

## A new species of *Halystus* from Socotra Island (Coleoptera: Curculionidae: Scolytinae: Polygraphini)

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**Abstract.** A new species of *Halystus* Schedl, 1982 from Socotra Island (Yemen) is described. Comparisons with other related genera and species, and differential diagnosis are provided.

**Key words.** Curculionidae, Scolytinae, Polygraphini, *Halystus*, new species, Yemen, Socotra

### Introduction

The last revision of the tribe Polygraphini by Wood (1986) includes eight genera, but recently one more genus, *Dolurgocleptes* Schedl, 1965, was added (JORDAL 2009). Some genera, such as the nearly world-wide *Polygraphus* Erichson, 1836, and the Holarctic *Carphoborus* Eichhoff, 1864 include numerous species. The other genera include only one to seven species (WOOD & BRIGHT 1992; BRIGHT & SKIDMORE 1997, 2002). Species of these latter genera are not frequently collected and few specimens are available.

A new species of Polygraphini was collected by Czech entomologists during several trips to Socotra Island (Yemen), and found to be morphologically distinct from all other species in the tribe. Based on external morphology, particularly the antennal club, it can be included within the monotypic genus *Halystus* Schedl, 1982. This genus was inadvertently described for a second time by Wood (1984) under the name *Phloeographus*, but subsequently synonymised by Wood (1988). The newly described species is the first representative of the genus in the Northern hemisphere (cf. KNÍŽEK 2011). The new species also has similarities with two other Polygraphine species, recently placed in the genus *Carphoborus*: *C. boswelliae* (Stebbing, 1903) and *C. laetus* Wood, 1988, with which it also shares related host plants (ROONWAL 1971, WOOD 1988).

## Material and methods

Specimens of the newly discovered species were compared to representatives of all known genera within the tribe Polygraphini (WOOD 1986, ALONSO-ZARAZAGA & LYAL 2009, JORDAL 2009). The morphological terminology used corresponds to other recent taxonomic studies on Scolytinae (e.g. WOOD 1986). Basic information about polygraphine species was taken from the literature cited above, and particularly from the original descriptions of the species and genera (STEBBING 1903; SCHEDL 1982; WOOD 1984, 1988). Specimens were studied using a binocular microscope with magnification up to 100 $\times$ . Body length was measured between the anterior margin of the pronotum and the elytral apex. The head was not included, as it can be hidden inside the pronotum or exposed far beyond it. Internal characters, except for the aedeagus, were not studied.

Exact label data are cited for the types and other material; a forward slash (/) separates different lines and a double slash (//) different labels. The holotype, allotype and 49 paratypes are deposited in the collection of the Národní muzeum, Prague (Czech Republic), 26 paratypes in the author's collection.

## Taxonomy

### *Halystus bimaculatus* sp. nov.

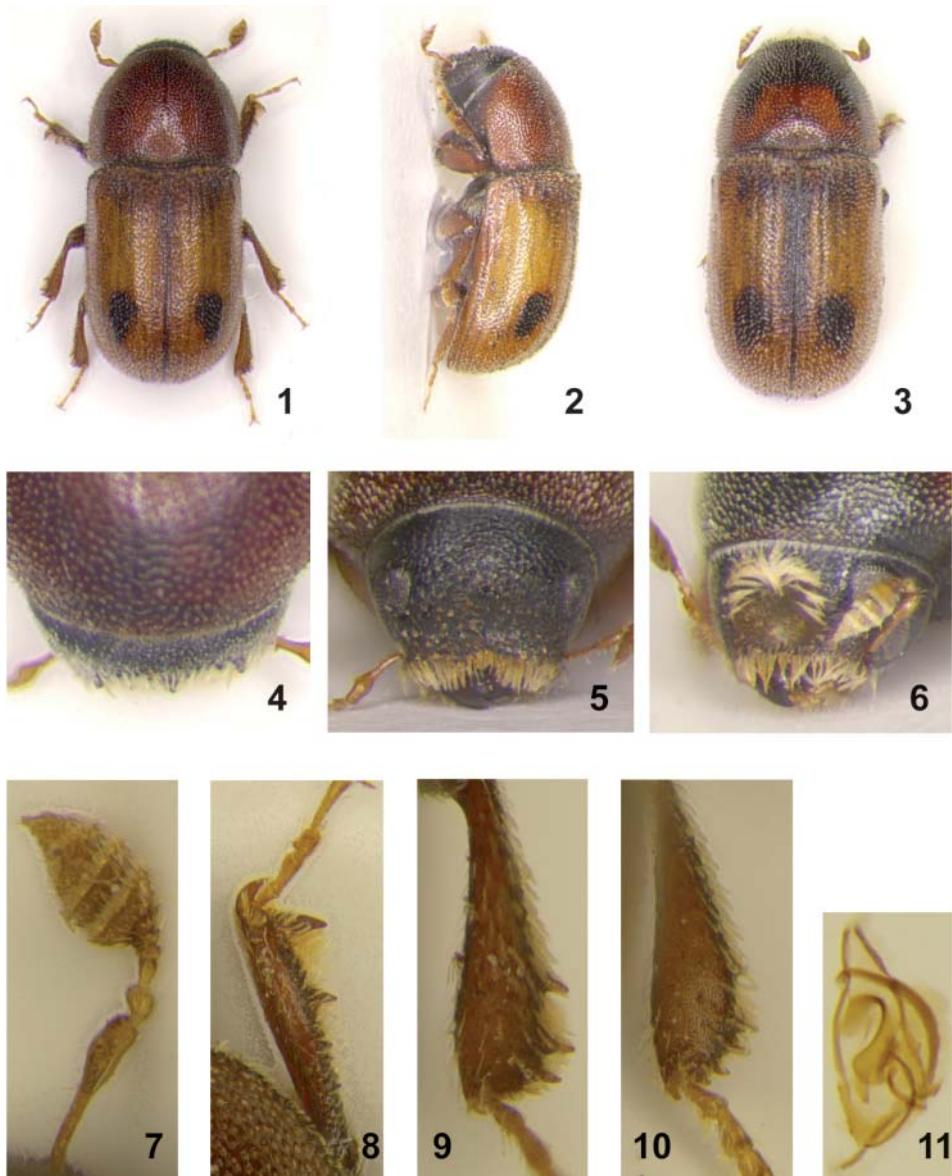
(Figs. 1–11)

