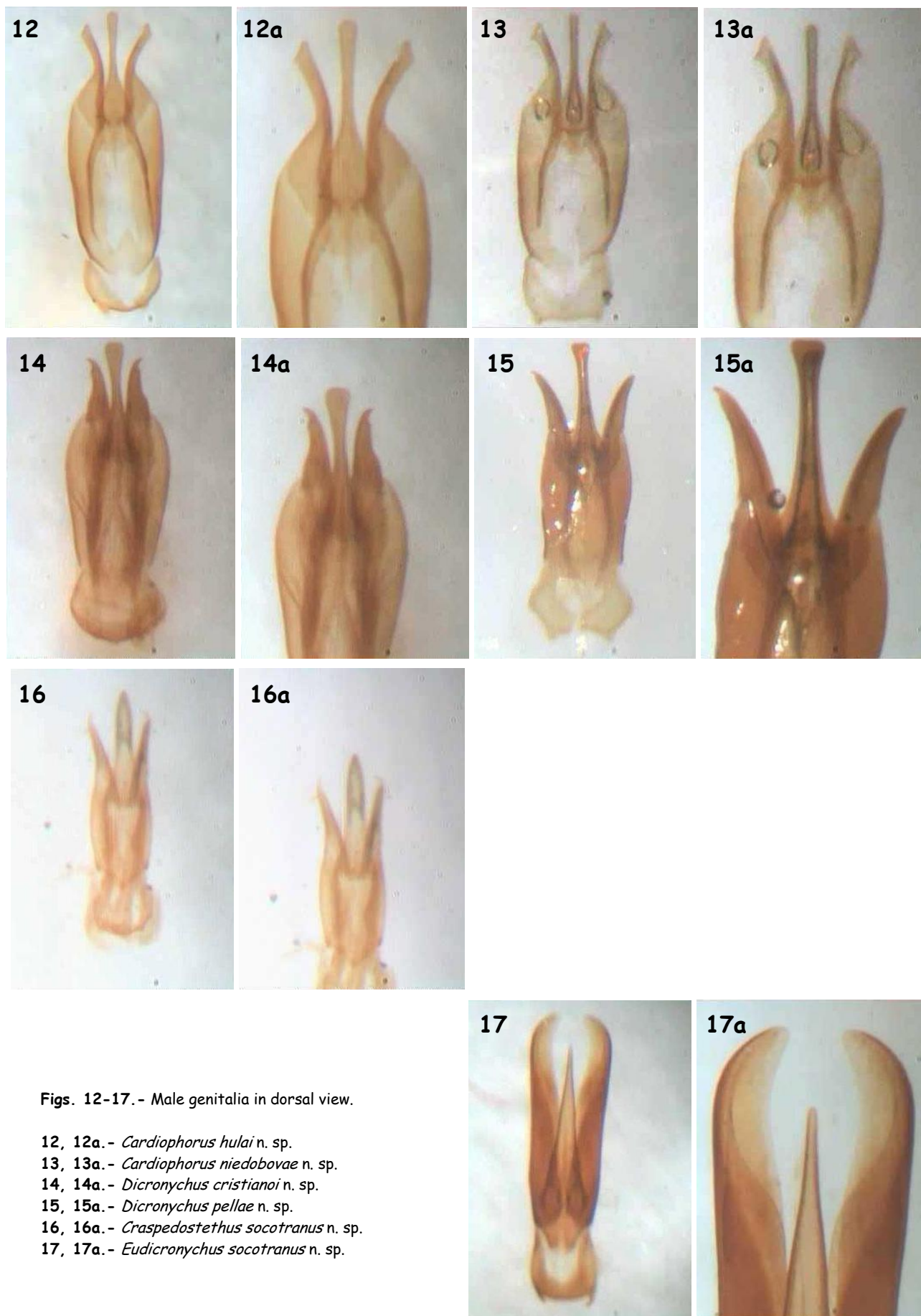
Figs. 1-4. - Male genitalia in dorsal view.

1, 1a. - *Agrypnus hajeki* n. sp.; 2, 2a. - *Calais sulcicollis* (Gahan)  
3, 3a. - *Aeoloides gubbahensis* n. sp.; 4, 4a. - *Gahanus socotranus* n. sp.



