

## A review of the family Oedemeridae (Coleoptera) of the Socotra Archipelago

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**Abstract.** The species of the family Oedemeridae inhabiting the Socotra Archipelago are reviewed and keyed. *Anisochrodes janavlada* sp. nov. (Socotra) and *Colobostomoides marshalli socotraensis* ssp. nov. (Socotra) are described and illustrated.

**Key words.** Coleoptera, Oedemeridae, *Colobostomoides*, *Dentostomus*, *Anisochrodes*, taxonomy, new species, new subspecies, distribution, key, Yemen, Socotra

### Introduction

Hitherto only three species of the family Oedemeridae have been recorded from the Socotra Archipelago: two endemic species, *Dentostomus socotrensis* (Švihla, 1986), described originally in the genus *Hypascleroides* Švihla, 1986, and *Dentostomus guichardi* (Švihla, 1987), described originally in *Paroxaxis* Arnett, 1951 – both species were later transferred to the genus *Dentostomus* Švihla, 1984 (ŠVIHLA 2004); and the Middle Eastern *Probosca* (*Proboxantha*) *maindroni* (Pic, 1935) (ŠVIHLA 2008b). In the rich material collected in the last decade, one additional new species and one new subspecies have been recognized, and new localities of previously cited species have been recorded. All species inhabiting this archipelago belong to the tribe Asclerini of the subfamily Oedemerinae.

This paper aims to improve the knowledge of the Oedemeridae of the Socotra Archipelago, describing new taxa and adding new faunistic records.

### Material and methods

The studied specimens are deposited in the following collections:

ISNB Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium;  
NMPC Národní muzeum, Praha, Czech Republic.

The names of integument structures used in the descriptions follow HARRIS (1979). They were examined under a 90× magnification using an Olympus SZ 61 binocular microscope. The black and white figures were made using the camera lucida. Photographs were taken using the Canon MP-E 65 mm macro lens attached to the Canon Eos 550D camera. Images of the same specimen at different focal planes were combined using the Helicon Focus 5.1.19 software. Locality labels of type specimens are cited verbatim, separate lines on the label are divided by a slash. Names of localities and dates of additional specimens are standardized.

## Taxonomy

### *Colobostomoides marshalli socotraensis* ssp. nov.

(Figs. 1–2)

**Type locality.** Yemen, Socotra Island, Neet.

**Type material.** HOLOTYPE: ♂ (NMPC), ‘Socotra I., x.2000 / Neet / V. Bejček, K. Šťastný lgt. [white label, printed]’. PARATYPES (NMPC), same label data, 2 ♂♂; ‘YEMEN, SOCOTRA Island SE / sandy beach by Wadi Dehlme / N 12°26’43”, E 54°16’54” / L. Purchart & J. Vybiral lgt. [white label, printed]’, 3 ♂♂; ‘YEMEN, SOCOTRA ISLAND / ca. 3 km NE of SHUAB / *Avicennia marina* mangrove; / sand dunes, 20.–21.vi.2012 / 12°34.1’N 53°23.9’E, 3 m // SOCOTRA Expedition 2012 / J. Bezděk, J. Hájek, V. Hula, / P. Kment, I. Malenovský, / J. Niedobová & L. Purchart leg.’, 1 ♂.