**Type locality.** Yemen, Socotra Island, Aloove area, Hassan vill. env., 12°31.2'N, 54°07.4'E, 221 m a.s.l.

**Type material.** HOLOTYPE: ♂, glued on card mount, with labels as follows: 'YEMEN, SOCOTRA Island / Aloove area, Hassan vill. Env. / 12°31.2'N, 54°07.4'E, 221 m / Jiří Hájek leg. 9-10.xi.2010'. ALLOTYPE: ♀, 'Yemen, Soqatra Is., 2003 / 3.xii., Dixam plateau, / WADI ZEERIQ, 750m / N12°31'08"E53°59'09" / [GPS], David Král lgt. // YEMEN – SOQOTRA 2003 / Expedition; Jan Farkač, / Petr Kabátek & David Král'. PARATYPES (75 specimens): same data as holotype, 1 ♂ 1 ♀; same data, but P. Hlaváč lgt., 1 ♂ 5 ♀♀; 'YEMEN, SOCOTRA Island, / wadi Ayhaft, / 12°36,5'N, 53°58,9'E, 200 m / L. Purchart lgt., 7-8.xi.2010', 3 ♂♂; 'Yemen, Soqatra Is. / HOMHIL protected area / 28.-29/ xi.2003, 364 m / N12°34'27"E54°18'32" / [GPS], David Král lgt. // YEMEN – SOQOTRA 2003 / Expedition; Jan Farkač, / Petr Kabátek & David Král', 1 ♂; 'Yemen, Soqatra Is., SIRHIN area / Dixam plateau, 1. -2.xii.2003, N / 12°31'08" E 53°59'09", 812m / [GPS], leg. P. Kabátek // YEMEN – SOQOTRA / 2003 / Expedition, Jan Farkač, / Petr Kabátek & David Král', 1 ♂; 'YEMEN, Socota Isl. / Firmihin plato, 400-500m / 18.-19.vi.2010, / N 12°28'46" E 54°00'89" / V. Hula & J. Niedobová lgt.', 1 ♂ 2 ♀♀ 1 unsexed spec. (body without head); 'YEMEN, Sana'a env., 2500m, / Bait Bows dam, 28.v.2010 / N 15°16'168", E 44°12'244" / Hula V. & Niedobová J. lgt.', 1 ♀; 'YEMEN, Socotra Island / Aloove area, Aloove vill. env. / Jatropha unicostata shrubland; / with Boswellia elongata trees / 19.-20.vi.2012 / 12°31.2'N, 54°07.4'E, 221 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula, / P. Kment, I. Malenovský, / J. Niedobová & L. Purchart leg. 2010', 24 ♂♂ 33 ♀♀.

