

Canuschiza of Socotra Island
(Coleoptera: Scarabaeidae: Melolonthinae)
Part 1. *Canuschiza insularis* species group

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Abstract. Within the Socotran chafer genus *Canuschiza* Lacroix, 1999 (Coleoptera: Scarabaeidae: Melolonthinae: Schizonychini) two species groups are recognized, *Canuschiza insularis* Lacroix, 1999 species group and *C. minuta* Lacroix, 1999 species group. A revision of *C. insularis* species group is provided. *Canuschiza insularis* is redescribed and the following seven new species are described within this group: *Canuschiza adah* sp. nov., *C. croton* sp. nov., *C. dracaena* sp. nov., *C. firmihin* sp. nov., *C. hagher* sp. nov., *C. jatropa* sp. nov., and *C. skand* sp. nov. An identification key to males and females of the species group is provided, and photographs illustrate external morphology and male genitalia.

Key words. Coleoptera, Scarabaeoidea, Scarabaeidae, Melolonthinae, Schizonychini, *Canuschiza*, new species, description, key, taxonomy, distribution, Yemen, Socotra

Introduction

Members of two melolonthine tribes are known from Socotra Island. The tribe Pachydemini (= Tanyproctini; see LACROIX & MONTREUIL (2013) for discussion on the precedence of Pachydemini over Tanyproctini) is represented by nine endemic species belonging to three genera (LACROIX 2002, KRÁL et al. 2012, BEZDĚK et al. 2013). The fauna of the tribe Schizonychini known so far (= Schizonychina sensu BOUCHARD et al. 2011) is less diverse. LACROIX (1999) established the new genus *Canuschiza* Lacroix, 1999 for two species described at the same time: *Canuschiza*

insularis Lacroix, 1999 (type of the genus) and *C. minuta* Lacroix, 1999. Since then, no other schizonychine species has been described or recorded from the Socotra Island.

Recently, we had the opportunity to study specimens of Schizonychini collected during several Czech biological expeditions to Socotra in 1999–2012. The examination of this material allowed us to describe seven new species and improve our knowledge about the geographic distribution and variability of previously known species.

Generic classification of Schizonychini is rather chaotic and unstable (e.g. LACROIX 2010). For the purpose of this study we accepted LACROIX's (1999) approach. From the practical point of view, we decided to review the genus *Canuschiza* in two parts. This first one is dealing with *C. insularis* group of species, i.e. members of *Canuschiza* having weakly convex body, head with simple darkened fronto-clypeal suture (translucent endocarina) and rectangular shape of posterior angles of pronotum, in some species even distinctly produced posteriad. Revision of the *C. minuta* group of species will be published later (A. Bezděk, D. Keith, D. Král and R. Sehnal, in prep.).

Material and methods

The following acronyms identify the collections housing the material examined (curators' names are in parentheses):

BMNH	The Natural History Museum [former British Museum (Natural History)], London, United Kingdom (Maxwell V. L. Barclay);
DKCC	Denis Keith collection, Chartres, France;
GSCT	Guido Sabatinelli collection, Tunis, Tunisia;
IECA	Institute of Entomology, Biology Centre ASCR, České Budějovice, Czech Republic (Aleš Bezděk);
ISNB	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium (Alain Drumont);
JBCP	Jan Batelka collection, Praha, Czech Republic;
MLCP	Marc Lacroix collection, Romans sur Isère, France;
MNHN	Muséum national d'Histoire naturelle, Paris, France (Antoine Mantilleri, Olivier Monteuil);
NMPC	Národní muzeum, Praha, Czech Republic (Jiří Hájek);
RSCV	Richard Sehnal collection, Velenice, Czech Republic;
ZFMK	Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany (Dirk Ahrens).

Altogether 203 specimens (see material below) were studied. Genitalia of at least three males of each species were dissected for examination, if available. Specimens were examined with an Olympus SZ61 stereomicroscope, measurements were taken with an ocular grid. The habitus photographs were taken using a Canon MP-E 65mm/2.8 1–5× Macro on bellows attached to a Canon EOS 550D camera. Partially focused images of each specimen were combined using Helicon Focus 3.20.2 Pro software. Specimens of the newly described species are provided with one printed red label: '[name of the taxon] sp. n., HOLOTYPUS, [or PARATYPUS with type number], sex symbol, Richard Sehnal, David Král & Aleš Bezděk det. 2014'. Exact label data are cited for the type material examined. Separate labels are indicated by double slash '//', lines within each label are separated by a slash '/'. Information in quotation marks indicates the original spelling. Our remarks and additional comments are placed in brackets, [p] – preceding data (within quotation marks) are printed; [h] – the same but handwritten. HT – holotype, PT – paratype. Species group names of newly described taxa are derived either from their type locality or from genus group name of Socotran endemic plants.

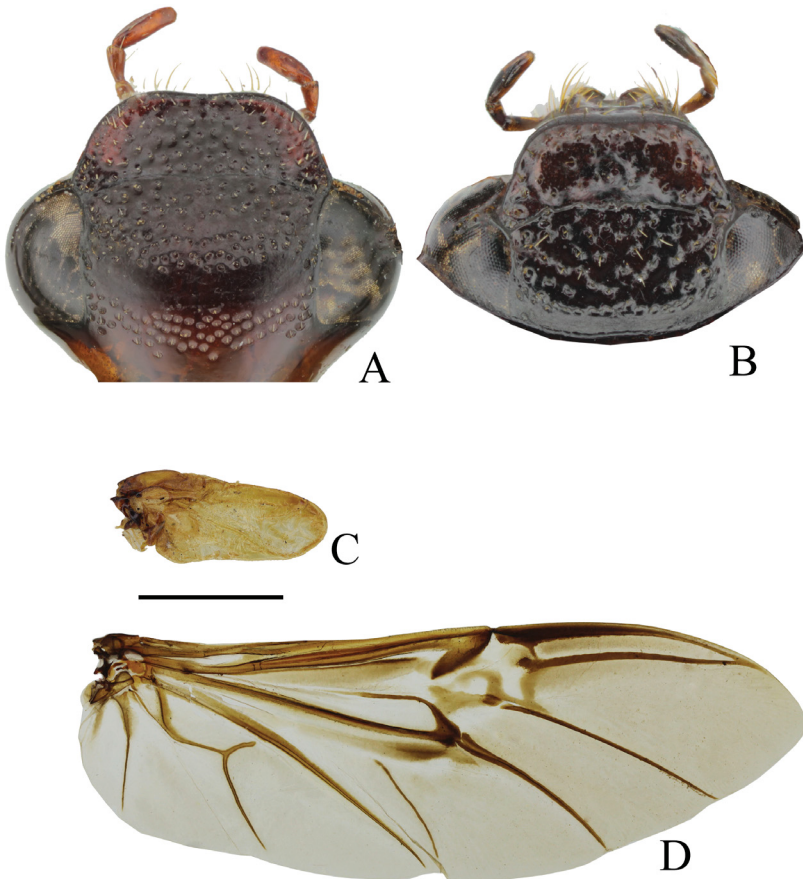
Taxonomy

Genus *Canuschiza* Lacroix, 1999

Canuschiza Lacroix, 1999: 89, Figs 1–27 (original description); LACROIX (2002): 404, Figs 1–25 (review); BEZDĚK (2006): 199 (catalogue); LACROIX (2010): 207 (catalogue).

Type species. *Canuschiza insularis* Lacroix, 1999, by original designation.

Differential diagnosis. Genus *Canuschiza* differs from other schizonychine genera in combination of the following characters. Body elongate (length 7.5–17.2 mm), almost parallel-sided, weakly to moderately convex. Labrum transverse, deeply bilobed, lobes rounded. Clypeus transverse, anterior angles rounded. Fronto-clypeal suture present, forming continuous shallowly bisinuate line or better visible elevated double fronto-clypeal carina (Figs 1A,B). Occipital carina missing. Eyes small (width of both eyes combined lower than maximum width



Figs 1A–D. *Canuschiza* Lacroix, 1999: A–B – head, dorsal view; C–D – metathoracic wing. A – *Canuschiza insularis* Lacroix, 1999, holotype; B – *C. minuta* Lacroix, 1999, holotype; C – *C. hagher* sp. nov., holotype; D – *C. skand* sp. nov., holotype. Scale bar: 2.0 mm. Figs A, B not to scale.

of frons between eyes) to large (width of both eyes combined larger than maximum width of frons between eyes). Antenna with eight to ten antennomeres; club with three antennomeres. Terminal maxillary palpomere elongate, truncate apically. Pronotum transverse, simply convex, without anteromedian tubercle. Basal border complete, anterior border missing. Posterior angles of pronotum broadly rounded to rectangular, in some species even distinctly produced posteriad. Elytra weakly to moderately convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, except of feebly visible sutural stria. Macropterous, rarely micropterous. Protibia narrow, tridentate, terminal calcar inserted against medial dent. Claws bifid, with ventrobasal teeth (e.g. Fig. 2B). Parameres symmetrical, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Figs 10A–D, 11A–D).

Geographical distribution. Endemic to Socotra Island.

Canuschiza insularis Lacroix, 1999 species group

Diagnosis. Body elongate, almost parallel, weakly convex; colour chestnut brown to black, elytra often somewhat alutaceous, macrosetation pale. Dorsal surface of head, pronotum, scutellar shield and elytra covered with short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with recumbent scale-like macrosetae. Labrum transverse, deeply bilobed, lobes rounded. Clypeus transverse, anterior angles rounded. Head with simple darkened fronto-clypeal suture (translucent endocarina) (Fig. 1A). Eye-canthus narrow, short, bare or with few macrosetae. Antenna with eight or ten antennomeres; club with three antennomeres, almost straight to regularly arcuate, sparsely and shortly macrosetaceous. Terminal maxillary palpomere elongate, truncate apically. Pronotum transverse, weakly convex, widest approximately at middle. Posterior angles approximately rectangular or even distinctly produced posteriad (e.g. Figs 6C, 9C). Scutellar shield large, almost equilaterally triangular. Elytra weakly convex, parallel-sided, rounded apically. Striae missing, except of feebly visible sutural stria. Surface finely microsculptured, alutaceous. Punctuation coarse, each puncture bearing short, pale scale-like, almost recumbent macroseta. Macropterous or micropterous. Protibia narrow, tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened. Claws bifid, with ventrobasal teeth (e.g. Fig. 2B). Pygidium slightly transverse, convex, all around bordered, broadly rounded apically, irregularly covered with coarse macrosetiferous punctures. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long pale macrosetae (Figs 10A–D, 11A–D).

Comparison. Members of *C. insularis* species group differ from *C. minuta* mainly in larger size (9.0–17.2 mm), weakly convex body, simple darkened fronto-clypeal suture (translucent endocarina) (Fig. 1A), and the rectangular shape of posterior angles of pronotum, in some species even distinctly produced posteriad (e.g. Figs 6C, 9C), while *C. minuta* is smaller (7.5 mm), with distinctly convex body, head with well visible elevated double fronto-clypeal carina (Fig. 1B) and broadly rounded posterior angles of pronotum.

Canuschiza adah sp. nov.

(Figs 2A–H, 10A)

Type locality. Yemen, Socotra Island, wadi Adah (= Lahas) [ca. 12°38'N, 54°05'E].

Type material (10 specimens). HOLOTYPE: ♂, labelled: 'YEMEN, Socotra isl. / Lakas, 17.-18.xi.2000 / V. Bejček et K. Šťastný lgt. [p] // YEMEN, Socotra isl. / Lahas (= wadi Adah) / ca 12°38'N, 54°05'E / arranged by Sehnal R. et al. 2014 [p]'. PARATYPES No. 1–9 (6 ♂♂ 3 ♀♀): same label data as holotype.

Type depositories. HT and PT Nos. 1, 7 in NMPC, PT Nos. 2, 8 in RSCV, PT Nos. 3, 9 in IECA, PT No. 4 in BMNH, PT No. 5 in MNHN, PT No. 6 in ISNB.