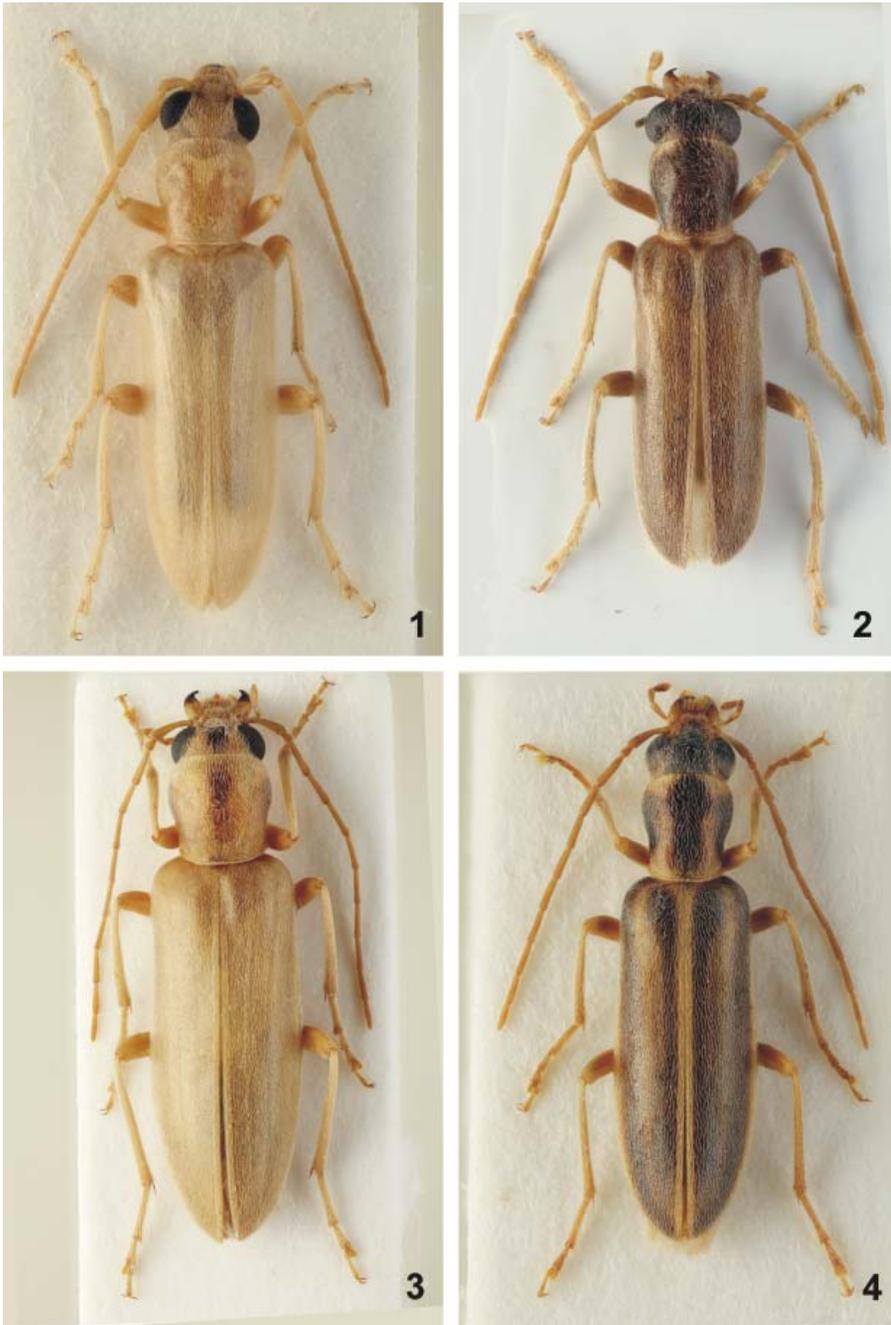
**Diagnosis.** Length (♂): 9.2–14.4 mm. Male terminalia similar to those of the nominotypical subspecies (cf. VÁZQUEZ 1996), female unknown.

**Differential diagnosis.** The newly described subspecies differs from the nominotypical form in the characters mentioned in Table 1 (cf. Figs. 1–2 and VÁZQUEZ 1996).

**Comments.** *C. marshalli marshalli* is hitherto known only from the Republic of South Africa (Eastern Cape and KwaZulu-Natal provinces). It is probable, that *C. marshalli socotraensis* ssp. nov. was introduced to Socotra by ocean streams and here it differentiated on the sub-specific level. However, there is also the possibility, that *C. marshalli* s. lat. originates from Socotra (and/or Asian mainland) and it was introduced to southern Africa by the commercial ships commuting, very frequent during the Antiquity and the Middle Ages. Another possibility is that this species is widely distributed from South Africa to Yemen, but still has not been discovered in the intermediate areas. This pattern of distribution is known for example in *Stenoria muiri* Kaszab, 1956 (Meloidae) – Yemen and southern Mozambique, with two subspecies scarcely distinct by phenetic characters.

