

## New species and new records of mutillid wasps from the Socotra Archipelago (Hymenoptera: Mutillidae)

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**Abstract.** The present paper provides new data on the mutillid fauna of the Socotra Archipelago (Yemen). The genera *Myrmilla* Wesmael, 1851, *Strangulotilla* Non-veiller, 1979, *Macromyrme* Lelej, 1984, and *Dentilla* Lelej, 1980 are recorded for the first time. Four new species are described: *Strangulotilla dioscoridea* sp. nov., *Macromyrme bezdeki* sp. nov., *Dentilla purcharti* sp. nov., and *Dentilla socotrana* sp. nov. On the whole, seven specific taxa have been listed for Socotra Island, two of which inhabit also Samha Island. The archipelago harbours mainly Ethiopian, but also some Palaearctic elements, confirming its significance as crossroad of these biogeographical realms.

**Key words.** Hymenoptera, Mutillidae, *Dentilla*, *Macromyrme*, *Myrmilla*, *Strangulotilla*, taxonomy, new species, new records, biogeography, Yemen, Socotra

### Introduction

The Socotra Archipelago is well-known to be characterized by high degree of endemism and species richness, and its biological diversity has been appropriately considered as a priority complex at global level (DI MICCO DE SANTO & ZANDRI 2004). During the last decade, Socotra has received an increasing attention by several researchers, aiming to define both faunal consistence and diversity, as well as its conservation efforts (see DAMME & BANFIELD 2011). However, some zoological groups are still virtually unexplored, and among these the hymenopteran family of Mutillidae is included: the single record reported from the main island in the recent review by LELEJ & HARTEN (2006) is indeed striking if compared to the remarkable richness of species documented by the same authors for the continental Yemen. This evident gap in knowledge has stimulated our interest in studying the material collected by two of us (PLC & FG) during a trip to the islands in February-March 2009, as well as that collected by Aidas Saldaitis in 2008 and now included in the collection of MR. Other material was added with the specimens collected by Bruno Massa (University of Palermo, Italy) during a

scientific trip to Socotra in 2008, but especially with those sent to us by Jan Bezděk and Luboš Purchart (Mendel University, Brno, Czech Republic), Petr Bogusch (University of Hradec Králové, Czech Republic), and Jiří Hájek (National Museum, Prague, Czech Republic). The examined material includes six genera and seven species, among which there are four genera and two species previously unrecorded for the study area, and four new species belonging to the subfamily Mutillinae, whose description are given in the present paper.

### Material and methods

To identify the examined material, monographs on both Ethiopian and Palaearctic mutillids (ANDRÉ 1899–1903; BISCHOFF 1920, 1921; NONVEILLER 1979; LELEJ 1985, 1995) and a wide relevant literature (see References) was consulted; also, studied specimens were compared to types and/or specimens kept in public and scientific institutions (see below for acronyms), and in the authors' collections. Examination of external features and genitalia and measurements of specimens were done using Optika SZM-2 stereo-binocular microscope with a micrometer eyepiece and Dino-Lite AM2011 digital microscope supported by DinoCapture 2.0 software. Examined male genitalia were clarified in a weak solution of potassium hydroxide (KOH), then mounted on labels and put in water soluble dimethyl hydantoin formaldehyde resin (DMHF) or preserved in glycerine and stored in a small plastic vial. Pictures were made using Canon Eos 450D digital camera equipped with Canon MPE-65 lens and mounted on Manfrotto micro-slider movement system; images were then processed with Zerene Stacker 1.0.32 software. Systematic placement follows the proposals of LELEJ (2002, 2005). Terms in morphological and surface sculpture descriptions follow, respectively, HUBER & SHARKEY (1993) and HARRIS (1979); malar space indicates the shortest distance from lower ocular margin to mandibular base. Abbreviations used in the text are: LOD, interocellar distance between lateral ocelli measured from above; OOD, ocellocular distance between lateral ocellus and compound eye measured from above; F, antennal flagellomere; S, sternum; T, tergum; these are followed by a number indicating the relative segment (e.g. F1, F2, etc.: first, second, etc. flagellomeres).

Acronyms of the collections are:

BMNH	The Natural History Museum (former British Museum of Natural History), London, United Kingdom;
IMCT	Iziko Museums of Cape Town, South Africa;
MRCI	Marcello Romano private collection, Capaci, Italy;
MSNG	Museo Civico di Storia Naturale of Genoa, Italy;
MZUF	Zoological Section 'La Specola', Museo di Storia Naturale dell'Università di Firenze, Italy;
NMPC	National Museum of Prague, Czech Republic;
PBHK	Petr Bogusch private collection, Hradec Králové, Czech Republic;
PLFG	Pietro Lo Cascio and Flavia Grita private collection, Lipari, Italy;
ZMAN	Zoological Museum of the University of Amsterdam, The Netherlands.

Since toponymic transcriptions are often highly variable, data from labels of the examined/typical specimens are reported in their original form; a forward slash (/) separates different lines of data. Collecting sites detectable on the map are listed and shown in Fig. 1, according to the toponymic indications given by WRANIK (2003) and MILLER & MORRIS (2004).

