

**Revision of the genus *Histeromorphus* (Coleoptera:
Tenebrionidae) from the Socotra Archipelago
with descriptions of three new species***

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Abstract. *Histeromorphus* Kraatz, 1865, a genus endemic to the Socotra Archipelago is revised and all species are redescribed. *Histeromorphus plicatipennis* Waterhouse, 1881 is resurrected from synonymy with *H. plicatus* Kraatz, 1865. Lectotypes are designated for *H. undatus* Gahan, 1900, *H. plicatus*, and *H. plicatipennis*. As a result of recent biodiversity research on Socotra Island, three new species are described: *Histeromorphus carinatus* sp. nov., *H. convexicostatus* sp. nov. and *H. nogedensis* sp. nov. All species are figured and keyed.

Key words. Coleoptera, Tenebrionidae, Erodiini, *Histeromorphus*, new species, taxonomy, description, Yemen, Socotra

Introduction

The insect fauna of Socotra Island (Yemen) has been subject to intensive study by Czech entomologists for the last several years that led to discoveries of many species new to science. A part of these results has already been published (HÁJEK & BEZDĚK 2012). The research was focused also on the family Tenebrionidae, one of the most diverse beetle families that occur on the island. Based on the material mentioned above, the following genera have been treated so far: *Deretus* Gahan, 1900 (PURCHART 2012, 2013; PURCHART & NABOZHENKO 2012), *Corticeus* Piller & Mitterpacher, 1783 (PURCHART & SCHAWALLER 2012), *Socotralia* Novák, 2004 (NOVÁK & PURCHART 2012), and *Nanocaecus* Schawaller & Purchart, 2012 (SCHAWALLER & PURCHART 2012). This paper presents a further part of these results and is dealing with the genus *Histeromorphus* Kraatz, 1865.

The genus *Histeromorphus*, endemic to the Socotra Archipelago (BATELKA 2012), was erected by KRAATZ (1865) for *Histeromorphus plicatus* Kraatz, 1865 (by monotypy).

* Results of the biodiversity research of darkling beetles on Socotra Island. Part VII.

WATERHOUSE (1881) added the new species *H. plicatipennis* Waterhouse, 1881 from Socotra Island and later GAHAN (1900) described *H. undatus* Gahan, 1900 from Abd el Kuri. Finally, LESNE (1915) added *H. socotranus* Lesne, 1915. The most recent taxonomic acts were done by KOCH (1970) who synonymised *H. socotranus* and *H. plicatipennis* with *H. plicatus*. The same author described *H. plicatus* var. *glaber* Koch, 1970 but according to ICZN (1999) the name is unavailable (Art. 15.2. – description of infrasubspecific name after 1960).

An interesting, but not unusual, situation was observed in descriptions of the species mentioned above, where, with the exception of *H. plicatus* (type species of the genus), all subsequently added species were described based on short differential diagnosis only. For this reason, all valid species are redescribed here. Based on type material and extensive additional material studied, *H. plicatipennis* is resurrected and three new species are described here.

Material and methods

Stated lengths and widths represent the maximum values of the measured parts. Body length is the distance from the clypeus to the elytral apex with head in its natural position. Width of the elytra is the combined maximum width of both elytra.

Many characters stated in the genus redescription are common for all species. Such characters are therefore not repeated in species descriptions and only attributes that are specific for particular species are described.

Label data are given verbatim for the type material. For nontype material the data are arranged as follows: name of locality, coordinates (if available), altitude, collection date, number of specimens examined, collector name. Name of each locality was kept as stated on locality labels. As there are several cases when the same localities were printed on locality labels with different spellings, it is recommended to see the suggested correct spelling by BEZDĚK et al. (2012) which was also used for spelling of all localities mentioned in the text.

Primary basic map layers of Socotra Island were processed and distribution maps were created in Q-GIS (open source geographic information system – <http://www.qgis.org>).

All specimens of the species described as new bear one printed red label: ‘HOLOTYPE [PARATYPE], *Name of species* sp. nov., det. L. Purchart 2014’.

The material studied is deposited in the following collections:

- BMNH The Natural History Museum, London, United Kingdom (Maxwell V. L. Barclay);
- SBCP Stanislav Bečvář collection, Prague, Czech Republic;
- CULS Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Prague, Czech Republic (Jan Farkač);
- CWWR Wolfgang Wranik collection, Universität Rostock, Germany;
- LPCB Luboš Purchart collection, Brno, Czech Republic;
- MCSC Museo civico di Storia naturale di Carmagnola, Italy (Gianni B. Del Mastro);
- MNHN Muséum National d’Histoire Naturelle, Paris, France (Antoine Mantilleri);
- NMPC Národní muzeum, Praha, Czech Republic (Jiří Hájek);
- SDEI Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (Stephan Blank);
- SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany (Wolfgang Schawaller).

Taxonomy

Genus *Histeromorphus* Kraatz, 1865

Histeromorphus Kraatz, 1865: 11 (original description). Type species: *Histeromorphus plicatus* Kraatz, 1865: 12 (by monotypy); WATERHOUSE (1881): 473 (description of new species); GAHAN (1900): 8 (description of new species); GAHAN (1903): 273 (redescription of species, new records); LESNE (1915): 228 (redescription, key to species, description of new species); GRIDELLI (1931): 221 (figure); GEBIEN (1937): 547 (catalogue); KOCH (1943): 498 (key to genera of Erodiini); KOCH (1970): 90 (description of variability); SCHAWALLER (2004): 441 (new records); LÖBL et al. (2008): 148 (catalogue).

Redescription. Body length 7.1–13.1 mm. Body width 4.8–9.4 mm. Black, dull, glabrous. Body broad, oval.

Head relatively large, smooth, slightly or densely punctate, widest at level of genae. Labrum pale brown, strongly exposed, surface sparsely covered with long yellow setae that become denser on lateral and anterior margins; anterior margin slightly sinuate. Anterior margin of clypeus straight or slightly to strongly sinuate. Clypeus punctate, frontoclypeal suture slightly indicated laterally or sometimes not visible. Mandibles flat laterally, bifid. Maxillary palpus with last palpomere slightly widened, with corona of setae on apical margin. Mentum large, transverse, trapezoid, widest towards apex, apically with two lateral convexities and central fissure. Submentum transverse, triangular. Eyes narrow, vertically elongate. Antennae relatively short, approximately as long as width of head, glabrous, usually with several setae on apical margin of apical three antennomeres, antennomere III elongate, longer than following antennomere, penultimate antennomere largest, apical antennomere rudimentary.

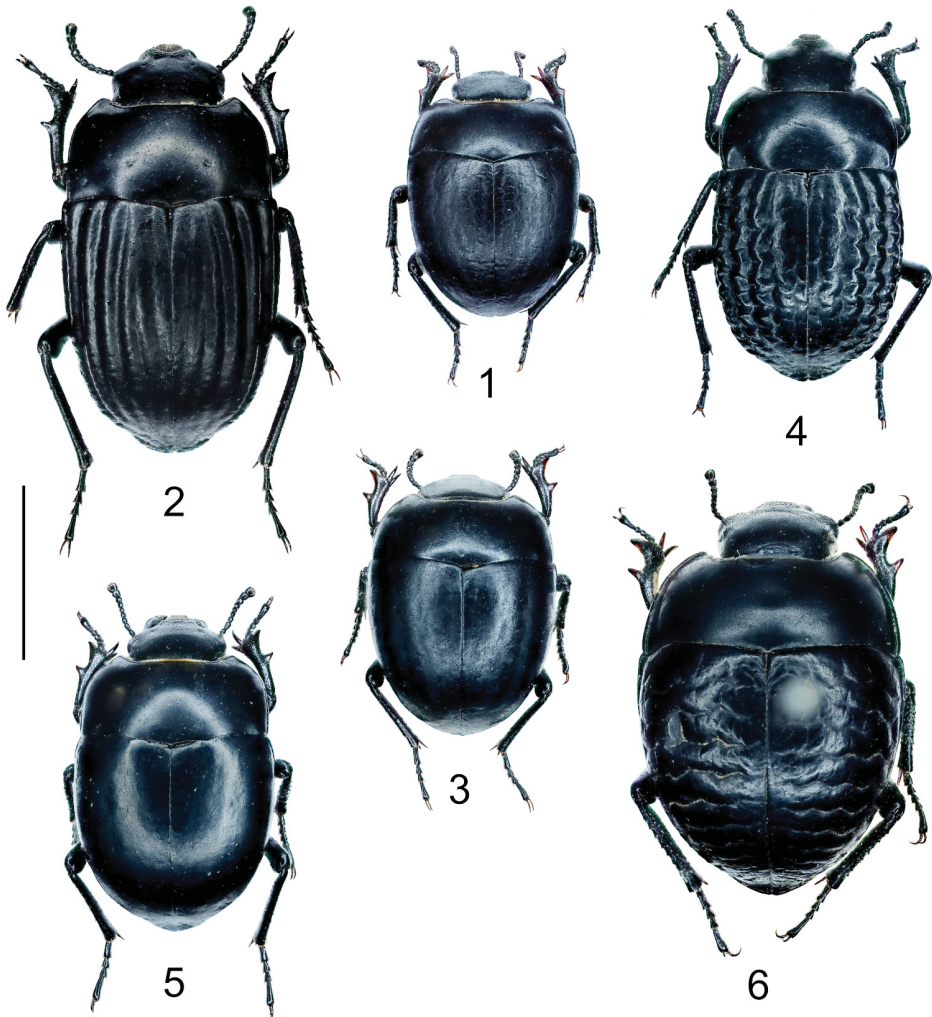
Pronotum strongly transverse, at least twice as broad as long, smooth or very slightly punctate. Sides of pronotum completely rounded or with straight posterior half. Anterior margin broadly and deeply sinuate, anterior corners sharp or obtuse angled. Posterior margin bisinuate, posterior corners sharp or obtuse. Lateral margin complete, anterior margin partly bordered, posterior margin and middle of anterior margin unbordered, obliterated.