Table 1. Differential characters of *Colobostomoides marshalli marshalli* (Blair, 1926) and *C. marshalli socotraensis* ssp. nov.

<i>C. marshalli marshalli</i>	<i>C. marshalli socotraensis</i> ssp. nov.
Pronotum pale lemon yellow with narrow medio-longitudinal terra-cotta to sienna stripe, not reaching anterior and posterior margin.	Pronotum either entirely pale lemon yellow or (in one specimen) almost entirely sienna with narrow anterior, ventro-lateral and posterior paler margins only.
Surface of pronotal disc with much finer imbrication between punctures, so that disc almost lustrous.	Surface of pronotal disc with coarser imbrication between punctures, so that disc semilustrous to matt.
Vertex mostly infuscate.	Head uniformly coloured.
Elytra more or less darkened submarginally.	Elytra either entirely pale lemon yellow or (in one specimen) almost entirely sienna with narrow sutural and lateral margins only.



Figs. 1–4. General habitus of Socotran Oedemeridae. 1–2 – *Colobostomoides marshalli socotraensis* ssp. nov.; 3–4 – *Dentostomus socotrensis* (Švihla, 1986).



Figs. 5–8. General habitus of Socotran Oedemeridae. 5 – *Dentostomus guichardi* (Švihla, 1987); 6–8 – *Anisochrodes janavlada* sp. nov.

**Etymology.** Named according to its distribution.

**Distribution.** Endemic to Socotra Island.

*Probosca (Proboxantha) maindroni* (Pic, 1935)

*Ananconia maindroni* Pic, 1935: 101.

*Probosca (Proboxantha) maindroni*: ŠVIHLA (1995): 16.

**Material examined. YEMEN: SOCOTRA ISLAND:** Neet, 8.–9.iii.2000, V. Bejček & K. Šťastný lgt., 42 spec.; same label data but 1.x.2000, 8 spec.; Shuab, 10.iii.2000, V. Bejček & K. Šťastný lgt., 25 spec. (all NMPC).

**Distribution.** Species described from southern Pakistan, and subsequently recorded from the United Arab Emirates, and, without precise data, also from Socotra (ŠVIHLA 2008b). Here the first detailed records from Socotra Island are published.

*Dentostomus guichardi* (Švihla, 1987)

(Fig. 5)

*Paroxacis guichardi* Švihla, 1987: 25, Figs. 64–67.

*Dentostomus guichardi*: ŠVIHLA (2004): 76.

**Material examined. YEMEN: ABD AL KURI:** without detailed locality, 6.ii.2000, Wranik lgt., 1 ♂ 2 ♀♀ (NMPC); Towanie vill. env., 12°10'N 52°13'E, 25.–27.ii.2008, A. Saldaitis lgt., 30 spec. (ISNB, NMPC). **SOCOTRA ISLAND:** Wadi Ayhaft, 23.iv.2009, Wranik lgt., 1 ♂ (NMPC).

**Distribution.** Species described from Abd al Kuri. Subsequently, ŠVIHLA (2008a) cited *D. guichardi* without specific data also from Socotra. Here the first detailed record from Socotra Island is published.

*Dentostomus socotrensis* (Švihla, 1986)

(Figs. 3–4)

*Hypascleroides socotrensis* Švihla, 1986: 197, Figs. 165–167.

*Dentostomus socotrensis*: ŠVIHLA (2004): 76.