Description of holotype (♂). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, elytra somewhat alutaceous, chestnut brown, macrosetation pale (Fig. 2A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

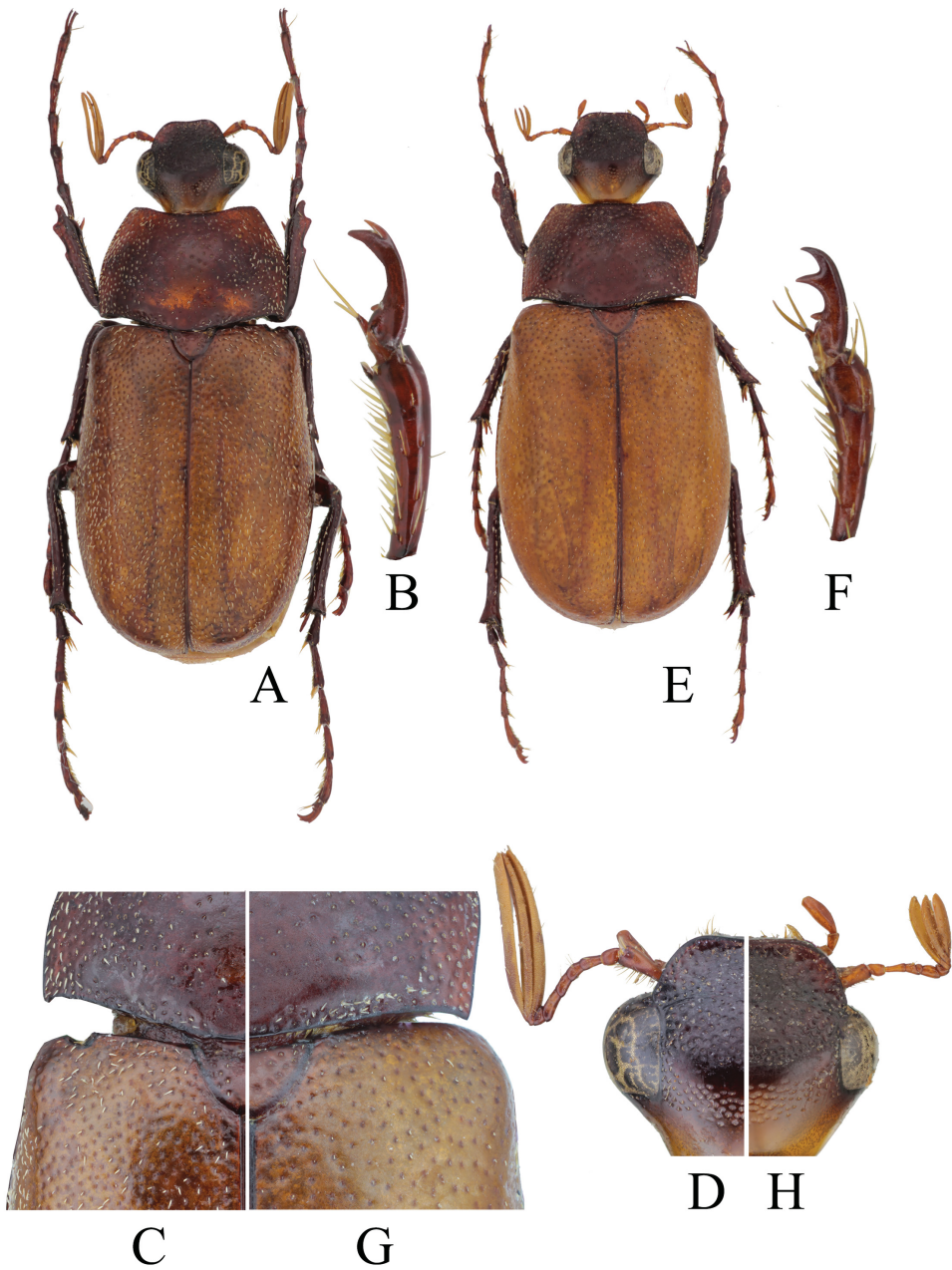
Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin almost not upturned and shallowly sinuate medially, anterior angles rounded. Fronto-clypeal suture present, forming continuous shallowly bisinuate line. Clypeus and frons densely, irregularly, coarsely punctate, each puncture with short, minute erect macroseta. Occiput sparsely, regularly, moderately punctate. Eye-canthus narrow, short, bare. Eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes), distinctly extending beyond eye-canthus. Antenna with ten antennomeres; club with three antennomeres, almost straight (Fig. 2D), distinctly shorter than antennal shaft (antennomeres I–VII combined). Antennomeres I–VII with sparse long macrosetae, club sparsely, shortly macrosetaceous. Terminal maxillary palpomere elongate, apically rounded, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins not crenate, bare. Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles weakly produced posteriad, approximately rectangular (Fig. 2C). Punctuation consisting of coarse, umbilicate, almost regularly spaced punctures becoming somewhat denser laterad; each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Scutellar shield large, almost equilaterally triangular, sides and apex rounded; bare.

Elytra weakly convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, excepting feebly visible sutural stria. Humeral umbones present, vaguely swollen. Surface finely microsculptured (shagreened), alutaceous; punctuation coarse, almost regularly spaced, punctures separated by 1–2 their diameter. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Macropterous.

Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly



Figs 2A–H. *Canuschiza adah* sp. nov., dorsal view: A–D – male, holotype, body length 13.7 mm; E–H – female, paratype No. 7, body length 13.0 mm. A, E – habitus; B, F – protarsal claw; C, G – detail of laterobasal area of pronotum and elytron; D, H – head. Not to scale.

expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 2B).

Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around bordered, apically broadly rounded, irregularly covered with coarse macrosetiferous punctures.

Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 10A).

Sexual dimorphism. Female differs from male in the following characters: body slightly broadened posteriad (Fig. 2E); antennal club straight, distinctly shorter (Fig. 2H); eyes small (width of both eyes combined shorter than maximum width of frons between eyes) (Fig. 2H); metatibia more strongly expanded apically; tarsomeres of all legs shorter (Fig. 2E).

Variability. Paratypes only slightly vary in length (see measurements), colour and punctuation of dorsal surface, length and distribution of scale-like macrosetation of pronotum and elytra.

Measurements. Total body length: ♂♂ 11.6–13.7 mm (holotype 13.7 mm), ♀♀ 13.0–13.5 mm.

Differential diagnosis. *Canuschiza adah* sp. nov. can be differentiated from all species of the *C. insularis* species group mainly by combination of the following diagnostic characters in males: antennae with ten antennomeres (Figs 2A,D); antennal club almost straight, as long as antennal shaft (antennomeres I–VII combined) (Figs 2A,D); anterior margin of clypeus almost not upturned and shallowly sinuate medially (Figs 2A,D); eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes) (Fig. 2D); lateral margins of pronotum bare; posterior angles of pronotum rectangular, moderately produced posteriad (Fig. 2C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, longer than puncture diameter; scale-like macrosetae of pronotum and elytra considerably short, narrow (Figs 2A,C); macropterous. For tentative differentiation of females refer to the identification keys below.

Etymology. Derived from area of origin of the new species, the Adah wadi, Socotra Island; noun in nominative case, in apposition.

Collecting circumstances. All type material was captured attracted to light (V. Bejček, pers. comm. 2014).

Geographical distribution. Type material originates from area of the Adah (= Lahas) wadi, for details see BEZDĚK et al. (2012).

Canuschiza croton sp. nov.

(Figs 3A–H, 10B)

Type locality. Yemen, Socotra Island, Dixam [= Diksam] plateau, wadi Zerig, 655 m a.s.l., 12°29.6'N 53°59.5'E.

Type material (9 specimens). HOLOTYPE: ♂, labelled: 'YEMEN, SOCOTRA Island / Dixam plateau, wadi ZERIG / pools, Juncus marsh; Dracaena trees; cave 13.-14.vi.2012 / 12°29.6'N, 53°59.5'E, 655 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský, J. Niedobová & L. Purchart leg. [p]'. PARATYPES: NOS. 1–5 (3 ♂♂ 2 ♀♀), same label data as holotype; No. 6 (♂): 'Yemen, Soqotra Is., 2003 / 3.xii, Dixam plateau, / WADI

ZEERIQ, 750m, / N12°31'08" E53°59'09" / [GPS], David Král lgt. [p] // YEMEN – SOQOTRA, 2003 / Expedition: Jan Farkač, / Petr Kabátek & David Král [p] // ex coll. David Král / National Museum / Prague, Czech Republic [p]; Nos. 7–8 (♂ and ♀): ‘YEMEN, SOCOTRA Island / wadi ES GEGO / 300 m a.s.l. / 12°28'18"N; 54°00'34"E / 13. V. 2004 lgt. A. REITER [p]’.

Type depositories. HT and PT Nos. 4, 6–8 in NMPC, PT Nos. 1, 2 in RSCV, PT Nos. 3, 5 in IECA.

Description of holotype (♂). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, elytra somewhat alutaceous, ochre, macrosetation pale (Fig. 3A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

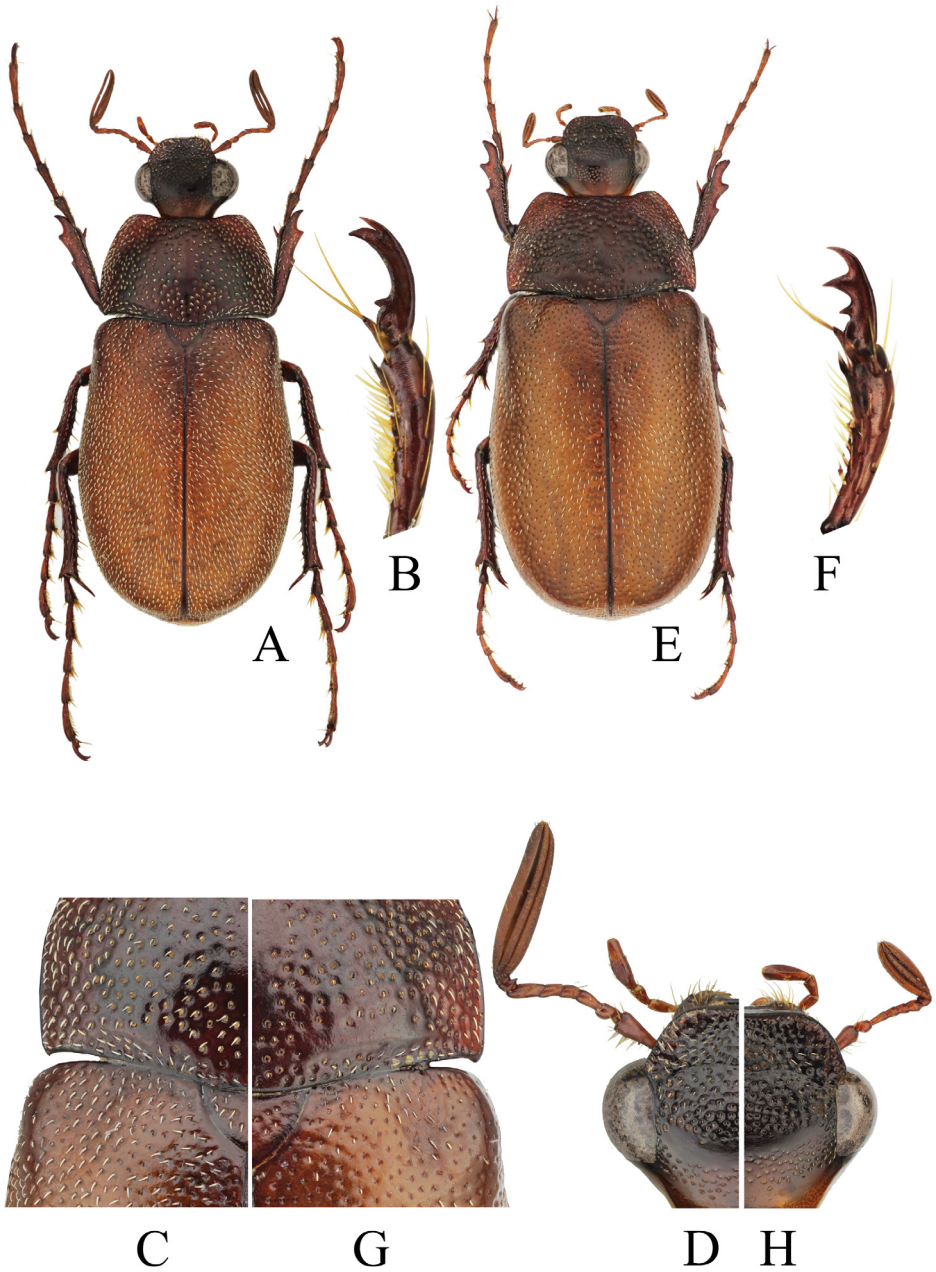
Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin finely upturned along its whole length, shallowly sinuate medially, anterior angles rounded. Fronto-clypeal suture present, forming continuous almost straight line. Clypeus and frons densely, almost regularly, coarsely punctate, each puncture with short, minute erect macroseta. Occiput sparsely, regularly, moderately punctate. Eye-canthus narrow, short, bare. Eyes considerably large (width of both eyes combined larger than maximum width of frons between eyes), distinctly extending beyond eye-canthus. Antenna with ten antennomeres; club with three antennomeres, almost straight (Fig. 3D), distinctly shorter than antennal shaft (antennomeres I–VII combined). Antennomeres I–VII with sparse long macrosetae, club sparsely, shortly macrosetaceous. Terminal maxillary palpomere elongate, apically truncate, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins not crenate, bare. Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles not produced posteriad, approximately rectangular (Fig. 3C). Punctuation consisting of coarse, umbilicate, almost regularly spaced punctures becoming somewhat denser laterad; each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