Elytra broad, with broadly rounded sides. Scutellum not visible. Elytral surface variable (smooth, irregularly plicate, with longitudinal zigzag elytral striae or with transverse wavy lines). Pseudopleura broad, smooth, separated from elytra by complete or incomplete pseudopleural margin of elytra. Elytra coarctate at elytral suture. Wings not developed.

Ventral part. Prosternum glabrous, smooth or slightly wrinkled, impunctate. Prosternal apophysis as broad as procoxae, widened posteriad. Mesoventrite glabrous, smooth or wrinkled; as long as or longer than coxae. Metaventrite glabrous, smooth or wrinkled; as long as coxae. Abdominal ventrites glabrous, smooth or wrinkled and with small granules.

Legs sparsely covered with short and fine setae or glabrous. Protibia strongly flattened, widened anteriorly, projected in finger-like tooth on lateral side of protibia; above the latter on lateral side of protibia another, much smaller tooth is situated. Profemur distinctly claviform. Inner anterior angle of all tibiae with two large spines.

Male genitalia. Aedeagus simple (Figs 29–51), inverted, i.e. tegmen ventral and median lobe dorsal (cf. WATT 1974).



Figs 1–6. Habitus of *Histeromorphus* in dorsal view. 1 – *H. carinatus* sp. nov., holotype; 2 – *H. convexicostatus* sp. nov., holotype; 3 – *H. nogedensis* sp. nov., holotype; 4 – *H. plicatipennis* Waterhouse, 1881; 5 – *H. plicatus* Kraatz, 1865; 6 – *H. undatus* Gahan, 1900. Scale bar = 5 mm.

Female genitalia. Ovipositor with spatulate apical coxite lobes (Figs 52–61) which are considered one of the tribal features of Erodiini (DOYEN 1993).

Distinct sexual dimorphism not present. Sometimes males possess somewhat slightly flattened abdominal ventrites contrary to convex ventrites in females.

Differential diagnosis. The tribe Erodiini presently contains 36 genera (SCHAWALLER 1990). Most of these genera possess long setae on the inner side of protibiae. On the contrary the genus *Histeromorphus*, together with the genera *Amnodeis* Miller, 1858, *Ammodoides* Lesne, 1915,

Anodesis Solier, 1834, *Arthrodion* Lesne, 1915, *Diodontes* Solier, 1834 and *Somalammodes* Koch, 1943, belongs to the generic group of Erodiiini which is characterized, and can be distinguished from the previous generic group, by the absence of long setae on the inner side of protibiae.

Histeromorphus differs from the genera *Arthrodion* and *Diodontes* in the absence of a keel above the inner margin of the eye (the latter two genera possess a long keel above it – subocular keel). From *Annodeis* and *Anodesis*, *Histeromorphus* can be distinguished by flat mandibles, glabrous antennae, elytra without granulate or keeled punctation, and its small size (in the latter two genera the mandibles are keeled dorsally and ventrally, basal antennomere is covered densely with hairs, elytra granulate or often with 1–2 keels, and they are larger).

From *Ammodoidea* and *Somalammodes*, *Histeromorphus* differs in strongly broad body with rounded sides, and glabrous (not punctate) surface (dorsal and ventral part); clypeus large, flat with emarginate anterior margin and tooth-like anterior corners (bidentate) or the anterior margin is straight. In the latter two genera the body is much smaller and narrower, parallel sided with punctate surface (dorsal and ventral part); clypeus small, short and tridentate (*Ammodoidea*) or with emarginate anterior margin (bidentate) but in this case the clypeus is bent down towards the labrum and its posterior part (margin) is transversely protuberant (*Somalammodes*).

Remark. The differential diagnosis is based mainly on Koch's paper and his key to the genera of the tribe Erodiiini (KOCH 1943). All the above mentioned characters were personally verified in the following species (all deposited in the MNHN): *Ammodoidea draceanarum* Koch, 1960, *A. lateripunctatus* (Fairmaire, 1890), *Annodeis milleri* Reitter, 1914, *A. confluens* Miller, 1858, *A. asiaticus* Miller, 1858, *A. intermedius* Reitter, 1914, *A. giganteus* (Reiche & Saulcy, 1857), *A. gebieni* Reitter, 1914, *Anodesis cleryi* Solier, 1834, *Arthrodion africanum* (Fairmaire, 1882), *Diodontes porcatus* Solier, 1834, *D. areolatus* Gerstäcker, 1871, *D. chatanayi* Lesne, 1915, *D. subscutellatus* Lesne, 1915, and *D. patrizii* Gridelli, 1939.

Distribution. The tribe Erodiiini is distributed in Africa, the Mediterranean region, the Middle East, and South (India only) and Central Asia (SCHAWALLER 1990). The genus *Histeromorphus* is endemic to Socotra Archipelago (BATELKA 2012).

Histeromorphus carinatus sp. nov.

(Figs 1, 7, 13, 19, 28–31, 52, 53)

Type locality. Yemen, Socotra Archipelago, Socotra Island, sand dune east of Suq, ca. 12°40'02"N, 54°03'45"E, 20–170 m a.s.l.

Type material. HOLOTYPE: ♂ (NMPC): Yemen: Soqotra Is., 22.xi.2003, SUQ, E env. - sand dune, N 12°40'02" E 54°03'45", 20-170 m [GPS]; Jan Farkač lgt. // YEMEN - SOQOTRA 2003, Expedition; Jan Farkač, Petr Kabátek & David Král. PARATYPES: 1 spec. (CULS): same data as holotype; 1 spec. (NMPC), 1 ♂ (LPCB): Yemen, Soqotra Is., GUBBAH vill. env., 23.xi.2003, N 12°36'35" E 53°46'56", 7 m [GPS], leg. P. Kabátek // YEMEN - SOQOTRA 2003, Expedition; Jan Farkač, Petr Kabátek & David Král; 1 ♀ (MCSC): YEMEN, Socotra Isl., Hadibo, N12°39'41.38", E054°03'19.50", 5.ii.2008, F. Pella lgt.

Description. Body length 7.1–8.3 mm (holotype 7.1 mm). Body width 5.0–6.2 mm (holotype 5.0 mm). Black, dull, glabrous. Body broad, oval (Fig. 1).

Head smooth, entire surface densely and roughly punctate (Fig. 7). Anterior margin of clypeus slightly sinuate; entire clypeus finely punctate; frontoclypeal suture slightly indicated laterally.

Pronotum broadest at base, entire surface finely punctate. Sides of pronotum rounded, regularly dilated towards pronotal base. Anterior corners nearly rectangular. Posterior corners obtuse-angled.

Elytra. Elytral surface glabrous, smooth, very sparsely and very finely shallowly punctate. Pseudopleura well separated from elytra by fine and complete pseudopleural margin running in its entire length along edge of elytra (Fig. 19).

Ventral part. Prosternum glabrous, smooth, impunctate. Prosternal apophysis as broad as procoxae, widened apically. Mesoventrite glabrous, smooth, longer (in ventral view) than coxae. Metaventrite glabrous, smooth, as long (in ventral view) as coxae. Abdominal ventrites glabrous, smooth, impunctate.

Legs. Profemur distinctly claviform (Fig. 13), anterior margin on ventral side strongly impressed, forming distinctly keeled sharp carina-like edge running along entire length of anterior margin, entire posterior margin on dorsal part with row of long yellow setae.

Male genitalia. Aedeagus simple (Figs 28–31). Apical piece of tegmen subparallel, rapidly narrowing at apex, with long opening on ventral side; base of apical piece straight, without teeth. Basal piece widened towards base. Median lobe straight in basal 2/3 and strongly curved upwards (in lateral view) in apical third.

Female genitalia. See Figs 52, 53.

Differential diagnosis. *Histeromorphus carinatus* sp. nov. can be easily differentiated from all other species by the fine and complete pseudopleural margin which is visible along the edge of elytra. In other species, the pseudopleural margin is incomplete and below the rounded side of elytra (when viewed from behind) starting at the humeral angles and running obliquely downwards towards the apex of elytra (*H. nogedensis* sp. nov., *H. plicatipennis* and *H. plicatus*) or, if complete (*H. undatus* and *H. convexicostatus* sp. nov.), it is strongly developed, nearly costate. Furthermore, the new species can be distinguished by its slightly sinuate clypeal margin and, with the exception of *H. nogedensis* sp. nov., by the ventrally keeled anterior margin of the profemur, row of long yellow setae along the posterior dorsal margin of profemur, and by strongly curved and almost rectangular (in lateral view) median lobe. It further differs from *H. undatus* and *H. convexicostatus* sp. nov. in the smooth elytra (transversally plicate in *H. undatus* and with straight concave interstriae in *H. convexicostatus* sp. nov.).

Distribution. So far known only from three localities on the sandy northern coast of Socotra Island.

Etymology. Refers to carinate (keel-like) anterior edge of posterior femur; adjective.