**Material examined. YEMEN: ABD AL KURI:** Towanie vill. env., 12°10'N 52°13'E, 25.–27.ii.2008, A. Saldaitis lgt., 11 spec. (ISNB, NMPC). **SOCOTRA ISLAND:** Neet, 8.–9.iii.2000, V. Bejček & K. Šťastný lgt., 21 spec.; same label data but 1.x.2000, 43 spec.; Shuab, 10.iii.2000, V. Bejček & K. Šťastný lgt., 27 spec. (all NMPC); same locality but 24.iii.2009, A. Saldaitis lgt., 151 spec.; Di Hamri env., 1.iii.2008, A. Saldaitis lgt., 1 spec.; Diksam Canyon, 23.iii.2009, A. Saldaitis lgt., 15 spec.; sand dunes near Irriseyi., 18.i.2010, A. Saldaitis lgt., 3 spec. (all ISNB); Ayri valley, 10.vi.2010, V. Hula & J. Niedobová lgt., 1 spec.; Shibhon, 680 m, 12°28'15"N 53°58'31"E, 13.vi.2009, L. Purchart lgt., 1 spec.; Deiqub cave, env., 10.vi.2010, V. Hula & J. Niedobová lgt., 1 spec.; Noked plain, sand dunes, 11 m, 12°21'09"N 54°01'47"E, 5.–6.xii.2003, D. Král lgt., Yemen – Socotra 2003 Expedition, Jan Farkač, Petr Kabátek & David Král, 1 spec.; Noked plain (sand dunes), Sharet Halma vill. env., 20 m, 12°21.9'N 54°05.3'E, 10.–11.xi.2010, J. Hájek lgt., 11 spec.; same label data but J. Batelka lgt., 7 spec.; same label data but P. Hlaváč lgt., 1 spec. (all NMPC).

**Comments.** Most common and strongly variable species in its length (6.8–13.5 mm) and coloration (cf. Figs. 3–4).

**Distribution.** A species so far known only from Darsah and Socotra (ŠVIHLA 2008a), this is the first record from Abd al Kuri. WRANIK (2003) mentioned this species also from Madagascar, which seems to me to be rather improbable, however, it cannot be ruled out with absolute certainty.

*Anisochrodes janavlada* sp. nov.

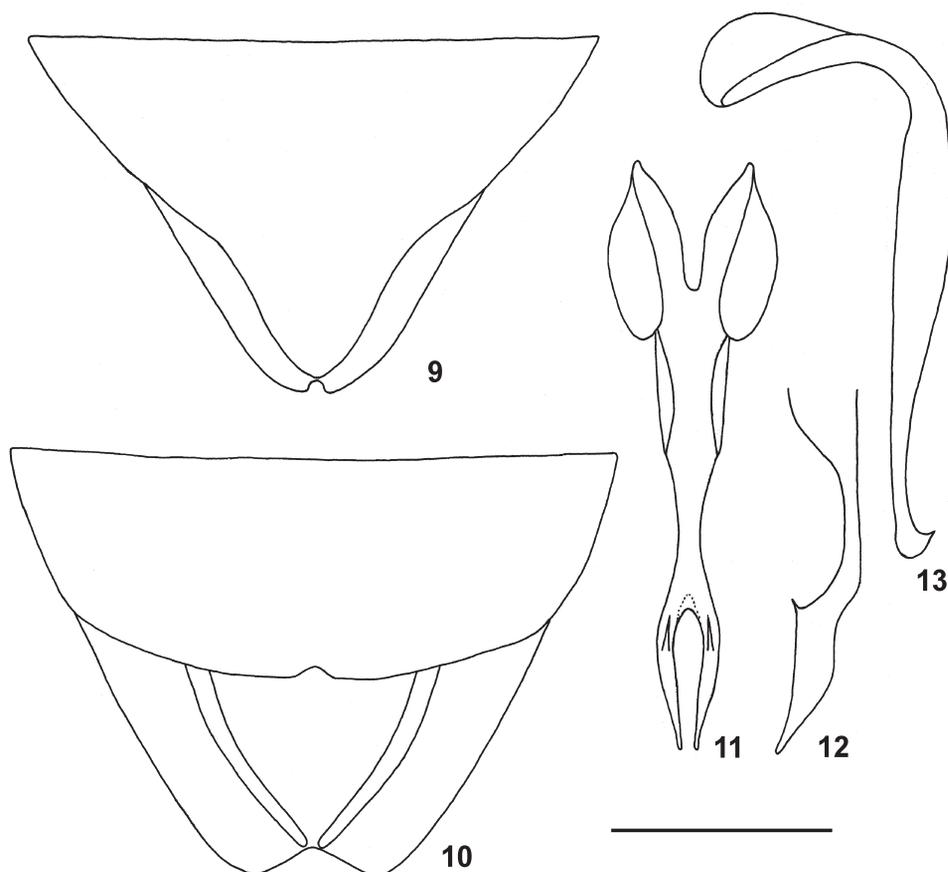
(Figs. 6–13)