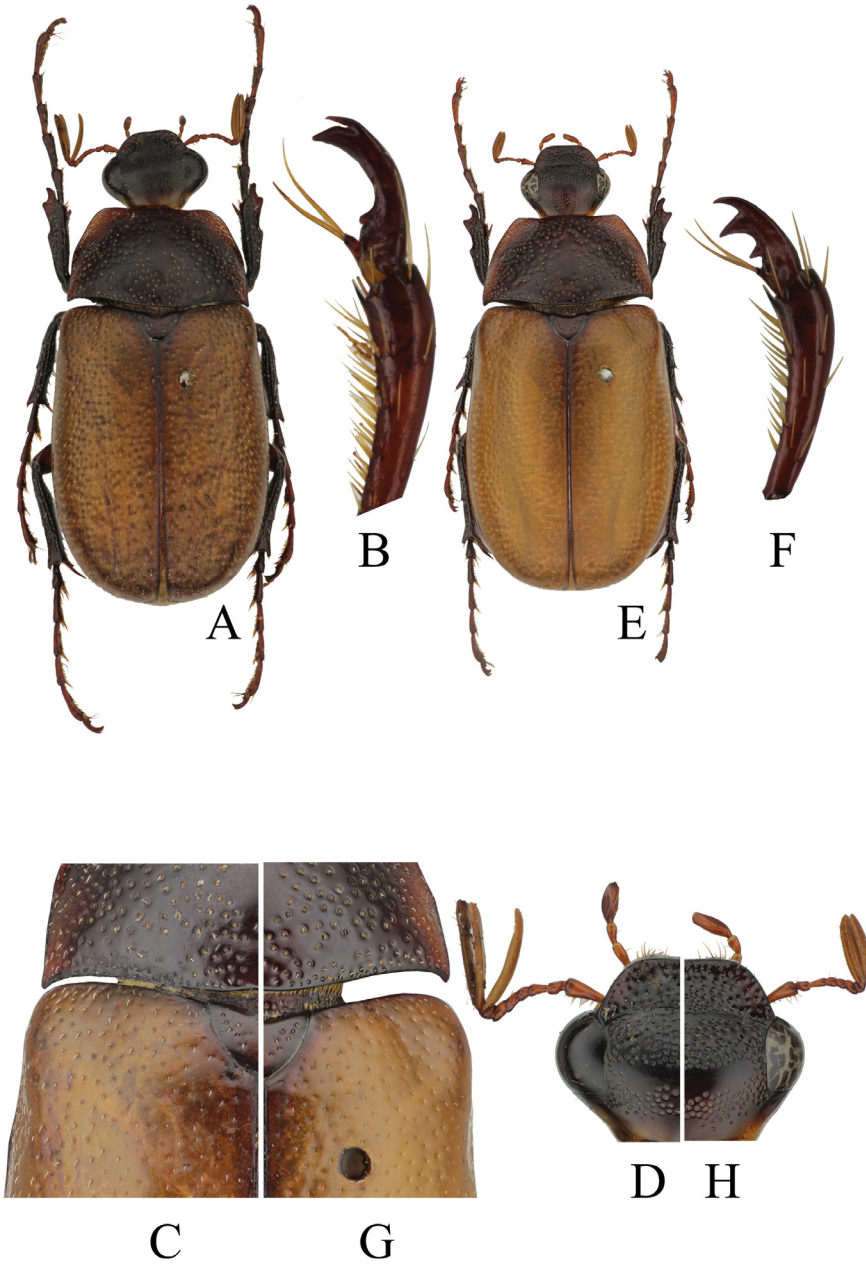
Scutellar shield large, almost equilaterally triangular, sides and apex rounded; disc punctate, each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Elytra weakly convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, except for feebly visible sutural stria. Humeral umbones present, vaguely swollen. Surface finely microsculptured (shagreened), alutaceous; punctuation coarse, almost regularly spaced, punctures separated by 1–2 their diameter. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Macropterous.

Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 3B).



Figs 3A–H. *Canuschiza croton* sp. nov., dorsal view: A–D – male, holotype, body length 13.8 mm; E–H – female, paratype No. 4, body length 13.9 mm. A, E – habitus; B, F – protarsal claw; C, G – detail of laterobasal area of pronotum and elytron; D, H – head. Not to scale.



Figs 4A–H. *Canuschiza dracaena* sp. nov., dorsal view: A–D – male, holotype, body length 14.0 mm; E–H – female, paratype No. 5, body length 16.5 mm. A, E – habitus; B, F – protarsal claw; C, G – detail of laterobasal area of pronotum and elytron; D, H – head. Not to scale.

Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around bordered, apically broadly rounded, irregularly covered with coarse macrosetiferous punctures.

Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 10B).

Sexual dimorphism. Female differs from male in the following characters: body slightly broadened posteriad (Fig. 3E); antennal club straight, considerably shorter (Fig. 3H); eyes small (width of both eyes combined shorter than maximum width of frons between eyes) (Fig. 3H); metatibia more strongly expanded apically; tarsomeres of all legs shorter (Fig. 3E).

Variability. Paratypes only slightly vary in length (see measurements), colour and punctuation of dorsal surface, length and distribution of scale-like macrosetation of pronotum and elytra.

Measurements. Total body length: ♂♂ 11.2–14.3 mm (holotype 13.8 mm); ♀♀ 13.2–13.9 mm.

Differential diagnosis. *Canuschiza croton* sp. nov. can be differentiated from all species of the *C. insularis* species group mainly by combination of the following diagnostic characters in males: antennae with ten antennomeres (Figs 3A,D); antennal club almost straight, shorter than antennal shaft (antennomeres I–VII combined) (Figs 3A,D); anterior margin of clypeus finely upturned, shallowly sinuate medially (Figs 3A,D); eyes considerably large (width of both eyes combined larger than maximum width of frons between eyes) (Figs 3A,D); lateral margins of pronotum bare; posterior angles of pronotum rectangular, sharp, moderately produced posteriad (Fig. 3C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, longer than puncture diameter; scale-like macrosetae of pronotum and elytra narrow (Figs 3A,C); macropterous. For tentative differentiation of females refer to the identification keys below.

Etymology. Derived from the Latin generic name of *Croton sulcifructus* Balf. f. (Euphorbiaceae), plant endemic to Socotra; noun in nominative case, in apposition.

Collecting circumstances. All type material was captured attracted to light (J. Hájek, pers. comm. 2014).

Geographical distribution. Type material originates from wadi Zerig and wadi Esgego located in Central Socotra, for details see BEZDĚK et al. (2012).

Canuschiza dracaena sp. nov.

(Figs 4A–H, 10C)

Type locality. Yemen, Socotra Island, Dixam [= Diksam], Firmihin, 490 m a.s.l., 12°28.6'N, 54°01.1'E.

Type material (23 specimens). HOLOTYPE: ♂, labelled: 'YEMEN, SOCOTRA Island / Dixam plateau 14.-15.vi.2012 / FIRMIHIN, Dracaena woodland / 12°28.6'N, 54°01.1'E, 490 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský, J. Niedobová & L. Purchart leg. [p]'. PARATYPES: Nos. 1–10 (3 ♂♂ 7 ♀♀), same label data as holotype; Nos. 11–16 (6 ♂♂): 'YEMEN, Socotra isl. / Firmihin, x.2000 / V. Bejček & K. Šťastný lgt. [p]'; Nos. 17–19 (3 ♀♀): 'Republic of Yemen, Socotra Isl. / Firmihin plato - Dracena tree forest / N12°28'465", E54°00'89830" / V. Hula lgt. 22.-25.6.2009 [p]'; Nos. 20–22 (3 ♀♀): 'YEMEN, SOCOTRA Island / Dixam plateau, wadi ZERIG / pools, Juncus marsh; Dracaena trees; cave 13.-14.vi.2012 / 12°29.6'N, 53°59.5'E, 655 m // SOCOTRA

expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský, J. Niedobová & L. Purchart leg. [p]’.

Type depositories. HT and PT Nos. 1, 2, 4–7 in NMPC, PT Nos. 3, 11, 20–22 in RSCV, PT Nos. 12, 13, 17–19 in IECA, PT Nos. 8, 14 in BMNH, PT Nos. 9, 15 in MNHN, PT Nos. 10, 16 in ISNB.

Description of holotype (♂). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, elytra somewhat alutaceous, chestnut brown, macrosetation pale (Fig. 4A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin weakly upturned and shallowly sinuate, anterior angles rounded. Fronto-clypeal suture present, forming continuous shallowly bisinuate line. Clypeus and frons densely (to confluent), irregularly, coarsely punctate, each puncture with short, minute erect macroseta. Occiput sparsely, regularly, moderately punctate. Eye-canthus narrow, short, bare. Eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes), distinctly extending beyond eye-canthus. Antenna with ten antennomeres; club with three antennomeres, almost straight (Fig. 4D), distinctly shorter than antennal shaft (antennomeres I–VII combined). Antennomeres I–VII with sparse long macrosetae, club sparsely, shortly macrosetaceous. Terminal maxillary palpomere elongate, apically truncate, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins not crenate, bare. Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles weakly produced posteriad, approximately rectangular (Fig. 4C). Punctuation consisting of coarse, umbilicate, almost regularly spaced punctures becoming somewhat denser laterad; each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Scutellar shield large, almost equilaterally triangular, sides and apex rounded; disc punctate, each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Elytra weakly convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, excepting feebly visible sutural stria. Humeral umbones present, vaguely swollen. Surface finely microsculptured (shagreened), alutaceous; punctuation coarse, almost regularly spaced, punctures separated by 1–2 their diameter. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Macropterous.

Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 4B).

Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around

bordered, apically broadly rounded, irregularly covered with coarse macrosetiferous punctures.

Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 10C).

Sexual dimorphism. Female differs from male in the following characters: body slightly broadened posteriad (Fig. 4E); antennal club straight, considerably shorter (Figs 4E, H), eyes small (width of both eyes combined shorter than maximum width of frons between eyes) (Figs 4E, H); metatibia more strongly expanded apically; tarsomeres of all legs shorter (Fig. 4E).

Variability. Paratypes only slightly vary in length (see measurements), colour and punctuation of dorsal surface, length and distribution of scale-like macrosetation of pronotum and elytra.

Measurements. Total body length: ♂♂ 12.9–16.4 mm (holotype 14.0 mm); ♀♀ 13.2–17.2 mm.

Differential diagnosis. *Canuschiza dracaena* sp. nov. can be differentiated from all species of the *C. insularis* species group mainly by combination of the following diagnostic characters in males: antennae with ten antennomeres (Fig. 4D); antennal club almost straight, shorter than antennal shaft (antennomeres I–VII combined) (Figs 4A, D); anterior margin of clypeus weakly upturned, almost straight medially (Figs 4A, D); eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes) (Figs 4A, D); lateral margins of pronotum bare; posterior angles of pronotum rectangular, sharp, moderately produced posteriad (Figs 4A, C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, longer than puncture diameter; scale-like macrosetae of pronotum and elytra, short, narrow (Figs 4A, C); macropterous. For tentative differentiation of females refer to the identification keys below.