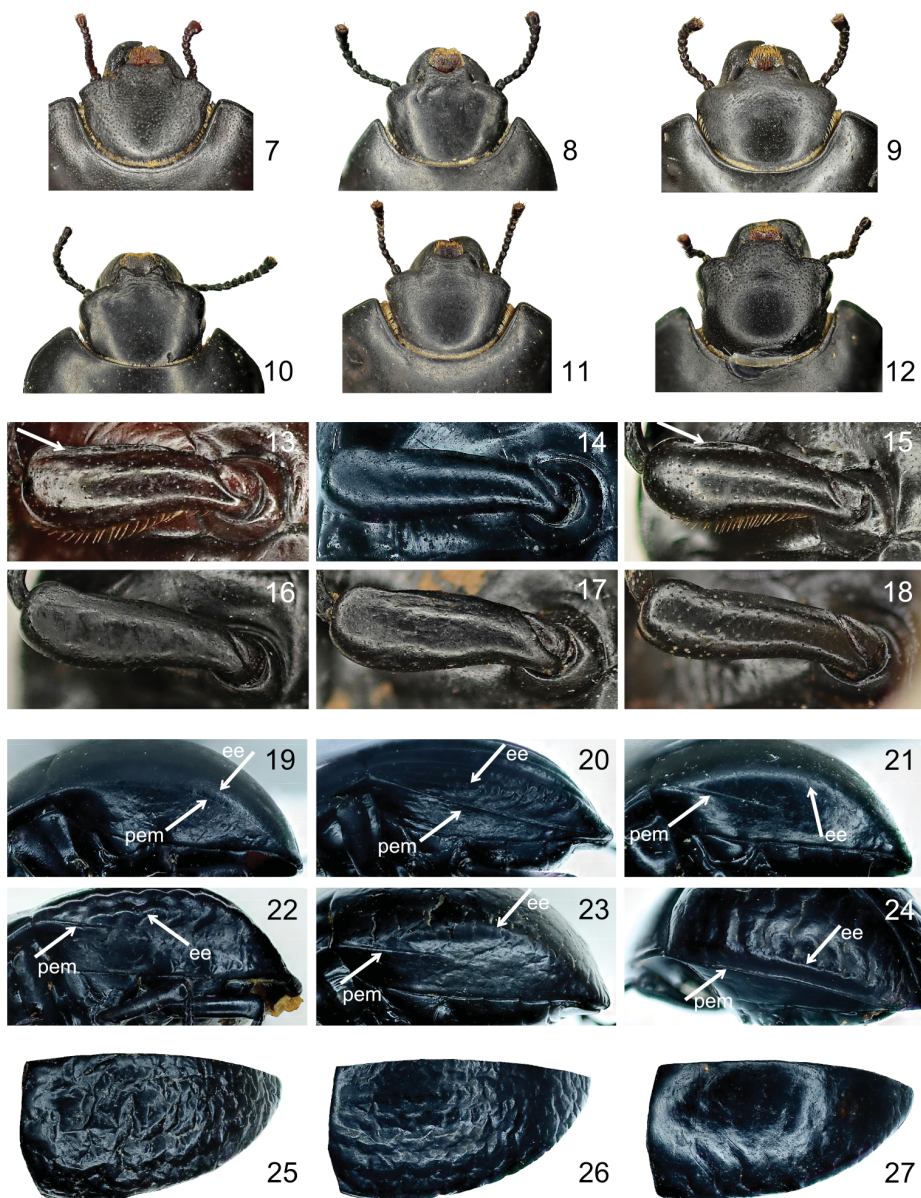
Histeromorphus convexicostatus sp. nov.

(Figs 2, 8, 14, 20, 32–35)

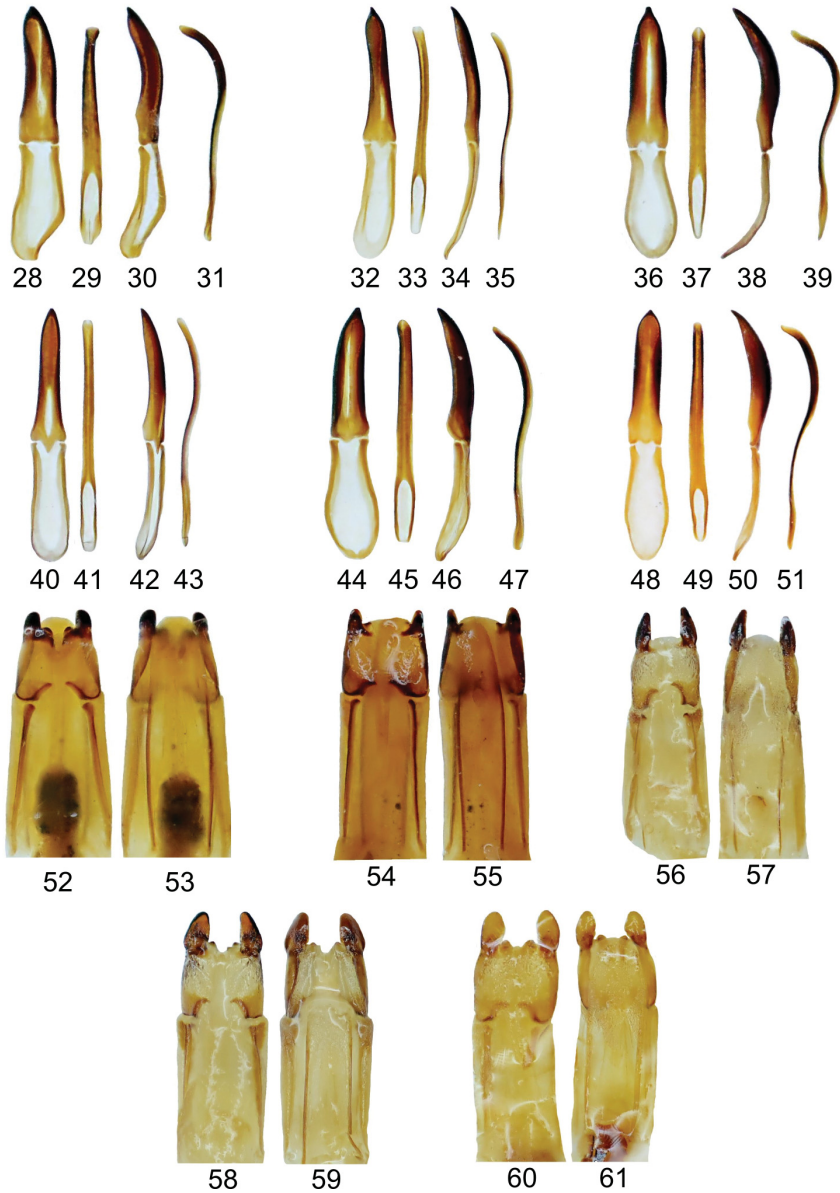
Type locality. Yemen, Socotra Archipelago, Socotra Island, Noged plain, Qaareh, ca. 12°20'10"N, 53°37'56"E, 57 m a.s.l.

Type material examined. HOLOTYPE: ♂ (NMPC): Yemen, Socotra Is., QAAREH (waterfall), Noged plain, 5.-6. xii.2003, N 12°20'10" E 53°37'56", 57 m [GPS], leg. P. Kabátek // YEMEN – SOQOTRA, 2003, Expedition; Jan Farkač, Petr Kabátek & David Král.

Description. Body length 11.5 mm. Body width 5.8 mm. Black, dull, glabrous. Body elongate, oval (Fig. 2).



Figs 7–27. 7–12 – head in dorsal view. 13–18 – profemur in ventral view; white arrows indicate keeled anterior margin. 19–24 – pseudopleural margin in lateral view; ee – edge of elytra; pem – pseudopleural margin. 25–27 – elytral surface variability. 7, 13, 19 – *Histeromorphus carinatus* sp. nov., holotype; 8, 14, 20 – *H. convexicostatus* sp. nov., holotype; 9, 15, 21 – *H. nogedensis* sp. nov., holotype; 10, 16, 22 – *H. plicatipennis* Waterhouse, 1881; 11, 17, 23, 25–27 – *H. plicatus* Kraatz, 1865; 12, 18, 24 – *H. undatus* Gahan, 1900.



Figs 28–61. 28, 32, 36, 40, 44, 48 – tegmen in ventral view. 29, 33, 37, 41, 45, 49 – median lobe in ventral view. 30, 34, 38, 42, 46, 50 – tegmen in lateral view. 31, 35, 39, 43, 47, 51 – median lobe in lateral view. 52, 54, 56, 58, 60 – ovipositor in ventral view. 53, 55, 57, 59, 61 – ovipositor in dorsal view. 28–31, 52–53 – *Histeromorphus carinatus* sp. nov.; 32–35 – *H. convexicostatus* sp. nov.; 36–39, 54–55 – *H. nogedensis* sp. nov.; 40–43, 56–57 – *H. plicatipennis* Waterhouse, 1881; 44–47, 58–59 – *H. plicatus* Kraatz, 1865; 48–51, 60–61 – *H. undatus* Gahan, 1900.

Head very sparsely and finely punctate anteriorly (Fig. 8). Anterior margin of clypeus strongly sinuate and therefore bidentate. Clypeus sparsely and roughly punctate, frontoclypeal suture slightly indicated laterally.

Pronotum smooth, glabrous, broadest in anterior third. Sides of pronotum rounded in anterior third and then straight and slightly narrowing towards pronotal base. Anterior corners acute-angled. Posterior corners obtuse-angled. Posterior half of pronotum with two shallow but distinct rounded impressions.

Elytra broad, elongate, with slightly rounded nearly subparallel sides. Each elytron with six strongly convex elytral interstriae. Space between elytral suture and first elytral striae slightly convex. Pseudopleura completely separated from elytra by complete and strongly developed, almost costate pseudopleural margin (Fig. 20); the latter starting from humeral angles and running obliquely downwards towards elytral apex below rounded edge of elytra (when viewed from behind).

Ventral part. Prosternum glabrous, smooth, impunctate. Prosternal apophysis as broad as procoxae, widened behind coxae. Mesoventrite glabrous, smooth, longer (in ventral view) than coxae. Metaventrite glabrous, smooth, as long (in ventral view) as coxae. Abdominal ventrites glabrous, smooth. Meso- and metaventrite with abdominal ventrites I and II gibbous.