**Type locality.** Yemen, Socotra Island, Wadi Zirik, 12°29.584'N 53°59.475'E.

**Type material.** HOLOTYPE: ♂ (NMPC), 'YEMEN, Socotra Isl. / Wadi Zirik, 12.vi.2010 / N 12°29,584', E 053°59,475' / V. Hula & J. Niedobová leg. [white label, printed]'. PARATYPES (NMPC), same label data, 1 ♀; 'YEMEN, Socotra Isl. / Firmihin plato, 400-500 m / N 12°28'46", E 54°00'89" / 18.-19.vi.2010 / V. Hula & J. Niedobová leg. [white label, printed]', 1 ♀; 'YEMEN, Socotra Isl. / Dgisfu valley, 2.vi.2010 / N 12°28,444' E 054°08,596' / V. Hula & J. Niedobová leg. [white label, printed]', 1 ♀; 'YEMEN, Socotra Isl. / Zemhon area 270-300 m / N 12°20,58', E 054°06,39' / 16.-17.6., V. Hula leg. [white label, printed]', 1 ♀; 'YEMEN, Socotra I., 4.-5.vi. / Qualentiah env., 2010 / slopes 5 km SE from Quasoit / N12°39,691', E 053°26,658' / V. Hula & J. Niedobová leg. [white label, printed]', 1 ♀; 'Republic of Yemen / Socotra Isl. – Deigyup cave env. / V. Hula lgt., 16.6.2009 [white label, printed]' 7 ♂♂ 1 ♀; 'YEMEN, Socotra Isl. / Deiqub cave env. / 10.vi.2010 / V. Hula & J. Niedobová leg. [white label, printed]', 1 ♂ 2 ♀♀; 'YEMEN, Socotra Isl., 2.vi.2010 / 7 km NW from Rhi di-Hamri, / flowering Croton scrubs / V. Hula & J. Niedobová leg. [white label, printed]', 12 ♂♂ 3 ♀♀; 'SOCOTRA Is. (YE) / Noked plain (sand dunes) / SHARET HALMA vill. env. / 12°21.9'N, 54°05.3'E, 20 m / Jan Batelka leg. 10-11.xi.2010 [white label, printed]', 1 ♂; 'YEMEN, SOCOTRA ISLAND / WADI THAR DI ITRUR, 21.vi.2012 / sifting under *Ficus cordata* / 12°32.8'N 53°42.9'E, 54 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský / J. Niedobová & L. Purchart leg.', 1 ♂; 'YEMEN, SOCOTRA ISLAND / ALOOVE AREA, Aloove vill. env. / *Jatropha unicostata* shrubland with / *Boswellia elongata* trees, / 19.-20.vi.2012 / 12°34.5'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.', 6 ♂♂ 3 ♀♀; 'YEMEN, SOCOTRA ISLAND / HOMHIL protected area / open woodland with *Boswellia* & *Dracaena* trees, 10.-11.vi.2012 / 12°34.5'N 54°00.9'E, 115 m // SOCOTRA expedition 2012 / J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský / J. Niedobová & L. Purchart leg.', 4 ♂♂ 2 ♀♀; 'YEMEN, SOCOTRA ISLAND / DEIQUB cave, 12.vi.2012 / cave & *Croton socotranus* + / *Jatropha unicostata* shrubland / 12°23.1'N 54°00.9'E, 115 m // J. Bezděk, J. Hájek, V. Hula / P. Kment, I. Malenovský / J. Niedobová & L. Purchart leg.', 1 ♂ 2 ♀♀; 'YEMEN, SOCOTRA ISLAND / KAZAZHAN area / shrubland on limestone; sifting / 10.vi.2012 / 12°33.8'N 54°19.8'E, 540 m // SOCOTRA Expedition 2012 / J. Bezděk, J. Hájek, V. Hula, / P. Kment, I. Malenovský, / J. Niedobová & L. Purchart leg.', 2 ♂♂ 1 ♀.