Etymology. Derived from the Latin generic name of the Dragon blood tree, *Dracaena cinnabari* Balf. f. (Asparagaceae), native to Socotra; noun in nominative case, in apposition.

Collecting circumstances. Majority of type material was captured attracted to light (J. Hájek and V. Hula, pers. comm. 2014).

Geographical distribution. Type material originates all from the mountainous parts of Central Socotra (Diksam plateau, Firmihin plateau and environs of the Zerig cave), for details see BEZDĚK et al. (2012).

Canuschiza firmihin sp. nov.

(Figs 5A–D, 10D)

Type locality. Yemen, Socotra Island, Firmihin plateau, *Dracaena* tree forest, [ca 500 m a.s.l.], 12°28.465'N 54°00.898'E.

Type material (2 specimens). HOLOTYPE: ♂, labelled: 'Republic of Yemen, Socotra Isl. / Firmihin plato - Dracena tree forest / N12°28'465", E54°00'89830" / V. Hula lgt. 22.-25.6.2009 [p]'. PARATYPE No. 1 (♂): 'YEMEN, SOKOTRA Island / DIKSAM plateau, Diksam / lake; 1000 m a.s.l. / 12°31'23"N; 53°57'12"E / 12.V.2004 lgt. A. REITER [p]'.
Type depositary. HT and PT No. 1 in NMPC.

Description of holotype (♂) (left middle leg missing). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, chestnut brown, macrosetation pale (Fig. 5A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white short

recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin weakly upturned and almost straight medially, anterior angles rounded. Fronto-clypeal suture present, forming continuous, almost straight line. Clypeus and frons densely, irregularly, coarsely punctate, each puncture with short, minute erect macroseta. Occiput smooth. Eye-canthus narrow, short, with long macrosetation. Eyes considerably large (width of both eyes combined larger than maximum width of frons between eyes), distinctly extending beyond eye-canthus. Antenna with ten antennomeres; club with three antennomeres, regularly arcuate (Fig. 5D), distinctly longer than antennal shaft (antennomeres I–VII combined). Antennomeres I–VII with sparse long macrosetae, club sparsely, shortly macrosetaceous. Terminal maxillary palpomere elongate, apically truncate, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins slightly crenate, bare. Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles not produced posteriad, approximately rectangular (Fig. 5C). Basal margin regularly rounded. Punctuation consisting of coarse, umbilicate, almost regularly spaced punctures becoming somewhat denser laterad; each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Scutellar shield large, almost equilaterally triangular, sides and apex rounded, flat.

Elytra weakly convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, except for feebly visible sutural stria. Humeral umbones present, vaguely swollen. Surface not microsculptured, moderately shiny; punctuation coarse, almost regularly spaced, punctures separated by 1–2 their diameter. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Macropterous.

Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 5B).

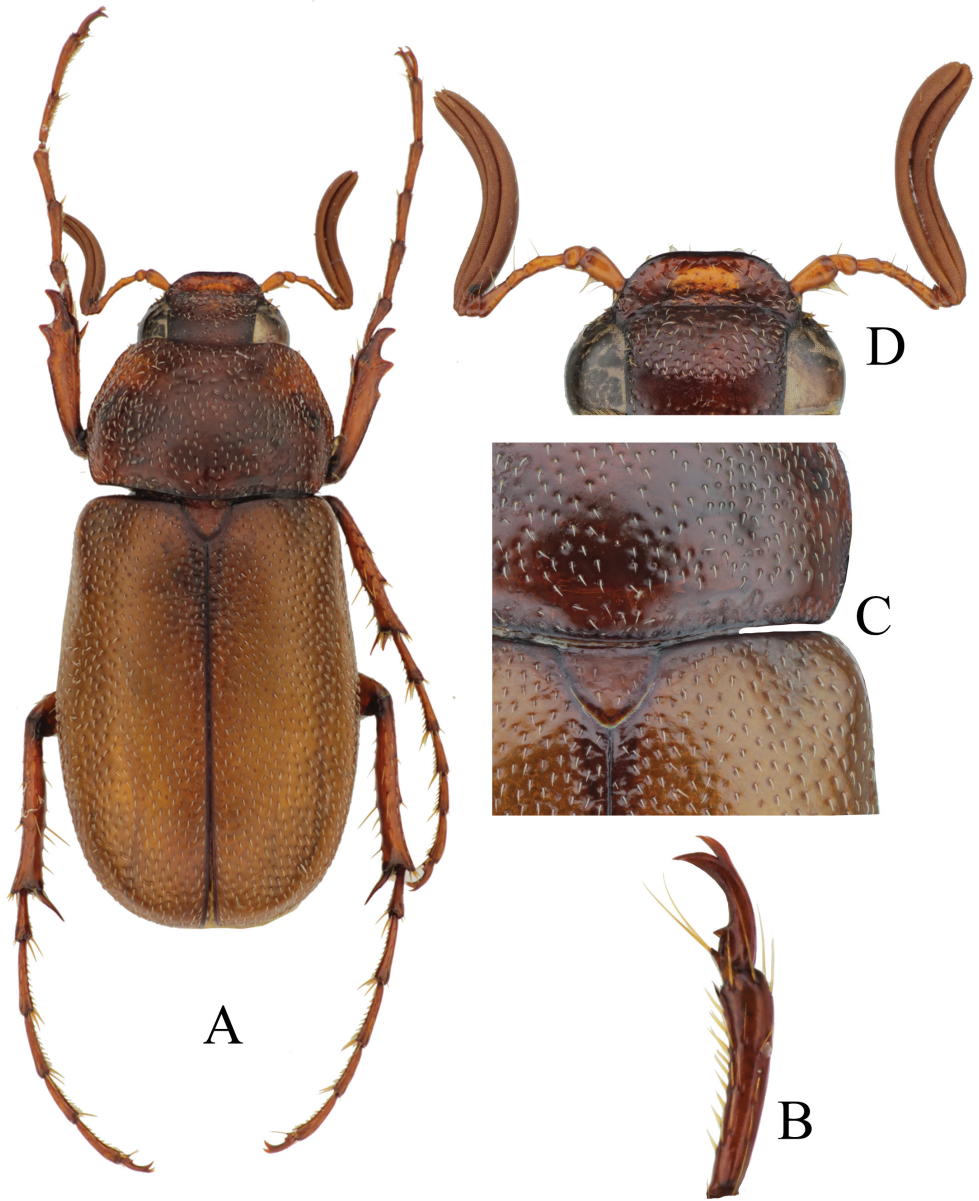
Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around bordered, apically broadly rounded, irregularly covered with coarse macrosetiferous punctures.

Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 10D).

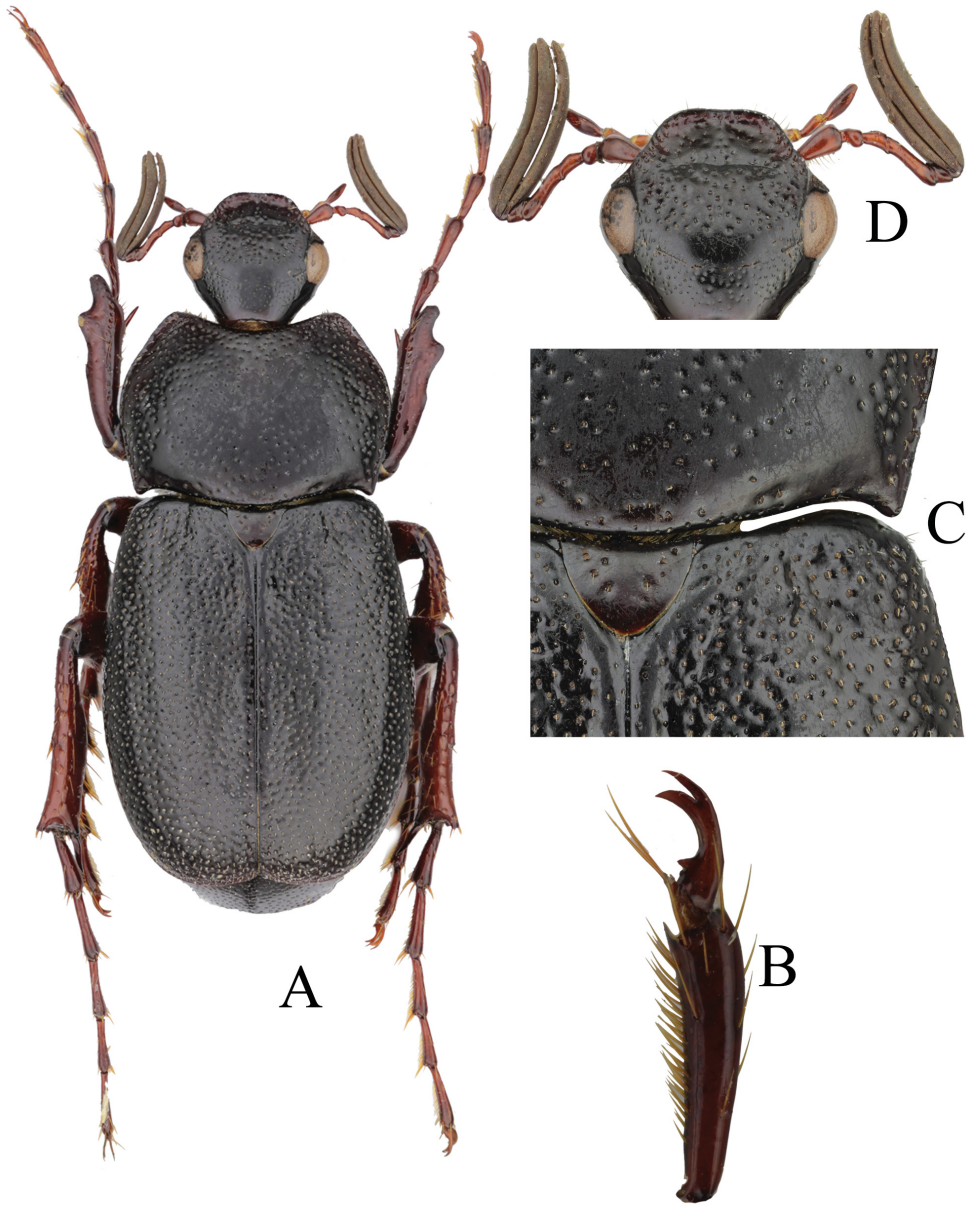
Sexual dimorphism. Female unknown.

Variability. The only paratype distinctly varies in body length, see measurements below.

Measurements. Total body length: holotype (♂) 9.0 mm, paratype (♂) 11.3 mm.



Figs 5A–D. *Canuschiza firmihin* sp. nov., male, holotype, body length 9.0 mm, dorsal view. A – habitus; B – protarsal claw; C – detail of laterobasal area of pronotum and elytron; D – head. Not to scale.



Figs 6A–D. *Canuschiza hagher* sp. nov., male, holotype, body length 17.0 mm, dorsal view. A – habitus; B – protarsal claw; C – detail of laterobasal area of pronotum and elytron; D – head. Not to scale.

Differential diagnosis. *Canuschiza firmihin* sp. nov. can be differentiated from all species of the *Canuschiza insularis* species group mainly by combination of the following diagnostic characters in males: antennae with ten antennomeres (Fig. 5D); antennal club regularly arcuate, longer than antennal shaft (antennomeres I–VII combined) (Figs 5A,D); anterior margin of clypeus weakly upturned, almost straight medially (Fig. 5A,D); eyes considerably large (width of both eyes combined larger than maximum width of frons between eyes) (Figs 5A,D); lateral margins of pronotum bare; posterior angles of pronotum rectangular, not produced posteriad (Figs 5A,C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, longer than puncture diameter; scale-like macrosetae of pronotum and elytra narrow, long, almost hair-like (Figs 5A,C); macropterous.

Etymology. Derived from area of origin of the new species, the Firmihin plateau, Socotra Island; noun in nominative case, in apposition.

Collecting circumstances. Both specimens known so far were captured attracted to light (V. Hula and A. Reiter, pers. comm. 2014).