**Description. Male** (Figs. 1–2, 4–5, 11): Body length 2.1–3.1 mm (2.8 mm in holotype), 2.02–2.24 times longer than wide (2.11 in holotype). Colour generally brown with lighter or darker, blackish or reddish areas visible dorsally, and two dark longitudinally oval spots dorso-laterally on the upper elytral declivity.

Head. Frons (Figs. 4–5) convex on upper two thirds, shallowly concave in lower part, transversally flattened just above epistomal margin; width of concavity three-fourths of distance between eyes; lateral and upper margins of concavity armed with series of small tubercles, of which two lateral and one central blunt tubercles are distinctly larger and form a flat triangle



Figs. 1–11. *Halystus bimaculatus* sp. nov. 1 – male, dorsal view; 2 – male, lateral view; 3 – female, dorsal view; 4 – male frons, dorsal view; 5 – male frons, frontal view; 6 – female frons, frontal view; 7 – antenna; 8 – protibia; 9 – mesotibia; 10 – metatibia; 11 – aedeagus.

between eyes, central tubercle often twice or more larger than lateral ones. Concavity with its lateral and upper margins shining, punctate; punctuation becoming less dense centrally, a longitudinal shining keel, slightly but not acutely elevated, between upper edge of flattened part and reaching base of central tubercle; lateral and upper parts of frons punctato-tuberculate, with concentric, tuberculate sculpture around prominent central tubercle. Vertex semi-matt, shagreened, densely and rather deeply punctate. Eyes relatively big, deeply emarginated on anterior margin in upper half, emargination nearly reaching middle of eye width. Vestiture of frons consists of rather stout hair-like sparse semierect setae directed medially; setae around prominent central tubercle directed towards top of tubercle. Setae on epistomal margin four to five times longer than those on frons, directed towards mandibles. Antennae (Fig. 7) light brown, antennal funicle pentamerous, antennal club asymmetrical, elongate, rather big, approximately as long as scapus; dorsoventrally flattened, sharply pointed at apex, widest at its base, with three transverse sutures marked by rows of setae, first two sutures transverse, straight, apical suture procurved, apex of antennal club curved laterally.

Pronotum. 0.73–0.82 times longer than wide (0.82 in holotype), brown, often with dark brown frontal half and/or reddish posterior half; widest basally, weakly convex longitudinally from lateral view with summit in basal third. Whole surface rather regularly densely punctate, with very narrow, but distinct central impunctate longitudinal strip extending whole pronotal length; small oval impunctate spots occur laterally from middle in basal half; anterior margin rounded from dorsal view, simple; lateral margins broadly rounded from dorsal view, nearly parallel in basal third, developed into sharp costa in basal two thirds; posterior margin nearly straight, transverse, slightly and broadly recurved in middle. Whole pronotum shining, slightly shagreened; vestiture of very short, dense scale-like setae, more conspicuous laterally and on base of pronotum.

Scutellum. Invisible, marked by dense brush of short stout hair-like setae not extending over elytral basal margin.

Elytra. 1.26–1.44 times longer than wide (1.31 in holotype), 1.64–2.09 times longer than pronotum (1.64 in holotype), 1.00–1.08 times wider than pronotum (1.03 in holotype), brown, usually with dark brown or blackish longitudinally oval areas on base of elytral declivity and between third and fifth interstriae, [triangular tuberculate area near elytral base as well as sutural interstriae from elytral base to dark areas on elytral declivity could be also similarly dark coloured, or elytra could be unicoloured, yellowish or brownish]; shining, parallel on basal three-fourths, broadly rounded apically, jointly rounded at apex; basal margin of elytra slightly procurved, armed with one row of small blunt tubercles; similar tubercles occur mainly near suture on basal fifth of elytra, forming a triangular tuberculate area near elytral base; elytral striae barely perceptible, marked by uniserrate, shallow, irregularly and densely placed punctures; interstriae smooth, transversely flat, approximately three times as wide as striae, very finely densely irregularly punctate, punctures half the size of those on striae; elytral declivity regularly rounded from lateral view, odd interstriae ornamented by sparse microscopic tubercles, which are more conspicuous on interstriae 1 and 3; lateral margins elevated into sharp costa; vestiture similar to that on pronotum, consisting of very short, nearly round scale-like setae organized more or less regularly in two or more usually three rows on each interstria, setae becoming much more dense on tuberculate elytral base.