**Figs. 5-11.** - Male genitalia in dorsal view.

- 5, 5a.** - *Propsephus insularis* n. sp.
- 6, 6a.** - *Cardiophorus bezdeki* n. sp.
- 7, 7a.** - *Cardiophorus kabateki* n. sp.
- 8, 8a.** - *Cardiophorus krali* n. sp.
- 9, 9a.** - *Cardiophorus purcharti* n. sp.
- 10, 10a.** - *Cardiophorus hlavaci* n. sp.
- 11, 11a.** - *Cardiophorus vybirali* n. sp.



Figs. 12-17.- Male genitalia in dorsal view.

- 12, 12a.- *Cardiophorus hulai* n. sp.
- 13, 13a.- *Cardiophorus niedobovae* n. sp.
- 14, 14a.- *Dicronychus cristianoii* n. sp.
- 15, 15a.- *Dicronychus pellae* n. sp.
- 16, 16a.- *Craspedostethus socotranus* n. sp.
- 17, 17a.- *Eudicronychus socotranus* n. sp.



**Figs. 18-21.** - Sclerites of bursa copulatrix.

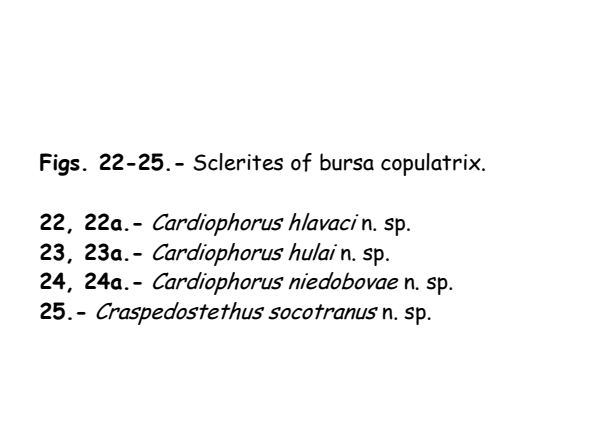
**18, 18a.** - *Calais sulcicollis* (Gahan)