Geographical distribution. Type material originates from the Firmihin *Dracaena* forest protected area and Diksam lake; both localities are situated in Central Socotra, for details see BEZDĚK et al. (2012).

Canuschiza hagher sp. nov.

(Figs 1C, 6A–D, 11A)

Type locality. Yemen, Socotra Island, Hagher Mts., Scand Mt. env., 12°34.6'N 54°01.5', 1450 m.

Type material (2 specimens). HOLOTYPE: ♂, labelled: 'YEMEN, SOCOTRA Island / Hagher Mts., SCAND Mt. env. / montane evergreen woodland / 16.-18.vi.2012 / 12°34.6'N 54°01.5', 1450 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský & L. Purchart leg. [p]'. PARATYPE No. 1 (♂): 'YEMEN, Socotra Isl. / Hagher Mts., Skant, / N 12°34,557', E 054°01,514' / 7.-8.vi.2010 / V. Hula & J. Niedobová leg. [p]'.
Type depositories. HT in NMPC, PT No. 1 in IECA.

Description of holotype (♂). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, blackish, extremities dark brownish to blackish, macrosetation pale (Fig. 6A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white, very short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin weakly upturned and shallowly sinuate medially, anterior angles rounded. Fronto-clypeal suture present, forming continuous shallowly bisinuate line. Punctuation of clypeus confluent. Frons densely, irregularly, coarsely punctate; each puncture with considerably short, minute erect macroseta. Occiput sparsely regularly, remarkably coarsely punctate. Eye-canthus narrow, short, bare. Eyes small (width of both eyes combined shorter than maximum width of frons between eyes), distinctly extending beyond eye-canthus. Antenna with eight antennomeres; club with three antennomeres, weakly regularly arcuate (Fig. 6D), long approximately as antennal shaft (antennomeres I–VII combined). Antennomeres I–VII almost bare, club sparsely, shortly

macrosetaceous. Terminal maxillary palpomere elongate, apically rounded, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins not crenate. Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles distinctly produced posteriad, acute-angular (Fig. 6C). Basal margin bisinuate. Punctuation consisting of coarse, umbilicate, irregularly spaced punctures becoming somewhat denser laterad; each puncture bearing considerably short, erect macroseta.

Scutellar shield large, almost equilaterally triangular, sides and apex rounded; disc with a few coarse, irregularly spaced punctures, bare.

Elytra weakly convex, oval, rounded apically, apical angle approximately rectangular. Striae missing, excepting feebly visible sutural stria. Humeral umbones absent. Surface not microsculptured, shiny; punctuation coarse, almost regularly spaced, punctures separated by 2–4 their diameters. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Micropterous, wing length approximately 1/6 of length of elytron (Fig. 1C).

Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 6B).

Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around bordered, apically broadly rounded, irregularly covered with coarse umbilicate, macrosetiferous punctures.

Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 11A).

Sexual dimorphism. Female unknown.

Variability. The only known paratype differs from holotype in flat, impunctate areas on pronotum.

Measurements. Total body length: holotype (♂) 17.0 mm, paratype (♂) 16.3 mm.

Differential diagnosis. *Canuschiza hagher* sp. nov. can be differentiated from all species of the *C. insularis* species group mainly by combination of the following diagnostic characters in males: antennae with eight antennomeres (Fig. 6D); antennal club weakly regularly arcuate, approximately as long as antennal shaft (antennomeres I–VII combined) (Figs 6A,D); anterior margin of clypeus weakly upturned, shallowly sinuate medially (Figs 6A,D); eyes small (width of both eyes combined shorter than maximum width of frons between eyes) (Figs 6A,D); lateral margins of pronotum bare; posterior angles of pronotum considerably produced posteriad (Figs 6A,C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, approximately as long as puncture diameter; scale-like macrosetae of pronotum and elytra short and narrow (Figs 6A,C); micropterous (Fig. 1C). Although *C. hagher* sp. nov.

differs from all other members of *C. insularis* species group in reduced metathoracic wings and lower number of antennomeres, other characters (like overall shape of body and shape of male genitalia) support its placement in *C. insularis* species group.

Etymology. Derived from the area of origin of the new species, the Hagher Mts., Socotra Island; noun in nominative case, in apposition.

Collecting circumstances. The holotype was found walking on the ground near the light trap, in small clearing with minute vegetation, see KRÁL et al. (2012: Fig. 42) (J. Hájek, pers. comm. 2014).

Geographical distribution. Type material originates from the highest part of the Hagher Mts., vicinity of Skand Mt., at altitude ca. 1450 m a.s.l.; for details see BEZDĚK et al. (2012).

Canuschiza insularis Lacroix, 1999

(Figs 7A–I, 11B)

Canuschiza insularis Lacroix, 1999: 89, Figs 1, 3–11, 15, 17, 19, 21, 23, 25, 27 (original description); LACROIX (2002): 401, Figs 1–12, 18–21 (review); BEZDĚK (2006): 199 (catalogue); LACROIX (2010): 207 (catalogue).

Type locality. ‘Socotra, plaine d’Hadibu’ [= Hadibo plain].

Type material examined. HOLOTYPE: ♂, labelled: ‘Socotra 10.XI.1993 / Plaine d’Hadibu / Piège lumineux / J.-G. CANU legit [p] // HOLOTYPE [p, red label] // Canuschiza / insularis n.sp. / M. LACROIX det. 19 [p] 99 [h]’ (MNHN, Fig. 7E).

Additional material examined (84 specimens). **YEMEN: SOCOTRA ISLAND:** Hamadero, 20.–21.xi.2000, V. Bejček & K. Šťastný leg., 1 ♂ 1 ♀ (NMPC); wadi Esgego, 300 m a.s.l., 12°28’18”N 54°00’34”E, 13.v.2004, A. Reiter leg., 4 ♂♂ 5 ♀♀ (NMPC); sand dunes near Irissey, 18.i.2010, A. Saldaitis leg., 2 ♂♂ in ISNB; Zemhon area, 270–300 m a.s.l., 12°20.58’N 54°06.39’E, 16.–17.vi.2010, V. Hula leg., 10 ♂♂ 6 ♀♀ (NMPC), 2 ♂♂ 2 ♀♀ (IECA), 2 ♂♂ 2 ♀♀ (RSCV); Firmihin plato, 400–500 m a.s.l., 12°28’46”N 54°00’89”E, 18.–19.vi.2010, V. Hula & J. Niedobová leg., 2 ♀♀ (IECA); wadi Ayhaft, 200 m a.s.l., 12°36.5’N 53°58.9’E, 7.–8.xi.2010, J. Bezděk leg., 2 ♂♂ 2 ♀♀ (IECA); same data but J. Hájek leg., 1 ♀ (NMPC); same data but L. Purchart leg., 1 ♀ (IECA); same data but P. Hlaváč leg., 1 ♀ (NMPC); same data but J. Batelka leg., 4 ♂♂ 1 ♀ (JBCP); Shuab, mangroves – coast line, 23.xi.2010, M. Butkevicius leg., 4 ♂♂ 4 ♀♀ (ISNB), 1 ♂ 1 ♀ (RSCV); Kaza Kazihon vill. env., 900 m a.s.l., 12°31’13”N 53°55’36”E, 5.vi.2012, V. Hula & J. Niedobová leg., 1 ♂ 4 ♀♀ (NMPC); Alooove vill. env., 221 m a.s.l., 12°31.2’N 54°07.4’E, J. Bezděk, J. Hájek, V. Hula, P. Kment, I. Malenovský & L. Purchart leg., 4 ♂♂ 5 ♀♀ (IECA), 2 ♂♂ 2 ♀♀ (RSCV), 1 ♂ [specimen stored in pure alcohol] (ZFMK).

Redescription (♂ holotype). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, elytra somewhat alutaceous, chestnut brown, macrosetation pale (Fig. 7A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin weakly upturned and shallowly sinuate, anterior angles rounded. Fronto-clypeal suture present, forming continuous shallowly bisinuate line. Clypeus and frons densely (to confluent), irregularly, coarsely punctate, each puncture with short, minute erect macroseta. Occiput sparsely regularly, moderately punctate. Eye-canthus narrow, short, bare. Eyes medium sized (width of both eyes combined approximately same as maximum width of frons between eyes), distinctly extending beyond

eye-canthus. Antenna with ten antennomeres; club with three antennomeres, almost straight (Fig. 7D), distinctly shorter than antennal shaft (antennomeres I–VII combined). Antennomeres I–VII with sparse long macrosetae, club sparsely, shortly macrosetaceous. Terminal maxillary palpomere elongate, apically rounded, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins not crenate, bare. Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles weakly produced posteriad, approximately rectangular (Fig. 7C). Punctuation consisting of coarse, umbilicate, almost regularly spaced punctures becoming somewhat denser laterad; each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Scutellar shield large, almost equilaterally triangular, sides and apex rounded; disc punctate, each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Elytra weakly convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, excepting feebly visible sutural stria. Humeral umbones present, vaguely swollen. Surface finely microsculptured (shagreened), alutaceous; punctuation coarse, almost regularly spaced, punctures separated by 1–2 their diameter. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Macropterous.

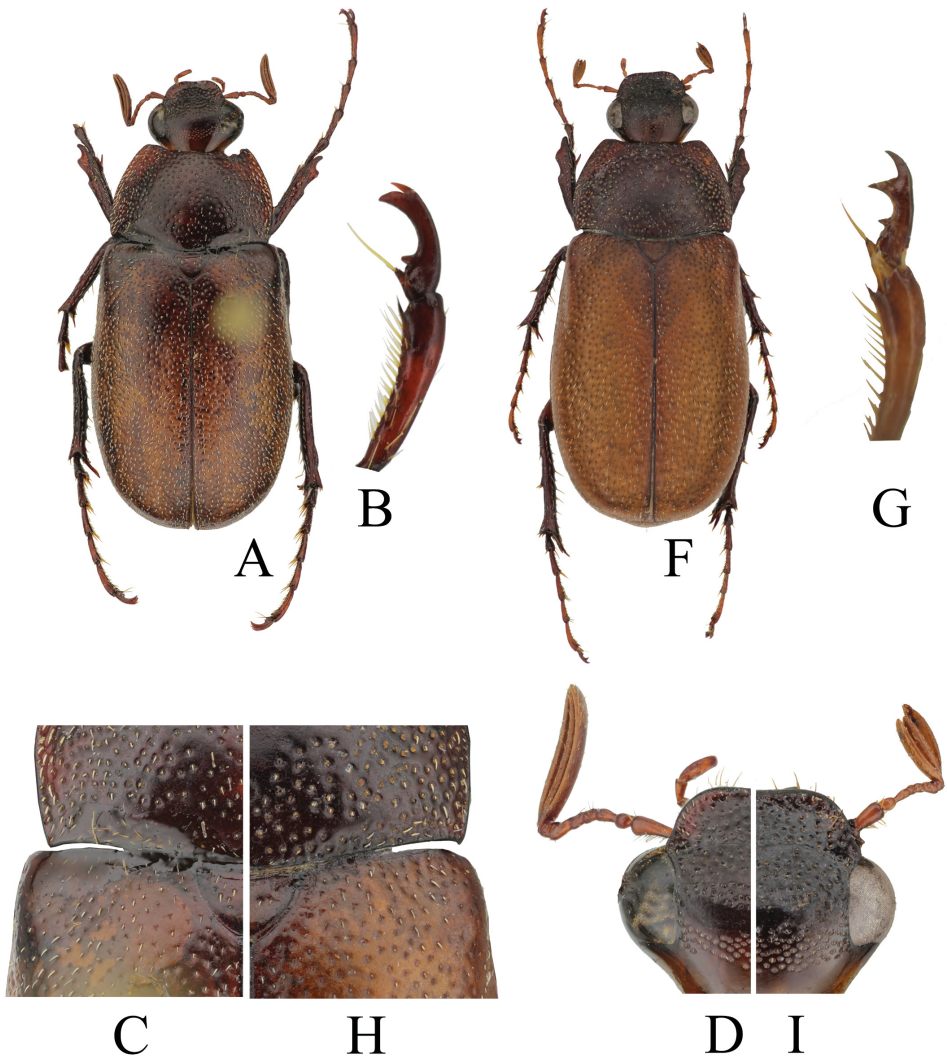
Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 7B).

Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around bordered, apically broadly rounded, irregularly covered with coarse macrosetiferous punctures.

Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 11B).

Sexual dimorphism. Female differs from male in the following characters: body slightly broadened posteriad (Fig. 7B); antennal club straight, distinctly shorter (Figs 7F,I); eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes) (Figs 7F,I); metatibia more strongly expanded apically; tarsomeres of all legs shorter (Fig. 7F).

Variability. Material of different populations studied (Aloove (= Zemhon), Ayhaft, Esgego, Firmihin, Hadibo (type locality), Hamadero and Kaza Kazihon – see BEZDĚK et al. 2012, for details) slightly varies in body length, colour and punctuation of dorsal surface, length and distribution of scale-like macrosetation of pronotum and elytra. Only material originating from Irisseyl (most eastern area of Socotra – see BEZDĚK et al. 2012, for details) and Shuab (most western coast of Socotra – see BEZDĚK et al. 2012, for details) possesses quite different



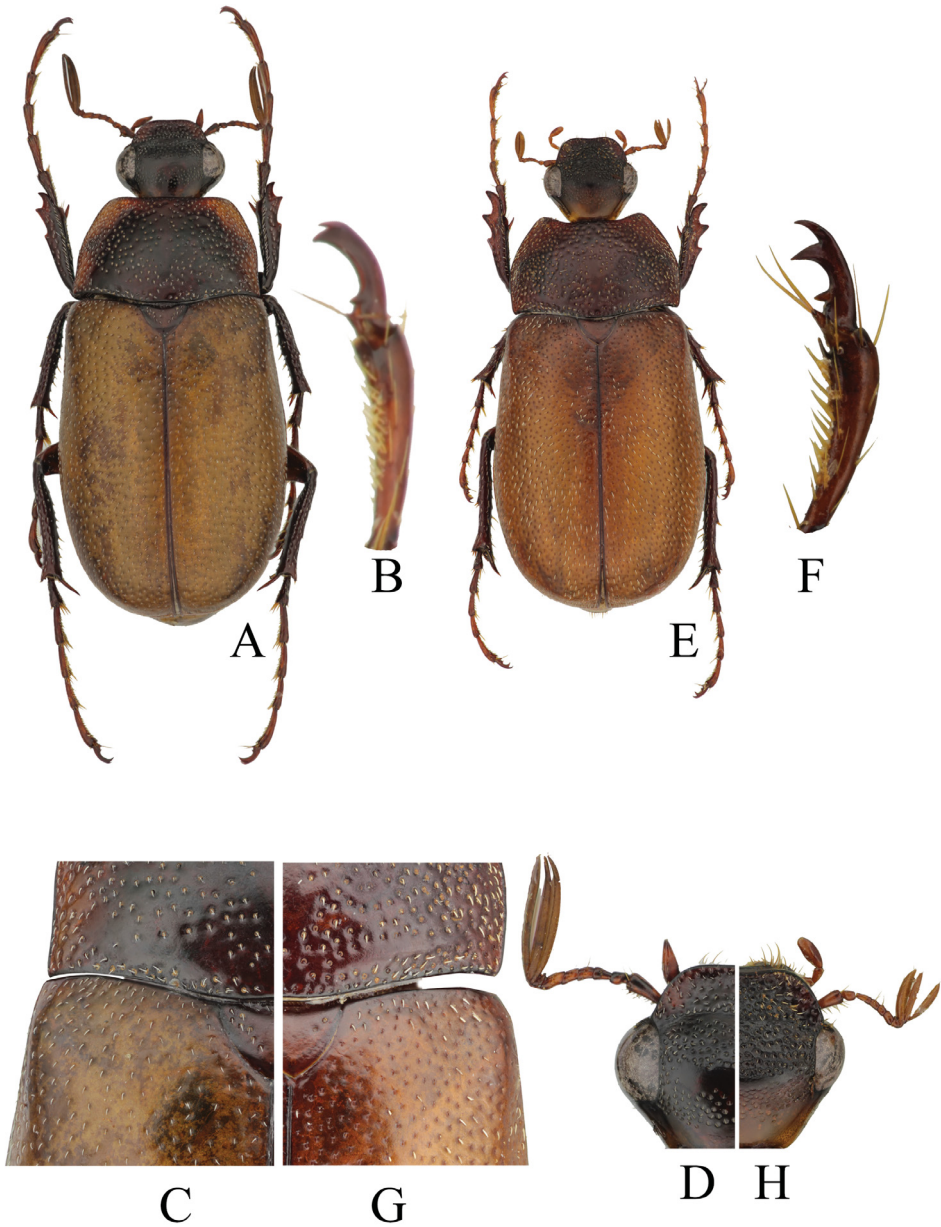
Socotra - 10.XI.1993
 Plaine d'Hadibu
 Piège lumineux
 J.-G. CANU legit

HOLOTYPE

E

Canuschiza
insularis n.sp.
 M. LACROIX det. 1999

Figs 7A–I. *Canuschiza insularis* Lacroix, 1999, dorsal view: A–E – male, holotype, body length 12.5 mm; F–I – female, specimen from Aloove, body length 13.4 mm. A, F – habitus; B, G – protarsal claw; C, H – detail of laterobasal area of pronotum and elytron; D, I – head; E – labels. Not to scale.



Figs 8A–H. *Canuschiza jatropa* sp. nov., dorsal view: A–D – male, holotype, body length 14.4 mm; E–H – female, paratype No. 27, body length 14.0 mm. A, E – habitus; B, F – protarsal claw; C, G – detail of laterobasal area of pronotum and elytron; D, H – head. Not to scale.

punctuation (coarser, sparser and irregularly spaced) than exhibited in all other populations studied, while all other diagnostic characters used approximately fit to *C. insularis*.

Measurements. Total body length: ♂♂ 9.4–14.9 mm (holotype 12.5 mm); ♀♀ 12.2–14.7 mm.

Differential diagnosis. *Canuschiza insularis* can be differentiated from all other species of the *Canuschiza insularis* species group mainly by combination of the following diagnostic characters in males: antennae with ten antennomeres (Fig. 7D); antennal club almost straight, shorter than antennal shaft (antennomeres I–VII combined) (Figs 7A,D); anterior margin of clypeus weakly upturned, shallowly sinuate medially (Figs 7A,D); eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes) (Figs 7A,D); lateral margins of pronotum bare; posterior angles of pronotum rectangular, moderately produced posteriad (Figs 7A,C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, longer than puncture diameter; scale-like macrosetae of pronotum and elytra short, narrow (Fig. 7C); macropterous. For tentative differentiation of females refer to the identification key below.

Collecting circumstances. As far as it is known, majority of specimens were captured attracted to light, some specimens from Firmihin were found after the dark feeding on *Jatropha unicostata* leaves (J. Hájek, pers. comm. 2014).

Geographical distribution. Species widely distributed in Socotra Island (Aloove, Ayhaft, Hadibo, Hamadero, Irisseyl, Kaza Kazihon, Shuab).

Canuschiza jatropha sp. nov.

(Figs 8A–H, 11C)

Type locality. Yemen, Socotra Island, Dixam [= Diksam plateau], wadi Zerig, 655 m a.s.l., 12°29.6'N 53°59.5'E.

Type material (34 specimens). HOLOTYPE: ♂, labelled: 'YEMEN, SOCOTRA Island / Dixam plateau, wadi ZERIG / pools, Juncus marsh; Dracaena trees; cave 13.-14.vi.2012 / 12°29.6'N, 53°59.5'E, 655 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský, J. Niedobová & L. Purchart leg. [p]'. PARATYPES: Nos. 1–20 (10 ♂♂ 10 ♀♀), same label data as holotype; Nos. 21–33 (6 ♂♂ 7 ♀♀): 'YEMEN, SOCOTRA Island / Dixam plateau 14.-15.vi.2012 / FIRMIHIN, Dracaena woodland / 12°28.6'N, 54°01.1'E, 490 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský, J. Niedobová & L. Purchart leg. [p]'.
HT and PT Nos. 1–3, 27–30 in NMPC, PT Nos. 4–6, 11–13, 21 in RSCV, PT Nos. 7, 8, 20, 24, 31–33 in IECA, PT Nos. 9, 14 in DKCC, PT Nos. 10, 15 in MLCP, PT Nos. 16, 22 in GSCT, PT Nos. 17, 23 in ISNB, PT Nos. 18, 26 in BMNH, PT Nos. 19, 25 in MNHN.

Description of holotype (♂). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, elytra somewhat alutaceous, chestnut brown, macrosetation pale (Fig. 8A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin weakly upturned and distinctly straight medially, anterior angles rounded. Fronto-clypeal suture present, forming continuous shallowly bisinuate line. Clypeus and frons densely, irregularly, coarsely punctate,

each puncture with short, minute erect macroseta. Occiput sparsely regularly, moderately punctate. Eye-canthus narrow, short, bare. Eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes), distinctly extending beyond eye-canthus. Antenna with ten antennomeres; club with three antennomeres, almost straight (Fig. 8D), distinctly shorter than antennal shaft (antennomeres I–VII combined). Antennomeres I–VII with sparse long macrosetae, club sparsely, shortly macrosetaceous. Terminal maxillary palpomere elongate, apically truncate, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins not crenate, bare. Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles weakly produced posteriad, approximately rectangular (Fig. 8C). Punctuation consisting of coarse, umbilicate, almost regularly spaced punctures becoming somewhat denser laterad; each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Scutellar shield large, almost equilaterally triangular, sides and apex rounded; disc punctate, each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Elytra weakly convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, excepting feebly visible sutural stria. Humeral umbones present, vaguely swollen. Surface finely microsculptured (shagreened), alutaceous; punctuation coarse, almost regularly spaced, punctures separated by 1–2 their diameter. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Macropterous.

Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 8B).

Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around bordered, apically broadly rounded, irregularly covered with coarse macrosetiferous punctures.

Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 11C).

Sexual dimorphism. Female differs from male in the following characters: body slightly broadened posteriad (Fig. 8E); antennal club straight, distinctly shorter (Figs 8E,H); eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes) (Figs 8E,H); metatibia more strongly expanded apically; tarsomeres of all legs shorter (Fig. 8E).

Variability. Paratypes only slightly vary in length (see measurements), colour and punctuation of dorsal surface, length and distribution of scale-like macrosetation of pronotum and elytra.

Measurements. Total body length: ♂♂ 12.5–14.8 mm (holotype 14.4 mm); ♀♀ 12.7–15.8 mm.

Differential diagnosis. *Canuschiza jatropha* sp. nov. can be differentiated from all species of the *C. insularis* species group mainly by combination of the following diagnostic characters in males: antennae with ten antennomeres (Fig. 8D); antennal club almost straight, shorter than antennal shaft (antennomeres I–VII combined) (Figs 8A,D); anterior margin of clypeus weakly upturned, distinctly straight medially (Figs 8A,D); eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes) (Figs 8A,D); lateral margins of pronotum bare; posterior angles of pronotum rectangular, moderately produced posteriad (Figs 8A,C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, approximately as long as puncture diameter; scale-like macrosetae of pronotum and elytra considerably short, narrow (Figs 8A,C); macropterous. For tentative differentiation of females refer to the identification keys below.

Etymology. Derived from the Latin generic name of the Sibiru (in Suqutri language) plant, *Jatropha unicostata* Balf. f. (Euphorbiaceae), plant endemic to Socotra; noun in nominative case, in apposition.

Collecting circumstances. Majority of type specimens were captured attracted to light, some specimens from Firmihin were found after the dark feeding on *Jatropha* leaves (J. Bezděk and J. Hájek, pers. comm. 2014).

Geographical distribution. Type material originates from the Diksam plateau, for details see BEZDĚK et al. (2012).

Canuschiza skand sp. nov.

(Figs 1D, 9A–I, 11D)

Type locality. Yemen, Socotra Island, Hagher Mts., Scand Mt. env., 1450 m a.s.l., 12°34.6'N 54°01.5'E.