Legs. Profemur distinctly claviform (Fig. 14), its dorsal side sparsely covered with short erect yellowish setae.

Male genitalia. Aedeagus simple (Figs 32–35). Apical piece of tegmen narrowed at its base, gradually narrowing towards apex then rapidly narrowing at apex, with short opening on its ventral side; base of apical piece straight and with distinct teeth. Basal piece subparallel. Median lobe almost straight in lateral view.

Female. Unknown.

Differential diagnosis. *Histeromorphus convexicostatus* sp. nov. differs from the remaining species of the genus mainly in having straight and strongly convex elytral interstriae, a distinct aedeagal shape (Figs 32–35), and a complete and strongly developed, nearly costate, pseudopleural margin of elytra. It shares the latter character with *H. undatus* but it has a strongly sinuate anterior margin of clypeus (straight in *H. undatus*), the pronotum is broadest in anterior third (broadest at elytral base in *H. undatus*), and the elytral surface is different (*H. undatus* possesses conspicuous transverse wavy lines on elytra).

Etymology. Refers to strongly convex elytral interstriae; adjective.

Distribution. So far known only from a single specimen collected in western Noged plain, south coast of Socotra Island.

Histeromorphus nogedensis sp. nov.

(Figs 3, 9, 15, 21, 36–39, 54, 55)

Type locality. Yemen, Socotra Archipelago, Socotra Island, Noged plain, sand dunes near Sharet Halma vill., ca. 12°21.9'N, 54°05.3'E, 20 m a.s.l.

Type material. HOLOTYPE: ♂ (NMPC): YEMEN, SOCOTRA Island Noged plain (sand dunes), SHARET HALMA vill. env., 12°21.9'N, 54°05.3'E, 10.-11.xi.2010, J. Bezděk leg. PARATYPES: 1 ♀ (NMPC), 2 ♂♂ 4 ♀♀ (LPCB): same data as holotype; 1 spec. (NMPC): YEMEN, SOCOTRA Island, Noged plain (sand dunes), SHARET HALMA vill. env., 12°21.9'N, 54°05.3'E, 20 m, Jiří Hájek leg., 10.-11.xi.2010; 5 spec. (NMPC), 2 spec. (BMNH), 1 spec. (SDEI), 2 ♂♂ 1 ♀, 6 spec. (LPCB): YEMEN, SOCOTRA Island, Noged plain, ABATARO, border of sand dunes and shrubland, 12.-13.vi.2012,

12°22.1'N, 54°03.4'E, 20 m // SOCOTRA expedition 2012, J. Bezděk, J. Hájek, V. Hula, P. Kment, I. Malenovský, J. Niedobová & L. Purchart leg.; 2 spec. (NMPC), 1 ♂ 1 ♀ (LPCB): Yemen, Soqatra Is., 2003, 6-7.xii., Noged plain, wadi IREEH, 95 m, N12°23'11" E53°59'47" [GPS], David Král lgt. // YEMEN – SOQOTRA, 2003, Expedition; Jan Farkač, Petr Kabátek & David Král.; 1 ♀, 2 spec. (MCSC): YEMEN, Socotra Isl., N12°20'17.26", E053°59'56.53", 10. ii. 2008, F. Pella lgt.; 1 ♂ (MCSC), 1 ♂ (LPCB): YEMEN, Socotra Isl., Steroh, N12°21'36.75", E053°55'40.64", 11. x. 2007, F. Pella lgt.; 1 ♀ (MCSC): same as previous but N12°21'36.98", E053°55'46.10"; 2 spec. (MCSC): YEMEN, Socotra Isl., Steroh, N12°21'46.33", E053°55'17.30", 10. ii. 2008, F. Pella lgt.; 1 ♀, 2 spec. (MCSC): YEMEN, Socotra Isl., N12°22'07.25", E053°55'52.79", 10. ii. 2008, F. Pella lgt.; 1 spec. (MCSC): YEMEN, Socotra Isl., Homaq, N12°19'50.86", E053°59'50.41", 10. ii. 2008, F. Pella lgt.; 1 ♀ (MCSC): YEMEN, Socotra Isl., Homaq, N12°20'23.59", E054°01'10.53", 10. ii. 2008, F. Pella lgt.; 1 ♂, 1 spec. (MCSC), 1 ♀ (LPCB): YEMEN, Socotra Isl., Homaq, N12°20'48.67", E054°01'05.55", 11. x. 2007, F. Pella lgt.; 4 ♀♀ (MNHN): Ile de SOCOTRA, Février-1992, Canu Jean-Guy leg. // Muséum Paris, 2001, Coll. générale; 1 ♀ (MNHN): same as previous, nov-1997; 1 spec. (SBCP), 1 ♂ (LPCB): SOCOTRA Isl. (Yemen), NOGED MOKHAR, 31.iii.2001, lgt. V. Bejček + K. Šťastný; 8 spec., 2 ♂♂ (SBCP), 2 ♂♂ (LPCB): SOCOTRA Isl. (Yemen), NOGED, 12.-13.xi.2000, lgt. V. Bejček + K. Šťastný; 1 spec., 1 ♂ 1 ♀ (SBCP), 1 ♂ (LPCB): SOCOTRA Isl. (YEMEN), NOGHED, 27.ii.-1.iii.2000, lgt. Bejček + Šťastný; 1 ♀ (SMNS): YEMEN, Socotra Isl., Dexam, Scant, 6.-24.ix.1999, V. Bejček & K. Šťastný lgt. // COLLECTION STANISLAV BEČVÁŘ; 1 spec., 1 ♂ (SMNS): YEMEN W, Socotra Isl., 6.-24.ix.1999, V. Bejček & K. Šťastný lgt.; 1 ♂ (SMNS): ZOOLOGISCHE EXKURSION, Samha, 2/1999, leg. Rösler; 1 ♀ (CWWR): same as previous but leg. Wranik; 1 ♂ (SMNS): Soqotra-Archipel: Samha, Aufstieg zum Plateau, 12°10'N 53°01'E, 240 m, 16.2.1999, leg.: H. POHL, SOQ 29; 1 spec. (CWWR): Samha, 8.2.2000, leg. Wranik; 2 ♂♂ (CWWR): Darsa, 10.2.2000, leg. Wranik.

Description. Body length 7.4–9.8 mm (holotype 7.5 mm). Body width 5.0–5.8 mm (holotype 5.4 mm). Black, dull, glabrous. Body broad, oval (Fig. 3).

Head smooth, entire surface sparsely and finely punctate (Fig. 9). Anterior margin of clypeus moderately sinuate. Entire clypeus finely punctate, frontoclypeal suture slightly indicated laterally.

Pronotum smooth, glabrous, impunctate. Sides of pronotum broadly rounded. Anterior corners nearly rectangular. Posterior corners obtuse-angled.

Elytra broad, with broadly rounded sides. Elytral surface glabrous, smooth, impunctate. Pseudopleura separated from elytra by elytral pseudopleural margin; the latter being incomplete, developed around apex of elytra and in anterior half of elytra, running from humeral angles obliquely downwards towards apex of elytra under rounded edge of elytra (when viewed from behind) and it is obliterated in posterior half of elytra (Fig. 21).

Ventral part. Prosternum glabrous, smooth, impunctate. Prosternal apophysis as broad as procoxae, widened apically. Mesoventrite glabrous, smooth, slightly longer (in ventral view) than coxae. Metaventrite glabrous, smooth, as long (in ventral view) as coxae. Abdominal ventrites glabrous, smooth impunctate.

Legs. Profemur distinctly claviform (Fig. 15), its anterior margin on ventral side strongly impressed forming distinctly keeled sharp carina running almost along entire length of anterior margin; entire posterior margin on dorsal part with row of long yellow setae.

Male genitalia. Aedeagus simple (Figs 36–39). Apical piece of tegmen subparallel, rapidly narrowing at apex, with long opening on ventral side; base of apical piece bisinuate and with distinct teeth. Basal piece widened towards base. Median lobe slightly S-like in basal half and strongly curved upwards (in lateral view) in apical half, almost rectangular.

Female genitalia. See Figs 54, 55.

Differential diagnosis. *Histeromorphus nogedensis* sp. nov. differs from other species (with the exception of *H. carinatus* sp. nov.) in having a keeled anterolateral profemoral margin,

with a row of long yellow setae on the posterolateral profemoral margin and in the strongly recurved apex of the median lobe (in lateral view). From *H. undatus*, *H. convexicostatus* sp. nov. and *H. plicatipennis* it differs also in having a smooth elytral surface (transverse wavy lines in *H. undatus*, straight and strongly convex or zigzag and convex elytral interstriae in *H. convexicostatus* sp. nov. and *H. plicatipennis*, respectively). It has an incomplete pseudopleural margin, while it is complete and strongly developed and almost costate in *H. undatus* and *H. convexicostatus* sp. nov. and fine but complete in *H. carinatus* sp. nov., in which the pseudopleural margin runs along the elytral edge, while in *H. nogedensis* sp. nov. it runs obliquely downwards towards the elytral apex below the edge of elytra.

Etymology. Refers to Noged plain (Socotra Island) where the major part of type specimens was collected; adjective.

Distribution. The new species is known from several localities in eastern Noged plain, south coast of Socotra Island, two localities on Samha Island and on Darsa Island. The only specimen with locality 'Dexam, Scant' seems to be wrongly labelled, as all specimens of the new species were observed exclusively on coastal part of the islands. See also *H. plicatipennis* where the same (wrong?) labelling occurred as well.

Histeromorphus plicatipennis Waterhouse, 1881, stat. rest.