**19.** - *Socotrelater ferrugineus* n. sp.

**20, 20a.** - *Cardiophorus kabateki* n. sp.

**21, 21a.** - *Cardiophorus purcharti* n. sp.





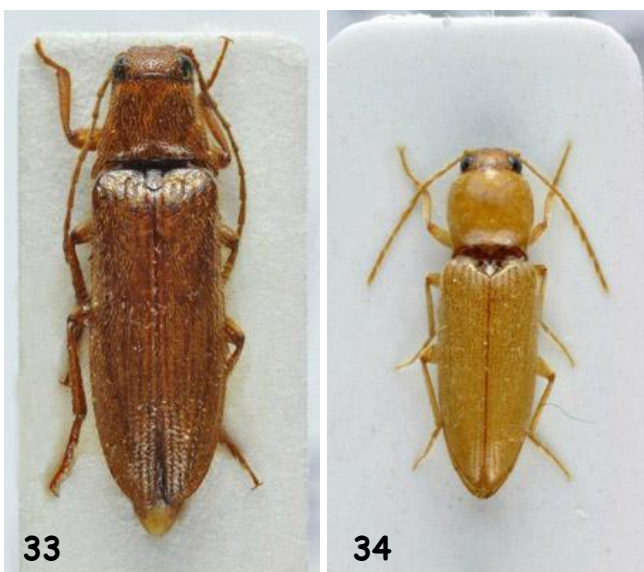
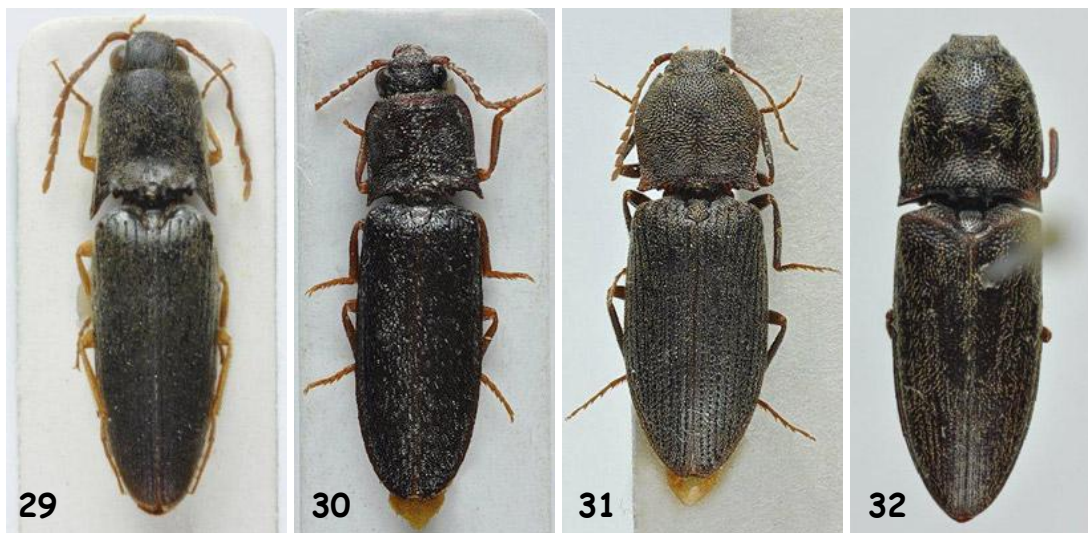
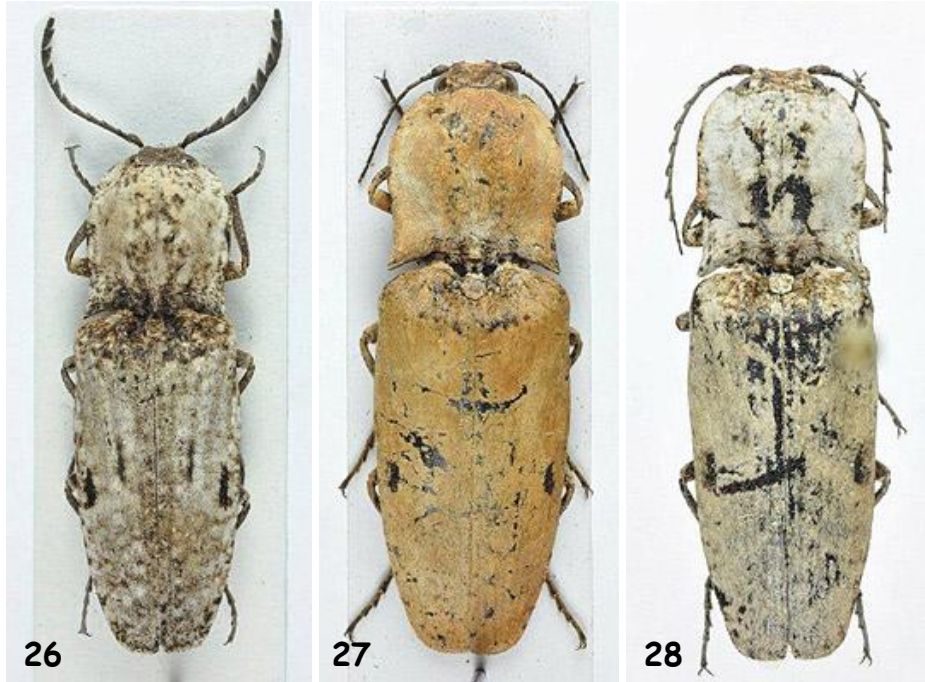
Figs. 22-25. - Sclerites of bursa copulatrix.

22, 22a. - *Cardiophorus hlavaci* n. sp.

23, 23a. - *Cardiophorus hulai* n. sp.

24, 24a. - *Cardiophorus niedobovae* n. sp.

25. - *Craspedostethus socotranus* n. sp.



Figs. 26-34. - Habitus.

26, 27, 28. - *Calais sulcicollis* (Gahan) (mm 21,8; mm 27; mm 20,5).

29. - *Aeoloides gubbahensis* n. sp. (mm 10,7).

30. - *Gahanus socotranus* n. sp. (mm 9).