**Description.** Coloration (Figs. 6–8). Head iron grey, sometimes with slight coppery tinge, mouthparts terra-cotta, tips of mandibles sepia, antennae terra-cotta. Pronotum either entirely terra-cotta or with pair of smaller or larger spots in anterior half or spots enlarged and extending over almost whole length of pronotum, so that only narrow margins of pronotum remain yellow. Legs terra-cotta, tibiae mostly longitudinally infusate on outer side, tarsi sepia. Ventral part of abdomen iron grey, sometimes with slight coppery tinge, last two abdominal segments terra-cotta. Elytra iron grey.

Male. Eyes rather small, slightly reniform, moderately protruding, head across eyes only very slightly wider than pronotum, head behind eyes narrowing posteriorly almost in straight line. Antennae filiform, moderately exceeding basal third of elytral length, terminal antennomere constricted behind its midlength. Terminal palpomere of maxillary palpus securiform. Surface of pronotum finely and densely imbricate-punctate, with fine, white, recumbent pubescence, matt. Pronotum about as long as wide, moderately cordiform, anterior margin very slightly rounded, anterior corners rounded, lateral margins sinuately converging posteriorly, posterior corners rounded, posterior margin straight. Surface of pronotum more finely and sparsely imbricate-punctate than that of head and with yellow pubescence, semilustrous. Basal projections of claws long, almost reaching apices of claws. Elytra parallel-sided up to elytral midlength, moderately narrowing in posterior half, elytral apices separately rounded. Elytral venation only very slightly visible basally, surface of elytra very finely and densely



Figs. 9–13. *Anisochrodes janavlada* sp. nov. 9 – last abdominal segment of female, ventral view; 10 – last abdominal segment of male including projections of urite VIII, ventral view; 11 – tegmen, ventral view; 12 – apical portion of tegmen, lateral view; 13 – aedeagus, lateral view. Scale bar: 0.5 mm.

rugulose-lacunose, with fine, white, short recumbent pubescence, matt. Pygidium almost twice as long as apical sternite, apex of which is widely rounded with shallow, subtriangular emargination in middle; pygidium subtriangular with shallow, subtriangular emargination apically (Fig. 10). Projections of urite VIII visible, very narrow, moderately curved, similar to that of *A. jelineki* Švihla, 1983 (cf. Fig. 10). Tegmen and aedeagus as in Figs. 11–13.

Female. Basal projections of claws shorter than in male, hardly reaching midlength of claws, elytral venation better developed, very slight but visible in ca basal two thirds of elytral length. Pygidium only moderately exceeding last sternite, similar to that of male, last sternite subtriangular, roundly tapering apically from about its midlength (Fig. 9).

Length (♂♀): 4.8–11.9 mm.

**Differential diagnosis.** *Anisochrodes janavlada* sp. nov. with its pronotum at least partly coloured differently than elytra mostly resembles *A. escalerai* Švihla, 1999, from which it differs in much finer and sparser pubescence of elytra, semilustrous pronotum, unicolor tibiae and especially in parameres with basoventral tooth and bigger apical hook of the aedeagus (cf. Figs. 6–8 and ŠVIHLA 1999). The three remaining species of the genus have pronotum similar to elytra in colour, and denser and thicker elytral pubescence. This type of pubescence suggests that the new species represents a sister clade of the three species known from the Asian mainland.

**Etymology.** Patronymic, dedicated to two of its collectors, Jana Niedobová (Brno, Czech Republic) and Vladimír (familiarily Vlád'a) Hula (Moutnice, Czech Republic). To be used as the noun in apposition.