(Figs 4, 10, 16, 22, 40–43, 56, 57)

Histeromorphus plicatipennis Waterhouse, 1881: 473 (original description); GAHAN (1903): 273 (redescription); LESNE (1915): 228 (key to species); GEBIEN (1937): 547 (catalogue); KOCH (1970): 91 (synonymisation with *H. plicatus*); LÖBL et al. (2008): 148 (catalogue, as synonym).

Type locality. Yemen, Socotra Archipelago, Socotra Island.

Type material examined. LECTOTYPE (here designated): unsexed spec. (BMNH): SYNTYPE [round, white with blue borders, printed] // Type [round, white with red borders, printed] // Socotra, 81-51 [white, handwritten] // *Histeromorphus plicatipennis* Waterh., Type [white, handwritten] // LECTOTYPE, *Histeromorphus plicatipennis* Waterhouse, 1881, desig. L. Purchart 2014 [red, printed]. PARALECTOTYPE: 1 unsexed spec. (BMNH): SYNTYPE [round, white with blue borders, printed] // Socotra, 81-51 [white, handwritten] // PARALECTOTYPE, *Histeromorphus plicatipennis* Waterhouse, 1881, desig. L. Purchart 2014 [red, printed].

Additional material examined. (16 spec.). **YEMEN: SOCOTRA ISLAND:** 2 ♀♀, 3 spec. (NMPC): Qalansiyah env., Ditwah (lagoon), N 12°41'42" E 53°30'08", 23 m, 9.xii.2003, D. Král leg.; 1 ♂ (NMPC): Gubbah vill. env., N 12°36'35" E 53°46'56", 7 m, 23.xi.2003, D. Král leg.; 2 ♂♂ (CULS), 1 ♀ (LPCB): Qaariah vill. env., N 12°38'05" E 54°12'39", 11 m, 28.xi.2003, J. Farkač leg.; 1 ♂ (LPCB): Di Hamri, N 12°37'59" E 54°15'40", 20 m, 27.ii.2010, L. Purchart leg.; 1 spec. (LPCB): Hoq cave, N 12°35'10" E 54°21'31", 340 m, 7.vi.2012, V. Hula & J. Niedobová leg.; 1 ♂ (MCSC): Qalansia, N 12°41'49.15" E 53°29'58.55", 4.xi.2007, F. Pella leg.; 1 spec. (MCSC): Qalansia, N 12°41'43.00" E 53°31'00.11", 8.xi.2007, F. Pella leg.; 1 spec. (MNHN): same locality, xi.1997, C. Jean-Guy leg.; 1 spec. (SBCP): same locality, 6.–24.ix.1999, V. Bejček & K. Štátný leg.; 1 spec. (SMNS): Dexam, Scant, 6.–24.ix.1999, V. Bejček & K. Štátný leg.

Redescription. Body length 8.3–12.0 mm (lectotype: 10.0 mm), body width 4.8–7.3 mm (lectotype: 6.5 mm). Black, dull, glabrous. Body broad, oval (Fig. 4).

Head smooth, very sparsely punctate anteriorly (Fig. 10). Anterior margin of clypeus strongly sinuate and therefore bidentate. Clypeus sparsely punctate, frontoclypeal suture slightly indicated laterally.

Pronotum broadest before middle, smooth, glabrous. Sides of pronotum rounded. Anterior corners acute. Posterior corners obtuse-angled.

Elytra broad, with broadly rounded sides. Elytral surface longitudinally plicate with four zigzag elytral striae on each elytron. Space between first and second striae flattened, following three interstriae distinctly convex. Pseudopleura separated from elytra by pseudopleural margin, which is obliterated between anterior half and apex of elytra and running from humeral angles obliquely downwards towards elytral apex below rounded elytral margin (when viewed from behind) (Fig. 22).

Ventral part. Prosternum glabrous, smooth, impunctate. Prosternal apophysis as broad as procoxae, widened apically. Mesoventrite glabrous, smooth, slightly longer (in ventral view) than coxae. Metaventrite glabrous, smooth, as long (in ventral view) as coxae. Abdominal ventrites glabrous, smooth. Meso- and metaventrite with abdominal ventrites I and II gibbous in both males and females.

Legs. Profemur distinctly claviform (Fig. 16), its dorsal side sparsely covered with short erected yellowish setae.

Male genitalia. Aedeagus simple (Figs 40–43). Apical piece of tegmen narrowed at its base, gradually narrowing towards apex, rapidly narrowing at apex, with short opening on ventral side; base of apical piece straight and with distinct teeth. Basal piece subparallel. Median lobe very slightly S-like in lateral view.

Female genitalia. See Figs 56, 57.

Differential diagnosis. *Histeromorphus plicatipennis* differs from other species mainly in the longitudinally plicate and convex interstriae with four zigzag striae on each elytron (the elytral surface is smooth in *H. carinatus* sp. nov., *H. plicatus*, *H. nogedensis* sp. nov., with transverse wavy lines in *H. undatus* and with straight and strongly convex interstriae in *H. convexicostatus* sp. nov.), in the meso- and metaventrite with the abdominal ventrites I and II being distinctly gibbous, and finally in the different shape of aedeagus. From *H. carinatus* sp. nov., *H. convexicostatus* sp. nov. and *H. undatus* it differs also in the incomplete, obsolete pseudopleural margin (complete in the three previous species).

Distribution. *Histeromorphus plicatipennis* occurs only along the north coast of Socotra Island. Similarly as in *H. nogedensis* sp. nov., the only specimen with locality “Dexam, Scant” seems to be wrongly labelled.

Remarks. There is no doubt that KOCH (1970) did not examine the type specimens when he synonymised *H. plicatipennis* with *H. plicatus*, as both species are very different (see differential diagnosis). The latter species shows in some specimens a similar but distinct pattern of elytral surface: *H. plicatipennis* has longitudinally plicate elytra with four regularly zigzag-like elytral striae, while in some specimens of *H. plicatus* a somewhat plicate elytral surface can be observed but never with four regularly zigzag-like striae and the elytral surface is not strictly longitudinally plicate. In my opinion, Koch’s taxonomical act was based on such specimens of *H. plicatus*.

Histeromorphus plicatus Kraatz, 1865

(Figs 5, 11, 17, 23, 25–27, 44–47, 58, 59)

Histeromorphus plicatus Kraatz, 1865: 12 (original description); GAHAN (1903): 273 (description of variability); LESNE (1915): 228 (key to species); GRIDELLI (1931): 221 (figure); GEBIEN (1937): 547 (catalogue); KOCH (1970): 91 (description of variability); SCHAWALLER (2004): 441 (new records); LÖBL et al. (2008): 148 (catalogue).

Histeromorphus socotranus Lesne, 1915: 228 (original description); GEBIEN (1937): 547 (catalogue); KOCH (1970): 91 (synonymisation with *H. plicatus*); LÖBL et al. (2008): 148 (as synonym).

Type locality. KRAATZ (1865), based on the locality label of the type specimen (see label records below), erroneously stated 'Abyssinia' as the type locality for *H. plicatus*. KOCH (1970), due to the fact that only specimens from Socotra Island were known, restricted occurrence of this species to the Island of Socotra.

Type material. *Histeromorphus plicatus*: LECTOTYPE (here designated): ♂ (SDEI): Abyssin., Deyrolle [white, handwritten] // Syntypus [red, printed] // *Histeromorphus mihi* B.E.Z.bh *plicatus mihi*, Abyssinia, Deyrolle [white, handwritten] // *plicatus*, Buq. [white, handwritten] // DEI Müncheberg, Col – 04293 [green, printed] // LECTOTYPE, *Histeromorphus plicatus* Kraatz, 1865, desig. L. Purchart 2014 [red, printed].

Histeromorphus socotranus: SYNTYPE: 1 unsexed spec. (MNHN): Hadibu Plain, Socotra, 10-15. Dec. 98, W.R.O. Grant, 99-85. [white, printed] // *Histeromorphus plicatus* Kraatz [white, printed] // MUSEUM PARIS, Collection Léon Fairmaire, 1906 [blue, printed] // TYPE [white, red letters, printed] // *Histeromorphus socotranus* Lesne, Type, P. Lesne vid. [white, handwritten].