Type material (37 specimens). HOLOTYPE: ♂, labelled: 'YEMEN, SOCOTRA Island / Hagher Mts., SCAND Mt. env. / montane evergreen woodland / 16.-18.vi.2012 / 12°34.6'N, 54°01.5'E, 1450 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský, J. Niedobová & L. Purchart leg. [p]'. Paratypes: Nos. 1–34 (30 ♂♂ 4 ♀♀), same label data as holotype; No. 35 (♂): 'Republic of Yemen / Socotra Isl. / SKANT / Z. Hrubý lgt. 24.6.2009 [p]'; No. 36 (♂): 'YEMEN, Socotra Isl. / Hagher Mts., Skant, / N 12°34,557', E 054°01,514' / 7.-8. vi.2010 / V. Hula & J. Niedobová leg. [p]'.
Type depositories. HT and PT Nos. 1–6, 34, 35 in NMPC, PT Nos. 7–14, 31 in RSCV, PT Nos. 15–21, 32, 36 in IECA, PT Nos. 22, 23 in BMNH, PT Nos. 24, 25 in MNHN, PT Nos. 26, 27 in ISNB, PT No. 28 in DKCC, PT No. 29 in MLCP, PT No. 30 in GSCT.

Description of holotype (♂). Body elongate, almost parallel, weakly convex. Dorsal and ventral surface moderately shiny, elytra somewhat alutaceous, chestnut brown, macrosetation pale (Fig. 9A). Dorsal surface of head, pronotum, scutellar shield and elytra covered with white short recumbent scale-like macrosetae, ventral surface of thorax and abdomen with white recumbent scale-like macrosetae. Head appendages and legs covered with yellowish moderately long macrosetae, mixed with a few white recumbent scale-like macrosetae on metafemora.

Head. Labrum transverse, deeply bilobed, lobes rounded, irregularly and coarsely punctate, covered with long erect macrosetae. Clypeus transverse, anterior margin weakly upturned and shallowly sinuate medially, anterior angles rounded. Fronto-clypeal suture present, forming

continuous shallowly bisinuate line. Clypeus and frons densely, irregularly, coarsely punctate, each puncture with short, minute erect macroseta. Occiput sparsely regularly, moderately punctate. Eye-canthus narrow, short, bare. Eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes), distinctly extending beyond eye-canthus. Antenna with ten antennomeres; club with three antennomeres, nearly straight (Fig. 9D), distinctly shorter than antennal shaft (antennomeres I–VII combined). Antennomeres I–VII with sparse long macrosetae, club sparsely, shortly macrosetaceous. Terminal maxillary palpomere elongate, apically truncate, approximately as long as palpomeres II and III combined.

Pronotum transverse, moderately convex, widest approximately at midlength. Basal and lateral borders complete, anterior border missing. Lateral outline regularly rounded, margins in anterior half minutely crenate and macrosetaceous (Fig. 9E). Anterior margin regularly, broadly sinuate. Anterior angles moderately produced, obtuse-angular; posterior angles weakly produced posteriad, approximately rectangular (Fig. 9C). Punctuation consisting of coarse, umbilicate, almost regularly spaced punctures becoming somewhat denser laterad; each puncture bearing short, narrow, white scale-like, almost recumbent macroseta.

Scutellar shield large, almost equilaterally triangular, sides and apex rounded; bare.

Elytra weakly convex, parallel-sided, rounded apically, apical angle approximately rectangular. Striae missing, excepting feebly visible sutural stria. Humeral umbones present, vaguely swollen. Surface finely microsculptured (shagreened), alutaceous; punctuation coarse, almost regularly spaced, punctures separated by 1–2 their diameter. Each puncture bearing short, narrow, white scale-like, almost recumbent macroseta. Epipleuron distinct, complete, narrow, bare laterally. Macropterous (Fig. 1D).

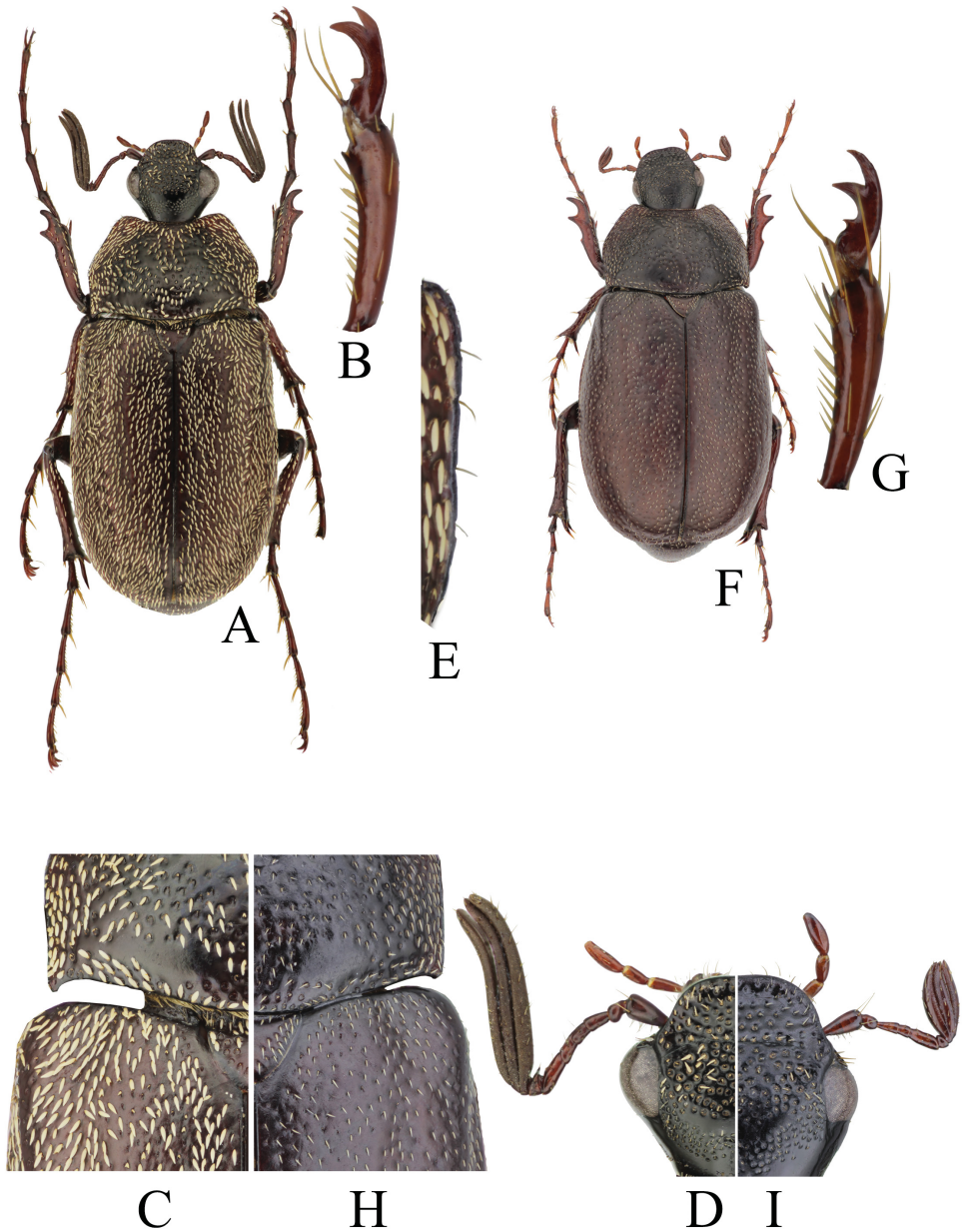
Legs. Femora narrow, shiny, irregularly punctate, macrosetaceous. Protibia narrow, distinctly tridentate, terminal calcar inserted against medial dent. Meso- and metatibia slightly expanded apicad, with two macrosetiferous longitudinal carinae. Upper terminal calcar of metatibia flattened, slightly curved, acute apically, almost two times as long as lower, apically truncate chisel-shaped metatibial calcar. Claws bifid, with ventrobasal teeth (Fig. 9B).

Ventral surface covered with mixture of short, recumbent, white scale-like macrosetae and long, semierect yellowish macrosetae. Pygidium slightly transverse, convex, all around bordered, apically broadly rounded, irregularly covered with coarse macrosetiferous punctures.

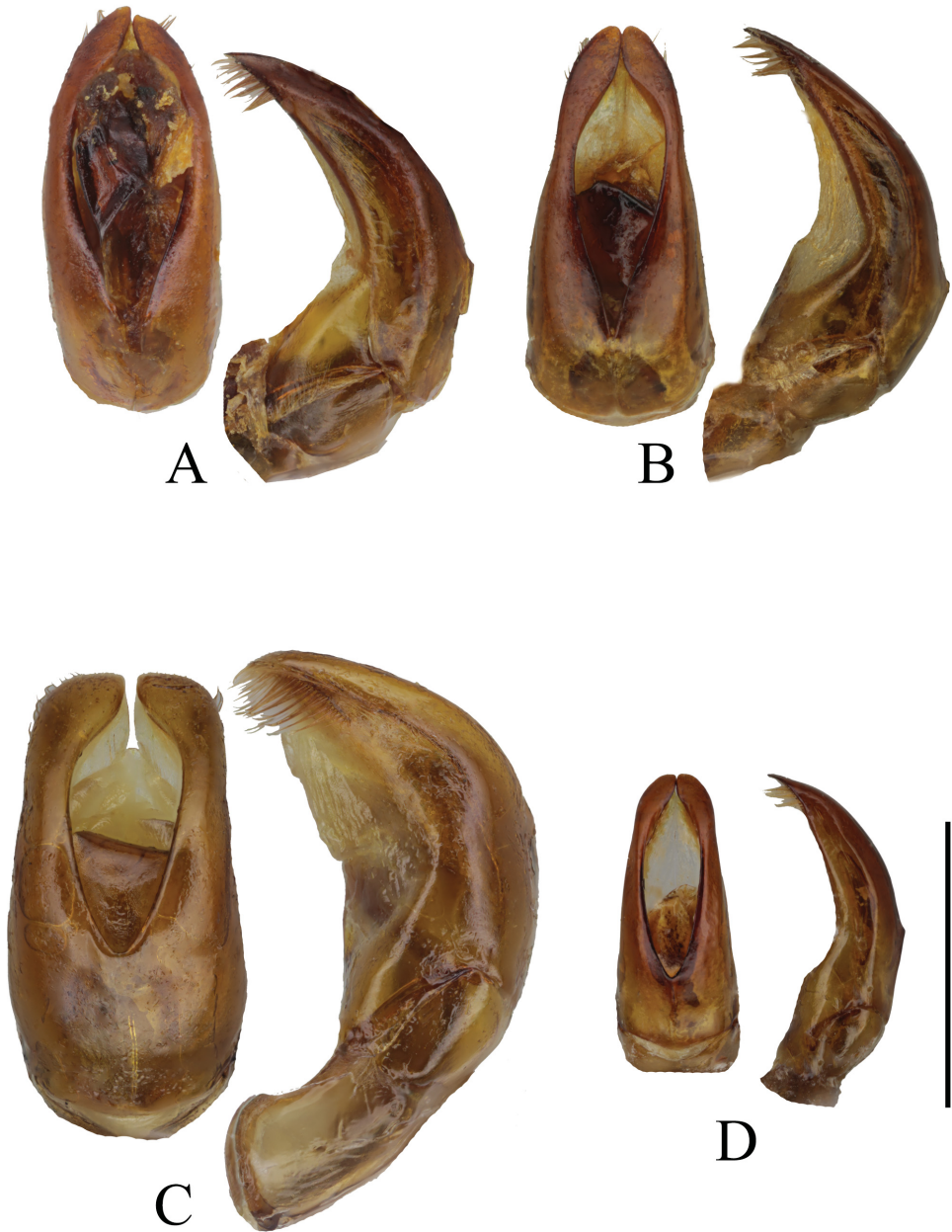
Male genitalia. Parameres symmetrical, shorter than phallobasis, regularly curved in lateral aspect, rounded apically in dorsal aspect; apex with tuft of long yellowish macrosetae (Fig. 11D).

Sexual dimorphism. Female differs from male in the following characters: body slightly broadened posteriad (Fig. 9F); antennal club straight, distinctly shorter (Figs 9F,I); eyes small (width of both eyes combined shorter than maximum width of frons between eyes) (Figs 9F, I); scale-like macrosetae of pronotum and elytra short, narrow (Figs 9F,H); metatibia more strongly expanded apically; tarsomeres of all legs shorter (Fig. 9F).