**Distribution.** Endemic to Socotra Island.

### Key to the Socotran species of the Oedemeridae

1. Both mandibles and claws simple. .... 2
  - Either both mandibles bifid apically or right mandibles with subapical tooth; claws dentate basally. .... 3
2. Parameres with ventrobasal tooth, pygidium rounded apically in both sexes, coloration as in Figs. 1–2. Socotra. .... ***Colobostomoides marshalli socotraensis* ssp. nov.**
  - Parameres without ventrobasal tooth; pygidium narrowly incised apically in both sexes; for habitus and coloration as in ŠVIHLA (2008b). Socotra, UAE, S Pakistan. .... ***Probosca (Proboxantha) maindroni* (Pic, 1935)**
3. Both mandibles bifid apically; basal teeth of claws reaching at least their midlength; pygidium triangularly emarginate in both sexes; parameres glabrous; habitus and coloration as in Figs. 6–8. Socotra. .... ***Anisochrodes janavlada* sp. nov.**
  - Left mandibles simple, right one with subapical tooth; basal teeth of claws not reaching their midlength; pygidium rounded in both sexes; parameres pubescent. .... 4
4. Head and vertex unicolor; aedeagus with apical tooth; habitus and coloration as in Fig. 5. Socotra, Abd al Kuri. .... ***Dentostomus guichardi* (Švihla, 1987)**
  - Head with darker spot on vertex; pronotum infusate medio-longitudinally and laterally; aedeagus without apical tooth; habitus and coloration as in Figs. 3–4. Socotra, Darsah, Abd al Kuri. .... ***Dentostomus socotrensis* (Švihla, 1986)**

### Discussion

The oedemerid genera represented in the fauna of Socotra are distributed in the southern part of the Arabian Peninsula, the Middle East and in eastern Africa. The genus *Colobostomoides* Švihla, 1983 includes two species; *Colobostomoides longepubens* Švihla, 1983 is distributed from Oman through southern part of Iran to southern Pakistan (ŠVIHLA 2008a), *C. marshalli* (Blair, 1926), according to VÁZQUEZ (1996), has been known only from eastern part of Republic of South Africa so far (Eastern Cape Province and KwaZulu-Natal Province). There are eight hitherto recognized species of the *Probosca* subgenus *Proboxantha* Švihla,

1995, seven of which are distributed in the arid zone from Chad to north-eastern Africa (southernmost to Sudan) and through the Near and Middle East to southern Pakistan easterly; the eighth species was described from Namibia. The genus *Dentostomus* includes two endemic Socotran species, and the third species, *D. anceyi* (Pic, 1920), is distributed in Djibouti, Saudi Arabia and continental Yemen (ŠVIHLA 2008a). Finally, the genus *Anisochrodes* Švihla, 1983, until now included *Anisochrodes jelineki* from southern Iran and Pakistan (Baluchistan), *A. holzschuhi* Švihla, 1983 from eastern Afghanistan, and *A. escaleraei* from south-western Iran (ŠVIHLA 2008a).

It follows from the above survey, that origin of the oedemerid fauna of the Socotra Archipelago is double. *Anisochrodes janavlada* sp. nov. is a member of the genus distributed in the Middle East, and *Probosca (Proboxantha) maindroni* seems to be a late immigrant from the same region; isolation of its Socotran population has not been long enough to create a distinct taxon. The origin of the genus *Dentostomus* seems to be Afro-Arabic, based on its present distribution. The origin of the genus *Colobostomoides* is somewhat disputable. The Asian species, *Colobostomoides longepubens*, seems to show a couple of more derived characters than *C. marshalli*, e.g. dilated parameres, sickle-shaped mandibles and long erected pubescence of body; however, the question is, where the latter species developed. The view of the origin and composition of the oedemerid fauna of the Socotra Archipelago will probably change in the future, when our knowledge, especially of the Afrotropical fauna, increases.

### Acknowledgements

I am much obliged to Jan Batelka (Praha, Czech Republic), Jan Bezděk (Mendel University, Brno, Czech Republic), Jan Farkač (University of Life Sciences, Praha, Czech Republic), Peter Hlaváč (Košice, Slovakia), Pol Limbourg (ISNB) for the possibility to examine rich and very interesting material, to Jan Bezděk (Brno, Czech Republic), Marco Bologna (Roma, Italy), Jiří Hájek (NMPC) and Ottó Merkl (Budapest, Hungary) for valuable comments, and to Martin Fikáček (NMPC) for help with preparing figures. This study was financially supported by the Ministry of Culture of the Czech Republic (DKRVO 00023272).

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