Additional material examined (436 spec.). **YEMEN: SOCOTRA ISLAND:** Shibhon, N 12°28'1.5", E 53°58'31.4", 680 m, 13.vi.2009, 2 spec., L. Purchart leg. (LPCB); Noked plain, Deiqyub Cave, N12°23'03" E054°00'56", 16.vi.2009, 3 spec., L. Purchart leg. (LPCB); Firmihin, N 12°28'27.9", E 54°0'54.2", 400–500 m, 22.–25.vi.2009, 1 spec., L. Purchart leg. (LPCB); Dixam plateau, Firmihin (Dracaena forest), 12°28'36"N, 54°01'06"E, 490 m, 15.–16.xi.2010, 1 spec., J. Hájek leg. (NMPC); Dixam plateau, Firmihin area, N 12°47'40", E 53°01'53", 428 m, 3.xii.2003, 7 spec., J. Farkač leg. (CULS); Firmihin, ii.1999, 1 spec., W. Wranik leg. (SMNS); Diksam plateau, N 12°31'1.4", E 53°56'28.4", 980–990 m, 16.vi.2009, 2 spec., L. Purchart lgt. (LPCB); Diksam plateau, Sirhin area, N12°31'08" E53°59'09", 812 m, 1.–2.xii.2003, 1 spec., J. Farkač leg. (CULS); Diksam, N12°28'50.64", E053°59'14.73", 29. xii. 2007, 1 spec., F. Pella leg. (MCSC); Wadi Mathif, N 12°27'2.2", E 54°18'5.8", 20–30m, 20.vi.2009, 2 spec., L. Purchart leg. (LPCB); Kesa env., N 12°39'37", E 53°26'42", 220–300 m, 28.–29.i.2010, 2 ♂♂ + 1 spec., L. Purchart leg. (LPCB); N 12°31'53", E 54°10'42", 300 m, 4.ii.2010, 1 spec., L. Purchart & J. Vybíral leg. (LPCB); Di Hamri, N 12°37'59", E 54°15'40", 20 m, 27.i.2010, 5 spec., L. Purchart leg. (LPCB); Aloove area, Hassan vill. env., N 12°31'12", E 54°07'24", 221 m, 9.–10.xi.2010, 1 ♂ + 2 spec., P. Hlaváč leg. (LPCB); same label data, 5 spec., J. Hájek leg. (NMPC); Dgisfu valley, N 12°28'26.64", E 54°08'35.76", 2.vi.2010, 1 spec., V. Hula & J. Niedobová leg. (LPCB); Homhil protected area, N 12°34'25", E 54°18'53", 400–510 m, 9.–10.ii.2010, 3 ♂♂, L. Purchart & J. Vybíral leg. (LPCB); N 12°29'41", E 54°09'30", 410 m, 3.ii.2010, 4 ♂♂, L. Purchart & J. Vybíral leg. (LPCB); Homhil protected area, N12°34'27" E54°18'32", 364 m, 28.–29.xi.2003, 12 spec., D. Král leg. (NMPC); same label data, 7 spec., P. Kabátek leg. (NMPC); same label data, 22 spec., J. Farkač leg. (CULS); Hügel u. Wiese E der Ebene von Homhil, N12°34' E54°19', 540 m, 9.ii.1999, 1 spec., H. Pohl leg. (SMNS); oberer Teil Wadi Zeewef, Ebene Homhil und westlicher Gebirgszug, Kalk mit *Dracena*-Bestand, N12°35' E54°18', 320–640 m 7.–8.ii.1999, 1 spec., H. Pohl leg. (SMNS); Qualentiah env., slopes 5 km SE from Qaysoh, N 12°36'41.46", E 53°26'39.48", 4.–5.vi.2010, 4 spec. V. Hula & J. Niedobová leg. (LPCB); Khayrha Mts., N slopes, Qalansiyah env., N 12°38'50" E 53°27'45", 85–592 m, 9.–10.xii.2003, 4 spec., P. Kabátek leg. (NMPC); same label data, 17 spec., D. Král leg. (NMPC); same label data, 2 spec., J. Farkač leg. (CULS); Qalansia, N12°41'43.82", E053°31'00.18", 8. xi. 2007, 4 spec., F. Pella leg. (MCSC); same label data, N12°41'43.00", E 53°31'00.11", 9 spec. (MCSC); same label data, N12°41'46.66", E 53°30'58.82", 10 spec. (MCSC); Hadiboh vill. env., N 12°35'10", E 54°21'31", 2.vi.2012, 3 spec., V. Hula & J. Niedobová leg. (LPCB); Hadiboh env., N12°65'02" E54°02'04", ca 10–100 m, 21.xi.–12.xii.2003, 4 spec., D. Král leg. (NMPC); same label data, 2 spec., J. Farkač leg. (CULS); Hoq cave, 12°35'10"N 54°21'31"E, 340 m, 7.vi.2012, 2 spec., V. Hula & J. Niedobová leg. (LPCB); Al Haghier Mts., wadi Madar, N 12°33'12", E 54°00'24", 1180–1230 m, 13.–14.xi.2010, 1 spec., P. Hlaváč leg. (LPCB); wadi Deneghen, N12°36'55" E54°03'49", 85 m, 27.xi.2003, 51 spec., D. Král leg. (NMPC); same label data, 7 spec., P. Kabátek leg. (NMPC); same label data, 3 ♂♂, J. Farkač leg. (CULS); Qalansiyah env., Ditwah (lagoon), N 12°41'42" E 53°30'08", 23 m, 9.xii.2003, 6 spec., D. Král leg. (NMPC); Dixam plateau, wadi Esgego, N 12°28'09", E54°00'36", 300 m, 2.–3.xii.2003, 1 spec., D. Král leg. (NMPC); same label data, 5 spec., J. Farkač leg. (CULS); Lahas (pass), N 12°13'46", E 54°05'26", 69 m, 28.xi.2003, 1 spec., D. Král lgt. (NMPC); Ba'a vill. env., N 12°32'19", E 54°10'41", 234 m, 5.xii.2003, 3 spec. D. Král lgt. (NMPC); same label data, 7 spec., J. Farkač leg. (CULS); Sheq vill. env, *Croton socotranus* + *Jatropha uniconostata* shrubland, N 12°39'42", E 54°03'48", 15 m, 8.vi.2012, 2 spec., J. Hájek leg. (NMPC); Gubbah vill. env, N 12°36'35" E 53°46'56", 7 m, 23.xi.2003, 1 spec., P. Kabátek leg. (NMPC); same label data, 1 spec., D. Král leg. (NMPC); same label data, 5 spec., J. Farkač leg. (CULS); wadi Ayhaft, N 12°36'38" E 53°58'49", 190 m, 24.–26. xi.2003, 2 spec., D. Král leg. (NMPC); same label data, 1 spec., J. Farkač leg. (CULS); wadi Ayhaft, N 12°36'38" E

53°58'49", 27.x.2007, 1 ♀, F. Pella leg. (MCSC); Al Haghier mts., W slopes, Skant area, N 12°35'52" E 54°00'01", 1240 m, 2.xii.2003, 2 ♂♂ + 9 spec., D. Král leg. (NMPC); Dixam plateau, wadi Zeeriq, N 12°31'08" E 53°59'09", 750m, 3.xii.2003, 13 spec., D. Král leg. (NMPC); Qaariah vill. env., N 12°38'05", E 5°42'39", 11 m, 28.xi.2003, 27 spec., J. Farkač leg. (CULS); Noked plain, Qaareh (waterfall), N 12°20'10", E 53°37'56", 57 m, 5.–6.xii.2003, 1 ♂ 1 ♀ + 5 spec., J. Farkač leg. (CULS, 1 ♂ 1 ♀ in LPCB); Suq, E env., sand dune, N 12°40'02", E 54°03'45", 20–170 m, 22.xi.2003, 1 spec., J. Farkač leg. (CULS); wadi Egiya, N 12°38'32.80", E 53°37'37.11", 8.xi.2007, 10 spec., F. Pella leg. (MCSC); same label data, N 12°38'31.68", E 53°37'38.49", 5.xi.2007, 41 spec. (MCSC); without precise locality, 15.xi.1993, 1 ♂ 1 ♀ + 5 spec., C. Jean-Guy leg. (MNHN); without precise locality, ii.1992, 2 ♀♀ + 31 spec. (MNHN); without precise locality, i.1994, 1 ♀ + 7 spec. (MNHN); without precise locality, xi.1997, 1 ♂ 1 ♀ + 11 spec. (MNHN); without precise locality, 1993–1994, 9 spec. (MNHN); without precise locality, 6.–24. ix.1999, 2 ♂♂ + 1 spec., V. Bejček & K. Štátný leg. (SMNS); without precise locality, xii.1982, 2 spec., W. Wranik leg. (SMNS); without precise locality, Küstenstrasse, Taleinschnitt mit Bach, *Ficus*-Aue, *Adenium* und *Croton*, Kalk/Granitkontaktzone, N12°38' E54°09', 4.ii.1999, 1 spec., H. Pohl leg. (SMNS).

Redescription. Body length 7.6–13.1 mm (lectotype: 9.6 mm), body width 5.0–9.4 mm (lectotype: 6.7 mm). Black, dull, glabrous. Body broad, oval (Fig. 5).

Head smooth, sparsely and finely punctate (Fig. 11). Anterior margin of clypeus strongly sinuate and therefore bidentate. Clypeus sparsely and finely punctate, frontoclypeal suture slightly indicated laterally, sometimes not visible.

Pronotum smooth, glabrous. Sides of pronotum, strongly narrowing in anterior third and rounded; in posterior half straight, subparallel or slightly narrowing towards pronotal base. Anterior corners acute. Posterior corners obtuse-angled.

Elytra broad, with broadly rounded sides. Elytral surface glabrous, usually smooth but with surface modification – e.g. irregularly plicate or with slightly indicated transverse lines laterally (Figs 25–27). Pseudopleura separated from elytra by incomplete pseudopleural margin which is obliterated between anterior half and apex of elytra (Fig. 23); sometimes pseudopleural margin complete but in this case it is only slightly indicated. In both forms pseudopleural margin runs from humeral angles obliquely downwards towards apex of elytra below rounded elytral edge (when viewed from behind).

Ventral part. Prosternum glabrous, smooth, impunctate. Prosternal apophysis as broad as procoxae, widened apically. Mesoventrite glabrous, smooth, approx. as long (in ventral view) as coxae. Metaventrite glabrous, smooth, as long (in ventral view) as coxae. Abdominal ventrites glabrous, smooth.

Legs. Profemur distinctly claviform (Fig. 17), dorsal side sparsely covered with short erected yellowish setae. Ventral side of profemur sometimes with short shallow impression running from apical part of protibia along its anterior margin; this impression never continues behind middle part of protibia.

Male genitalia. Aedeagus simple (Figs 44–47). Apical piece of tegmen subparallel, rapidly narrowing at apex, with long opening on ventral side; base of apical piece straight, with distinct teeth. Basal piece widened towards base. Median lobe almost straight in basal 2/3 and moderately curved up (in lateral view) in apical third.

Female genitalia. See Figs 58, 59.