Legs. Brown, procoxae narrowly separated, mesocoxae and metacoxae separated by more than antennal club width. Protibiae slightly flattened antero-posteriorly (Fig. 8), very slightly widened in basal third, nearly cylindrical; ornamented with two strong sharply pointed socketed teeth on outer lateral margin in apical half, and a row of much smaller lateral tubercles along this margin. Meso- and metatibiae (Figs. 9–10) more strongly widened in apical half where flattened, then rounded and narrowed toward apex; outer lateral margin ornamented by five sharply pointed narrow socketed teeth displaced apically on widened part. All tibiae sparsely ornamented by semierect, long hair-like setae, becoming more dense and conspicuous on outer lateral margins and anterior side.

Aedeagus as shown in Fig. 11.

**Female** (Fig. 3, 6) of same appearance as male in all body parts, except shape of frons. Body length 2.0–3.0 mm (2.5 mm in allotype), 2.09–2.30 times longer than wide (2.09 in allotype). Head with frons broadly shallowly concave on lower two thirds, concavity rounded, semicircular on lateral and upper margins, smooth, shining, very densely punctate, surface covered by brush of very abundant short hair-like darkly ferruginous setae; lateral and upper margins ornamented by long hair-like yellowish setae incurved towards centre of concavity, other parts of frons shining and shallowly punctate and with very sparse semi-erect, short hair-like setae; vertex semi-matt, shagreened, sparsely shallowly punctate.

Pronotum. 0.68–0.82 times longer than wide (0.69 in allotype). Elytra 1.36–1.52 times longer than wide (1.42 in allotype), 1.94–2.29 times longer than pronotum (2.20 in allotype), 1.02–1.10 times wider than pronotum (1.07 in allotype).

**Differential diagnosis.** The newly described species differs from *Halystus namibiae* Schedl, 1982, the only other known species of the genus, mainly in general body shape, which is much more slender, and cylindrical in *H. namibiae*. In *H. namibiae*, 1) the long yellowish hair-like setae surrounding the frontal concavity in females are much longer and reach the central part of frons (touching each other); 2) a small central rounded tubercle just above epistomal margin is present; 3) the frons lacks tubercles and is nearly glabrous in the male; 4) the pronotum is less convex longitudinally, and its surface is smooth, very shining in-between the punctuation; 5) the elytra are also more shining, the interstriae marked by one more or less regular row of punctures, interstriae II on elytral declivity are slightly impressed and the tubercles on odd interstriae are more conspicuous and pointed. SCHEDL (1982) mentioned in his generic description ‘two transverse septa’ on the antennal club and Wood (1984) mentioned ‘two clearly marked, slightly procurved, aseptate sutures’. Based on the study of the type specimen it is evident that there are in fact three aseptate sutures marked by rows of hair-like setae, which corresponds to the newly described species. From the morphologically similar species *Carphoborus laetus* Wood, 1988, and probably also *C. boswelliae* (Stebbing, 1903) (the latter species was not seen and information is taken from Wood (1988)), the new species differs mainly in the shape of antennal club, which has a broadly rounded apex in both named species of *Carphoborus*. In addition, the colouration is more uniform without any colourful spots or areas in the *Carphoborus* species. Finally, the frons is ornamented by only one small median tubercle in the male of *C. laetus*, and in the female of *C. laetus*, the shining surface of the frontal concavity has not a dense brush of short, hair-like setae fully covering the surface. In *C. boswelliae*, there are apparently no distinct tubercles on the frons, and declivital tubercles are absent.

**Etymology.** The name of the new species, *bimaculatus*, is derived from the presence of the two dark spots on the dorso-lateral part of the elytral declivity.

**Biology.** The species lives and develops within the phloem of weakened and/or dying *Boswellia elongata* Balf. f. (Burseraceae) (J. Hájek, pers. comm.). The host is endemic to Socotra Island.

**Distribution.** So far known only from Socotra Island. The specimen from continental Yemen (Sana'a) is of doubtful origin, and was very probably mis-labelled. The known host does not occur on the Arabian mainland.

### Acknowledgements

The author would like to express cordial thanks to David Král, Petr Kabátek, Jan Farkač and Jiří Hájek (all Prague, Czech Republic), for providing me with specimens for the study, and to Heinrich Schönmann (Naturhistorisches Museum Wien, Austria) for allowing me to study the museum material of related species and genera. Many thanks also to Roger Beaver (Chiangmai, Thailand) for support through literature and fruitful discussion during this taxonomic and systematic study. Part of the material from Socotra Island (collected in 2003) was obtained during the implementation of the Czech project 'Socotra 2000' which was realised between 1999 and 2003 within the framework of the bilateral Foreign Developmental Assistance provided by the Czech Republic to the Republic of Yemen. This study was partly supported by the Ministry of Agriculture of the Czech Republic, Project No. MZe 002070203 'Stabilization of forest functions in anthropologically disturbed and changing environmental conditions'.

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