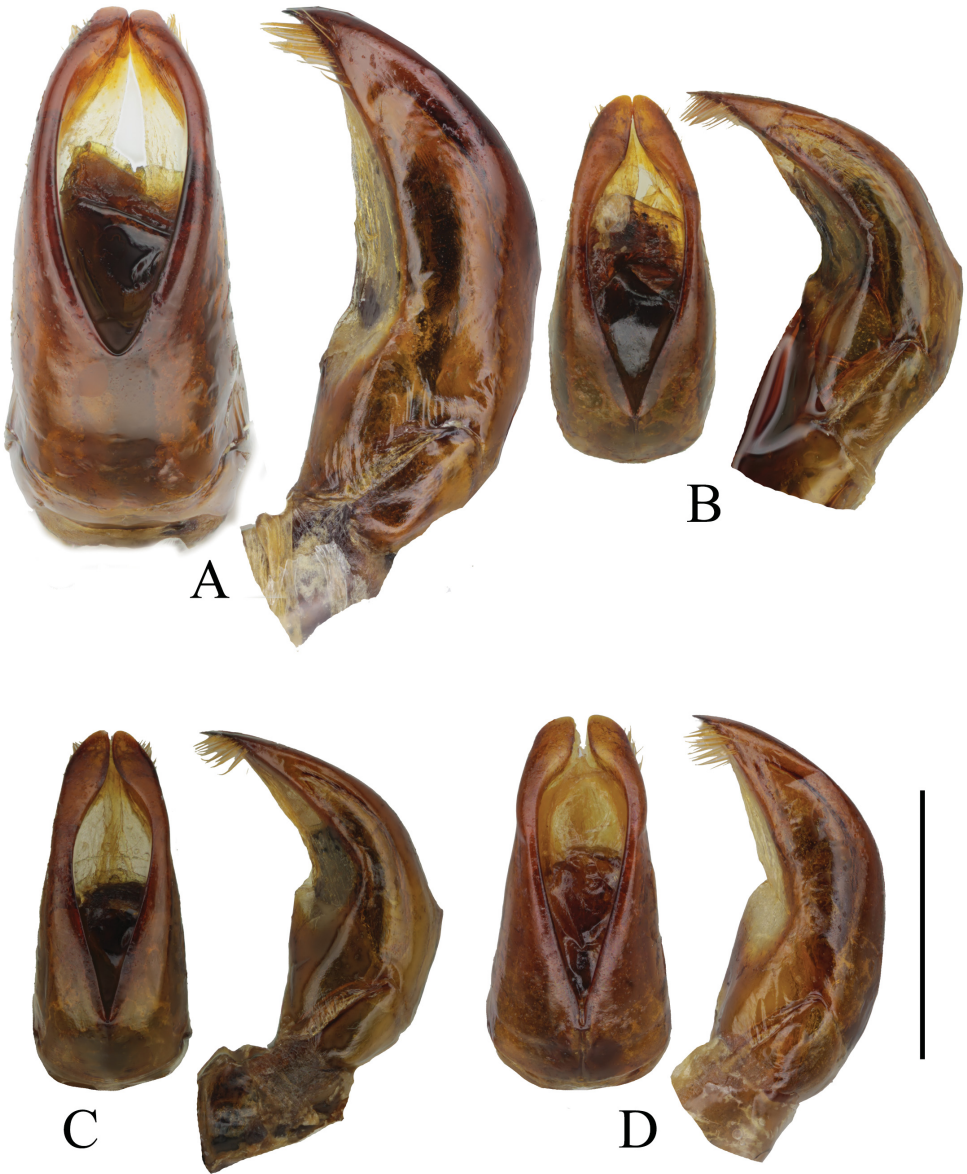
Variability. Paratypes only slightly vary in length (see measurements), colour and punctuation of dorsal surface, length and distribution of scale-like macrosetation of pronotum and elytra.



Figs 9A–I. *Canuschiza skand* sp. nov., dorsal view: A–E – male, holotype, body length 12.5 mm; F–I – female, paratype No. 33, body length 14.2 mm. A, F – habitus; B, G – protarsal claw; C, H – detail of laterobasal area of pronotum and elytron; D, I – head; E – detail of lateroapical area of pronotum. Not to scale.



Figs 10A–D. Aedeagus in dorsal (left) and lateral (right) view: A – *Canuschiza adah* sp. nov., holotype; B – *C. croton* sp. nov., holotype; C – *C. dracaena* sp. nov., holotype; D – *C. firmihin* sp. nov., holotype. Scale bar: 1.0 mm.



Figs 11A–D. Aedeagus in dorsal (left) and lateral (right) view: A – *Canuschiza hagher* sp. nov., holotype; B – *C. insularis* Lacroix, 1999, holotype; C – *C. jatropa* sp. nov., holotype; D – *C. skand* sp. nov., holotype. Scale bar: 1.0 mm.

Measurements. Total body length: ♂♂ 12.2–14.7 mm (holotype 12.5 mm); ♀♀ 11.7–14.2 mm.

Differential diagnosis. *Canuschiza skand* sp. nov. can be differentiated from all species of the *C. insularis* species group mainly by combination of the following diagnostic characters in males: antennae with ten antennomeres (Fig. 9D); antennal club almost straight, as long as antennal shaft (antennomeres I–VII combined) (Figs 9A,D); anterior margin of clypeus weakly upturned, almost straight medially (Figs 9A,D); eyes medium sized (width of both eyes combined approximately the same as maximum width of frons between eyes) (Figs 9A,D); lateral margins of pronotum in anterior half minutely crenate and macrosetaceous (Fig. 9E); posterior angles of pronotum rectangular, moderately produced posteriad (Figs 9A,C); elytra densely irregularly punctate, each puncture bearing scale-like macroseta, longer than puncture diameter; scale-like macrosetae of pronotum and elytra considerably short, broad (Figs 9A,C); macropterous. For tentative differentiation of females refer to the identification keys below.

Etymology. Derived from the area of origin of the new species, vicinity of the Skand Mt., Socotra (Yemen); noun in nominative case, in apposition.

Collecting circumstances. All type material was captured attracted to light trap placed on clearing in evergreen montane woodland (J. Hájek, pers. comm. 2014).

Geographical distribution. Type material originates from the vicinity of the Skand Mt., the highest area of the Hagher Mts and whole Socotra, for details see BEZDĚK et al. (2012).

Identification key to *Canuschiza* species groups

- A (B) Head with simple darkened fronto-clypeal suture (translucent endocarina) (Fig. 1A), antennae with eight or ten antennomeres, posterior angles of pronotum rectangular or even distinctly produced posteriad. ***C. insularis* species group**
- B (A) Head with double fronto-clypeal carina (Fig. 1B), antennae with nine antennomeres, posterior angles of pronotum broadly rounded. ***C. minuta* species group**

Identification key to *Canuschiza* sex

- A (B) Body almost parallel, weakly convex; antennal club considerably longer (e.g. Figs 2A,D); tarsomeres longer (e.g. Fig. 2A). **males**
- B (A) Body broadened posteriad, at least elytra distinctly convex; antennal club straight, shorter (e.g. Figs 2E,H); tarsomeres shorter (e.g. Fig. 2E). **females**

Identification key to males of *Canuschiza insularis* species group

- 1 (2) Antennae with eight antennomeres (Fig. 6D), posterior angles of pronotum considerably produced posteriad. Completely black, micropterous species (Fig. 1C). ***C. hagher* sp. nov.**
- 2 (1) Antennae with ten antennomeres (e.g. Fig. 2D), posterior angles of pronotum simply rectangular or only moderately produced posteriad. Differently coloured, macropterous species (e.g. Fig. 1D).

- 3 (4) Posterior angles of pronotum rectangular, rounded apically, not produced posteriad (Fig. 5C). *C. firmihin* sp. nov.
- 4 (3) Posterior angles of pronotum rectangular, sharp, moderately produced posteriad (e.g. Fig. 4C).
- 5 (6) Elytra finely, sparsely punctate, punctures almost arranged in longitudinal rows; each puncture bearing considerably narrow scale-like macroseta not longer than puncture diameter (Fig. 4A). *C. dracaena* sp. nov.
- 6 (5) Elytra densely, irregularly punctate; each puncture bearing scale-like macroseta longer than puncture diameter (e.g. Fig. 9A).
- 7 (8) Scale-like macrosetae of pronotum and elytra considerably broad (Figs 9A,C). Lateral margins of pronotum in anterior half minutely crenate and macrosetaceous (Fig. 9E). *C. skand* sp. nov.
- 8 (7) Scale-like macrosetae of pronotum and elytra narrow (e.g. Figs 7A,C). Lateral margins of pronotum bare or with short, sparse macrosetation in posterior third only (visible in lateral aspect only).
- 9 (12) Antennal club shorter than antennal shaft (antennomeres I–VII combined) (Figs 7D, 8D).
- 10 (11) Anterior margin of clypeus almost straight (Fig. 8D). *C. jatropha* sp. nov.
- 11 (10) Anterior margin of clypeus shallowly sinuate medially (Fig. 7D).
..... *C. insularis* Lacroix, 1999
- 12 (9) Antennal club as long as or longer than antennal shaft (antennomeres I–VII combined) (Figs 2D, 3D).
- 13 (14) Scale-like macrosetae of pronotum and elytra broad (of same width in its whole length) (Fig. 2C); punctures of pronotum and elytra irregularly spaced; anterior margin of clypeus almost straight, not upturned (Fig. 2D); frons with impunctate area in middle; basal angles of pronotum remarkably produced in small tip posteriad (Fig. 2C); elytra darkened, yellow-brownish (Fig. 2A). *C. adah* sp. nov.
- 14 (13) Scale like macrosetae of pronotum and elytra broad at basis, becoming regularly narrower apicad (Fig. 3C); punctures of pronotum almost regularly spaced; anterior margin of clypeus finely upturned along its whole length (Fig. 3D); frons completely regularly punctate; basal angles of pronotum with less pronounced apical tip (Fig. 3A); elytra ochre. *C. croton* sp. nov.

**Tentative identification key to females of
Canuschiza insularis species group***

- 1 (2) Elytra finely, sparsely punctate, punctures almost arranged in longitudinal rows; each puncture bearing considerably narrow scale-like macroseta not longer than puncture diameter. *C. dracaena* sp. nov.
- 2 (1) Elytra densely, irregularly punctate; each puncture bearing scale-like macroseta, longer than puncture diameter.

* females of *C. firmihin* sp. nov. and *C. hagher* sp. nov. are unknown.

- 3 (4) Lateral margins of pronotum in anterior half minutely crenate and macrosetaceous. *C. skand* sp. nov.
- 4 (3) Lateral margins of pronotum bare or with short, sparse macrosetation in posterior third only (visible in lateral aspect only).
- 5 (6) Punctuation of frons posterior to frontal suture remarkably coarse, individual punctures touching each other with their margins, every puncture bearing short seta, not extending beyond margin of puncture. *C. jatropha* sp. nov.
- 6 (5) Punctuation of frons posterior to frontal suture sparser, individual punctures not touching each other with their margins, every puncture bearing short seta, extending slightly beyond margin of puncture.
- 7 (8) Frons and occiput divided by continuous narrow impunctate area. *C. insularis* Lacroix, 1999
- 8 (7) Frons and occiput divided by sharply bordered impunctate area (edge). *C. adah* sp. nov. + *C. croton* sp. nov.

Checklist of *Canuschiza insularis* species group

<i>C. adah</i> sp. nov.	wadi Adah
<i>C. croton</i> sp. nov.	Diksam plateau: wadi Esgego, wadi Zerig
<i>C. dracaena</i> sp. nov.	Diksam plateau: Firmihin, wadi Zerig
<i>C. firmihin</i> sp. nov.	Diksam plateau: Diksam lake; Firmihin
<i>C. hagher</i> sp. nov.	Hagher Mts.: area of Mt. Skand
<i>C. insularis</i> Lacroix, 1999	widely distributed: Alooove, Ayhaft, Esgego, Firmihin, Hadibo, Hamadero, Irissey, Kaza Kazihon, Shuab
<i>C. jatropha</i> sp. nov.	Diksam plateau: Firmihin; wadi Zerig
<i>C. skand</i> sp. nov.	Hagher Mts.: area of Mt. Skand

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