Differential diagnosis. *Histeromorphus plicatus* differs from *H. plicatipennis*, *H. convexicostatus* sp. nov. and *H. undatus* mainly in the smooth, irregularly plicate elytral surface that can also have slightly indicated short transverse lines laterally (longitudinally regularly plicate interstriae with four zigzag striae in *H. plicatipennis*, straight strongly convex interstriae in

H. convexicostatus sp. nov. and long transverse wavy lines in *H. undatus*). From *H. carinatus* sp. nov. and *H. nogedensis* sp. nov. it can be distinguished by the different shape of profemur which is not distinctly keeled on its anterior margin on ventral part and which does not possess a row of long yellow erected setae along the entire posterior dorsal margin. If some setae are present, then they are short and not distributed along the entire length of posterior margin. It also differs from the two mentioned species in the shape of median lobe, which is only slightly curved upwards (strongly curved in *H. carinatus* sp. nov. and *H. nogedensis* sp. nov.).

Remarks. LESNE (1915) described *H. socotranus* based on the complete pseudopleural margin and also on the presence of the short transverse slightly indicated lines on the elytra situated along elytral sides. These two characters, however, are somewhat variable in *H. plicatus* and therefore synonymy of *H. socotranus* is justified.

Specimens from high altitudes (Hagher Mts.) are usually considerably smaller than specimens from lower altitudes.

According to SCHAWALLER (2004), there are no differences in structure of the aedeagus between *H. plicatus* populations from Socotra, Darsa and Samha Islands, and the population of *H. undatus* Gahan, 1900 from Abd el Kuri. I had the opportunity to dissect males of *H. undatus* and found distinct differences in the structure of tegmen and lobe. In addition, specimens previously identified as *H. plicatus* from Samha Island also showed distinct differences in the structure of aedeagus, and they are now identified as *H. nogedensis* sp. nov.

Distribution. Widely distributed on Socotra Island.

Histeromorphus undatus Gahan, 1900

(Figs 6, 12, 18, 24, 48–51, 60, 61)

Histeromorphus undatus Gahan, 1900: 8 (original description); GAHAN (1903): 290 (redescription, with figure of habitus); LESNE (1915): 228 (key to species); GEBIEN (1937): 547 (catalogue); KOCH (1970): 93 (differential diagnosis); SCHAWALLER (2004): 442 (new records); LÖBL et al. (2008): 148 (catalogue).

Type locality. Yemen, Socotra Archipelago, Abd el Kuri Island.

Type material. LECTOTYPE (here designated): unsexed spec. (BMNH): SYNTYPE [round, white with blue borders, printed] // Type [round, white with red borders, printed] // Abd-el-Kuri, 22. Feb. 990, W.R.O. Grant, 99-85 [white, printed] // *Histeromorphus undatus* Gahan, Type [white, handwritten] // LECTOTYPE, *Histeromorphus undatus* Gahan, 1900, desig. L. Purchart 2014 [red, printed]. PARALECTOTYPES: 2 unsexed spec. (BMNH): SYNTYPE [round, white with blue borders, printed] // Abd-el-Kuri, 22. Feb. 99, W.R.O. Grant, 99-85 [white, printed] // *Histeromorphus undatus* Gahan, Co-Type [white, handwritten] // PARALECTOTYPE, *Histeromorphus undatus* Gahan, 1900, desig. L. Purchart 2014 [red, printed].

Additional material examined (4 spec.). **YEMEN: ABD EL KURI ISLAND:** Abd-el-Kuri, 22.ii.1899, 1 ♀, W.R.O. Grant leg. (MNHN); Westküste, Umgebung Basecamp, N 12°11', E 53°14', 17.–18.ii.1999, 1 ♂ + 1 spec., H. Pohl leg. (SMNS); ii.1999, 1 spec., W. Wranik leg. (SMNS).

Redescription. Body length 11.5–12.5 mm (lectotype: 12.5 mm), body width 7.5–8.5 mm (lectotype: 8.5 mm). Black, dull, glabrous. Body broad, oval (Fig. 6).

Head sparsely and finely punctate (Fig. 12). Anterior margin of clypeus straight. Clypeus finely and sparsely punctate, frontoclypeal suture slightly indicated laterally.

Pronotum broadest at posterior corners, smooth, glabrous. Sides of pronotum rounded. Lateral margin markedly thickened and with distinct groove along its entire length. Anterior and posterior corners sharply angled.

Elytra glabrous, with broadly rounded sides. Elytral surface with conspicuous transverse wavy lines. Pseudopleura separated from elytra by complete and strongly developed, almost costate pseudopleural margin of elytra which runs parallel with edge of elytra (Fig. 24).

Ventral part. Prosternum glabrous, slightly longitudinally wrinkled, impunctate. Prosternal apophysis as broad as procoxae, widened apically, sparsely covered with small granules. Mesoventrite glabrous, longitudinally wrinkled, covered with small granules, as long (in ventral view) as mesocoxae. Metaventrite glabrous, longitudinally wrinkled, covered with small granules, as long (in ventral view) as metacoxae. Abdominal ventrites glabrous; abdominal ventrite I longitudinally wrinkled, covered with small granules; other abdominal ventrites smooth.

Legs. Profemur distinctly claviform (Fig. 18), dorsal side sparsely covered with short erect yellowish setae.

Male genitalia. Aedeagus simple (Figs 48–51). Apical piece of tegmen subparallel, rapidly narrowing at apex, without opening on ventral side; base of apical piece bisinuate, with distinct teeth. Basal piece widened towards base. Median lobe slightly S-like in basal half, moderately curved upwards (in lateral view) in apical half.

Female genitalia. See Figs 60, 61.

Differential diagnosis. This species can be distinguished from the other species of the genus by the straight anterior margin of clypeus (sinuate in other species), distinctly acute-angled posterior corners of pronotum (obtuse-angled in other species), longitudinally wrinkled hypomeron and longitudinally wrinkled and granulate meso- and metaventrite (completely smooth in other species), by markedly thickened lateral margin of the pronotum with a groove along its entire length (not markedly thickened and without groove in other species). With *H. convexicostatus* sp. nov. it shares the complete and strongly developed, almost costate pseudopleural margin of elytra (incomplete in *H. plicatipennis*, *H. nogedensis* sp. nov., and *H. plicatus*). In *H. carinatus* sp. nov. the pseudopleural carina is also complete, but it is fine and runs in different direction than in *H. undatus* and *H. convexicostatus* sp. nov.

Distribution. Known only from Abd el Kuri Island.

Key to species of *Histeromorphus* Kraatz, 1865

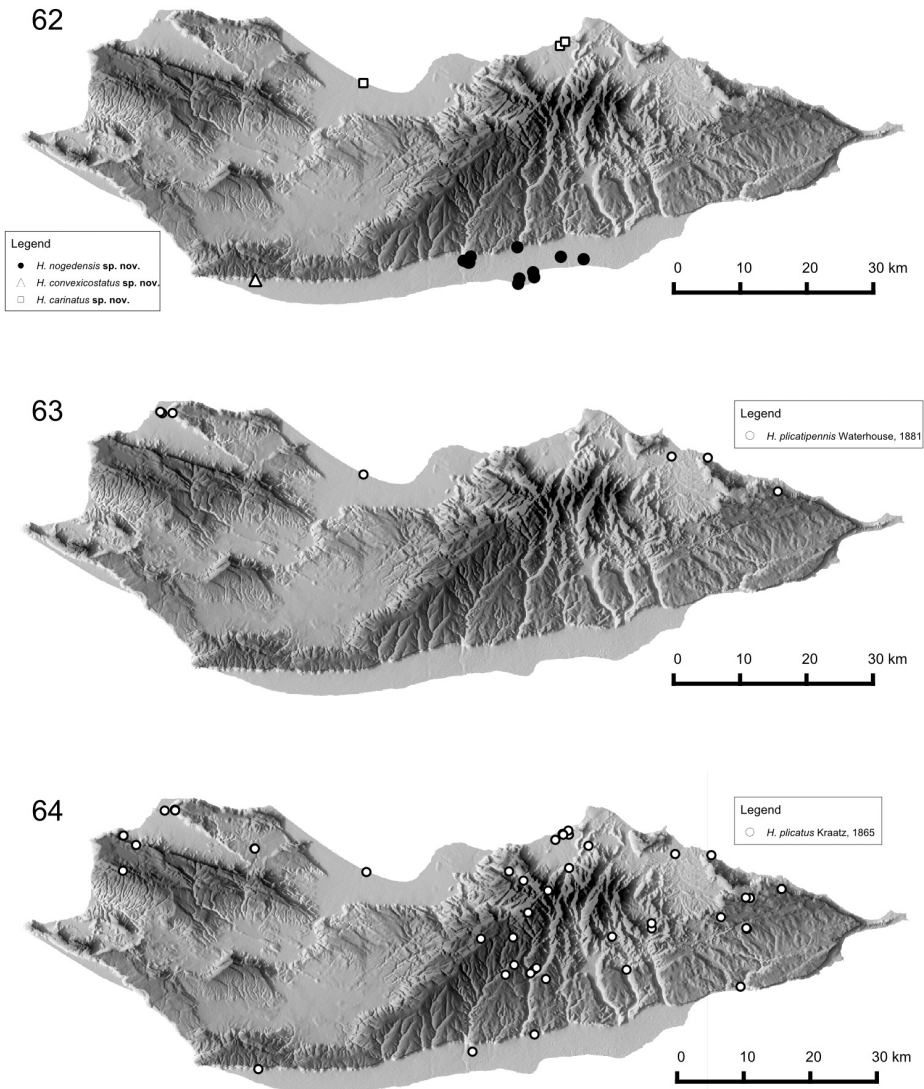
- 1 Anterior margin of clypeus straight (Fig. 12). Posterior angles of pronotum sharp. Lateral margin of pronotum distinctly thickened, with groove along its entire length. Hypomeron longitudinally wrinkled, meso- and metaventrite longitudinally wrinkled and granulate. Elytra with transverse wavy lines (Fig. 6). Abd el Kuri. *H. undatus* Gahan, 1900
- Anterior margin of clypeus slightly or strongly sinuate, never straight (Figs 7–11). Posterior angles of pronotum obtusangulate. Lateral margin of pronotum bordered but not thickened; without any groove along its length. Hypomeron, meso- and metaventrite smooth, not wrinkled or granulate. Elytra smooth or sculptured but in this case never with distinct transverse wavy lines (Figs 1–5). Socotra, Darsa, Samha. 2
- 2 Anterior margin of profemur on its ventral side with distinct keel along its $\frac{3}{4}$ or entire length; simultaneously entire posterior margin of profemur on its dorsal side with row of