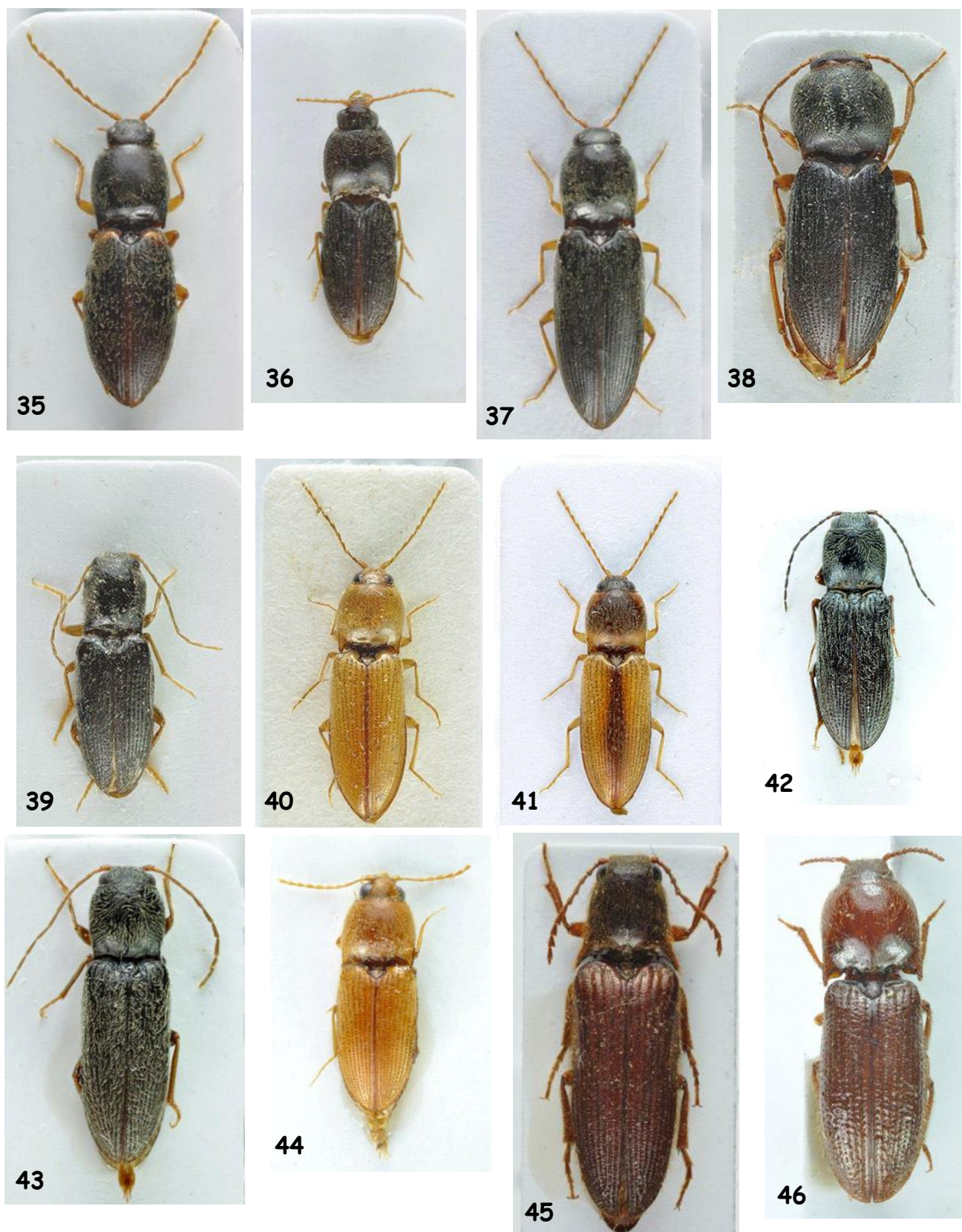
31. - *Agrypnus hajeki* n. sp. (mm 10).

32. - *Lacon modestus* (Boisduval, 1835) (mm 13).

33. - *Propsephus insularis* n. sp. (mm 11).

34. - *Cardiophorus bezdeki* n. sp. (mm 5).





Figs. 35-46. - Habitus.

35. - *Cardiophorus kabateki* n. sp. (mm 5,9). 36. - *Cardiophorus krali* n. sp. (mm 3,7). 37. - *Cardiophorus purcharti* n. sp. (mm 6,8). 38. - *Cardiophorus hlavaci* n. sp. (mm 7,3). 39. - *Cardiophorus vybirali* n. sp. (mm 4,35). 40. - *Cardiophorus hulai* n. sp. (mm 6). 41. - *Cardiophorus niedobovae* n. sp. (mm 5,3). 42. - *Dicronychus cristiano* n. sp. (mm 4,5). 43. - *Dicronychus pellae* n. sp. (mm 5,35). 44. - *Craspedostethus socotranus* n. sp. (mm 3,7). 45. - *Eudicronychus socotranus* n. sp. (mm 13,8). 46. - *Socotrelater ferrugineus* n. sp. (mm 8,8).