- long yellow setae (Figs 13, 15). Median lobe strongly curved upwards, nearly rectangular (in lateral view) (Figs 31, 39). 3
- Anterior margin of profemur on its ventral side rounded, not keeled; posterior margin on its dorsal side without row of long yellow setae, sometimes with several short setae (Figs 14, 16–18). If short keel is slightly indicated, then always without setae on posterior margin. Median lobe slightly curved upwards (in lateral view) (Figs 35, 43, 47, 51). 4
- 3 Pseudopleural margin fine, but complete, running along elytral edge (Fig. 19). Anterior margin of clypeus slightly sinuate (Fig. 7). Body less convex (in lateral view). *H. carinatus* sp. nov.
- Pseudopleural margin incomplete, running from humeral angles obliquely downwards towards apex of elytra below the elytral edge, obsolete in apical third of elytral length and then continuing around apex of elytra (Fig. 21). Anterior margin of clypeus strongly sinuate (Fig. 9). Body more convex (in lateral view). *H. nogedensis* sp. nov.
- 4 Pseudopleural margin complete, strongly developed, nearly costate (Fig. 20). Elytra with straight and strongly convex interstriae (Fig. 2). Sides of elytra nearly subparallel. *H. convexcicostatus* sp. nov.
- Pseudopleural margin incomplete (Figs 22, 23); if sometimes complete, then only slightly indicated. Elytra smooth or sculptured, but never with straight strongly convex interstriae. 5
- 5 Elytra with moderately convex, longitudinally plicate interstriae with four regularly zigzag striae on each elytron (Fig. 4). Meso- and metaventrite together with abdominal ventrites I and II distinctly gibbous in both males and females. *H. plicatipennis* Waterhouse, 1881
- Elytra usually smooth, if sculptured then at most somewhat irregularly plicate or with short, slightly indicated transverse wavy line along elytral edge (Figs 5, 25–27). Meso- and metaventrite, abdominal ventrites I and II slightly convex in females, or at most slightly flattened in males. *H. plicatus* Kraatz, 1865

Discussion

Based on the material studied, it is evident that *H. plicatus* is a common species, widely distributed throughout Socotra Island (Fig. 64). Most of its recorded localities are on limestone plateau. However, it has also been reported from the northern coastal plain which has different characteristics (less sand) than the southern coastal plain which is distinctly sandier. It suggests a rather petrophilous preferences of *H. plicatus*. On the contrary, the remaining four species are strictly confined to the coastal plains in the northern (*H. plicatipennis* and *H. carinatus* sp. nov.) and southern (*H. convexcicostatus* sp. nov. and *H. nogedensis* sp. nov.) parts of the island (Figs 62, 63). Furthermore, according to locality labels and personal observation, *H. nogedensis* sp. nov. is most abundant near sandy dunes, which indicates its possible psammophilous preferences.

All the species of the genus *Histeromorpha* known from Socotra Island are endemic, and the presence of a relatively high number (five species) of closely related but clearly differen-



Figs 62–64. Distribution maps of *Histeromorphus* species.

tiated taxa in such a small area is interesting, to say the least. Within the family Tenebrionidae there are additional genera endemic to Socotra Island with a relatively high number of species – e.g. *Eusyntelia* Waterhouse, 1881 (six species – SCHAWALLER 2004), *Deretus* Gahan 1900 (seven species – PURCHART 2013), *Socotralia* Novák, 2007 (seven species – NOVÁK & PURCHART 2012). A similar high speciation can be observed in Socotra's fauna of Eumolpinae

(Coleoptera: Chrysomelidae) for which the hypothesis of an *in-loco* speciation process starting from a small group of ancestors is suggested (ZOLA 2012).

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References

- BATELKA J. 2012: Socotra Archipelago – a lifeboat in the sea of changes: advancement in Socotran insect biodiversity survey. Pp. 1–26. In: HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.
- BEZDĚK J., PURCHART L., KRÁL K. & HULA V. 2012: List of local Socotran geographical names used in entomological literature. Pp. 27–67. In: HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.
- DOYEN J. T. 1993: Cladistic relationships among Pimeliine Tenebrionidae (Coleoptera). *Journal of the New York Entomological Society* **101**: 443–514.
- GAHAN C. J. 1900: [The expedition to Sokotra.] XI. Descriptions of the new genera and species of Coleoptera. *Bulletin of the Liverpool Museums* **3**: 8–13.
- GAHAN C. J. 1903: Insecta: Coleoptera. Pp. 261–292. In: FORBES H. O. (ed.): The natural history of Sokotra and Abd-el-Kuri: Being the report upon the results of the conjoint expedition to these islands in 1898–9. *Special Bulletin of the Liverpool Museums*, xlvii + 598 pp.
- GEBIEN H. 1937: Katalog der Tenebrioniden (Col. Heteromera). Teil I. *Publicazioni del Museo Entomologico „Pietro Rossi“* **2**: 505–883.
- GRIDELLI E. 1931: Spedizione del barone Raimondo Franchetti in Dancalia (Coleoteri, Tenebrionidae). *Annali del Museo Civico di Storia Naturale di Genova* **55**: 220–233.
- HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.
- ICZN 1999: *International Code of Zoological Nomenclature. Fourth Edition*. International Trust for Zoological Nomenclature. London, xxix + 306 pp.
- KOCH C. 1943: Phylogenetische, biogeographische und systematische Studien über ungeflügelte Tenebrioniden (Col. Tenebr.) IV. *Mitteilungen der Münchner Entomologischen Gesellschaft* **33**: 479–597.
- KOCH C. 1970: Die Tenebrioniden (Coleoptera) des Archipels von Socotra. *Italian Journal of Zoology* **4**: 69–132.

- KRAATZ G. 1865: *Revision der Tenebrioniden der alten Welt aus Lacordaire's Gruppen der Erodiides, Tentyriides, Akisides, Piméliides, und der europäischen Zophosis-Arten*. Nicolaische Verlagsbuchhandlung, Berlin, 393 pp.
- LESNE P. 1915: Les érodiens de l'Afrique orientale (Coléoptères Ténébrionides). *Bulletin du Museum National d'Histoire Naturelle* (Paris) **21**: 225–240.
- LÖBL I., MERKL O., ANDO K., BOUCHARD P., EGOROV L. V., IWAN D., LILLIG M., MASUMOTO K., NABOZHENKO M., NOVÁK V., PETTERSON R., SCHAWALLER W. & SOLDATI F. 2008: Family Tenebrionidae Latreille, 1802. Pp. 105–352. In: LÖBL I. & SMETANA A. (eds): *Catalogue of Palaearctic Coleoptera. Volume 5. Tenebrionoidea*. Apollo Books, Stenstrup, 670 pp.
- NOVÁK V. & PURCHART L. 2012: Review of the genus Socotralia Novák, 2007 from Socotra Island, with description of new species. Pp. 323–336. In: HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.
- PURCHART L. 2012: Biodiversity research of darkling beetles on Socotra Island. Part I. – The genus Deretus Gahan, 1900 (Coleoptera: Tenebrionidae). *Zootaxa* **3153**: 57–68.
- PURCHART L. 2013: A new species of the genus Deretus Gahan, 1900 (Coleoptera: Tenebrionidae) from the island of Socotra. *Annales Zoologici* (Warszawa) **63**: 79–83.
- PURCHART L. & NABOZHENKO M. V. 2012: First description of larva and pupa of the genus Deretus (Coleoptera: Tenebrionidae) with key to the larvae of the tribe Helopini. Pp. 295–302. In: HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.
- PURCHART L. & SCHAWALLER W. 2012: A new species of the genus Corticeus Piller et Mitterpacher, 1783 (Coleoptera: Tenebrionidae) from Socotra. Pp. 315–322. In: HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.
- SCHAWALLER W. 1990: Revision of the Western Palaearctic Tenebrionidae (Coleoptera). Part 3. A new genus of Erodiini from Arabia. *Fauna of Saudi Arabia* **11**: 49–54.
- SCHAWALLER W. 2004: New species and records of Tenebrionidae (Coleoptera) from the Socotra Archipelago. *Fauna of Arabia* **20**: 439–458.
- SCHAWALLER W. & PURCHART L. 2012: Nanocaecus hlavaci gen. et sp. nov. – first record of the tribe Gnathiini (Coleoptera: Tenebrionidae: Diaperinae) from the Socotra Archipelago. Pp. 303–314. In: HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.
- WATERHOUSE C. O. 1881: On the coleopterous insects collected by Prof. Bailey Balfour in the island Socotra. *Proceedings of the Zoological Society of London* **1881**: 469–478.
- WATT J. C. 1974: A revised subfamily classification of Tenebrionidae (Coleoptera). *New Zealand Journal of Zoology* **1**: 381–452.
- ZOIA S. 2012: Eumolpinae (Coleoptera: Chrysomelidae) of Socotra Island. Pp. 449–501. In: HÁJEK J. & BEZDĚK J. (eds): Insect biodiversity of the Socotra Archipelago. *Acta Entomologica Musei Nationalis Pragae* **52 (supplementum 2)**: i–vi + 1–557.