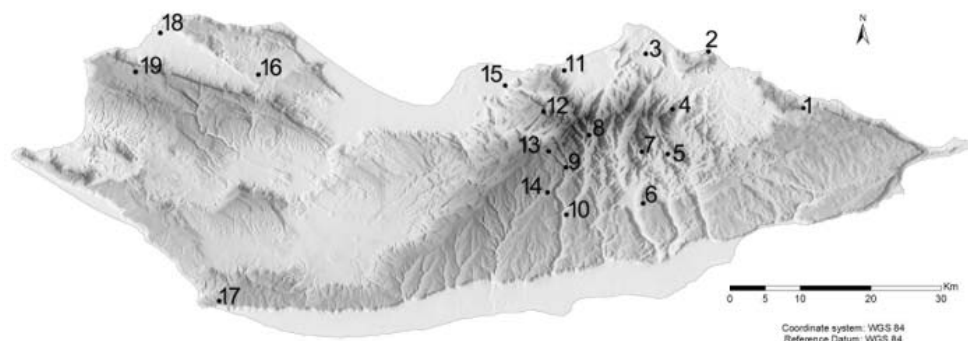


Fig. 1. Sites of collection of the examined material at Socotra Island. Toponyms follow WRANIK (2003) and MILLER & MORRIS (2004) and are progressively numbered from East to West. Samha Island is not indicated in the map. 1 – Homhil; 2 – Di Hamri; 3 – Wadi Kam; 4 – Rokeb (S of Di Hamri); 5 – Di Ishal; 6 – Wadi Di-Fa’rroh; 7 – Di Zumhum; 8 – Haggeher; 9 – Diksam plateau (Firmihin); 10 – Wadi Da’arho; 11 – hills near Hadibu; 12 – Wadi Ayheft; 13 – Diksam canyon; 14 – Wadi Zerig; 15 – Quadheb; 16 – unnamed place 30 km East from Qalansiyah; 17 – Qa’arah; 18 – Detwa lagoon; 19 – Qalansiyah.

## Systematics

Subfamily Pseudophotopsidinae Bischoff, 1920

Genus *Pseudophotopsis* André, 1896

*Pseudophotopsis aurea* (Klug, 1829)

*Mutilla aurea* Klug, 1829: 18, tab. 4, fig. 3.

*Mutilla kassalina* Magretti, 1898: 42.

*Pseudophotopsis kassalina*: MAGRETTI (1906: 40); BISCHOFF (1920: 99); NONVEILLER (1974: 105).

*Pseudophotopsis kassalina* f. *semiaurata* Bischoff, 1920: 99 (unavailable name).

*Ephutomma continua* var. *aurea*: MAGRETTI (1906: 37).

*Ephutomma continua* ssp. *aurea*: BISCHOFF (1920: 151); INVREA (1956: 301).

*Pseudophotopsis continua* ssp. *arabica* Hammer, 1962: 2.

*Pseudophotopsis aurea*: NONVEILLER (1974: 105); LELEJ & HARTEN (2006: 7).

**Type localities.** *Mutilla aurea*: ‘Ex Habessinia et Arabia deserta’ [Ethiopia and Arabia]; *Mutilla kassalina*: ‘Kassala’ [Sudan]; *Pseudophotopsis continua* ssp. *arabica*: ‘Sufean, Lahej, Aden’ [SW Yemen].

**Type material.** *Mutilla kassalina*: ‘Coll.e P. Magretti / Kessala / Fatigati 18[...]’ ‘*Mutilla* / (*Pseudophotopsis*) / *kassalina*, Magrt.’ ‘TYPUS’ (MSNG). *Pseudophotopsis kassalina* f. *semiaurata*: ‘Coll.e P. Magretti / C.a Eritrea / Arafati 1901’ ‘*kassalina* Magr.’ ‘*semiaurata* / Bisch. Type / det. Bischoff’ (MSNG).

**Additional material examined.** ‘Sokotra Isl. / Di Hamri / 20-21.xi.2008 / Saldaitiene & Saldaitis leg.’, 1 ♂ (PLFG); ‘SOCOTRA is. (YE) / Wadi Ayhaft 12°36.5’ N / 53°58.9’ E, 200 m / Jan Batelka leg., 7-8.xi.2010’, 1 ♂ (NMPC); ‘Sokotra Island N. / Di Hamri env. / 01.iii.2008 / leg. A. Saldaitis’, 1 ♂ (MRCI); ‘N. Sokotra / Island, / Wadi Kam / 13.i.2010 / Saldaitis leg.’, 1 ♂ (MRCI).

**Notes.** *Mutilla kassalina* Magretti, 1898, described from Kessala (= Kassalā, Sudan), was recently treated as a junior synonym of *Pseudophotopsis aurea* (Klug, 1829) by LELEJ & HARTEN (2006); this synonymy is based on the overlapping distribution areas and on common

morphological characters in both sexes. However, the status of *Pseudophotopsis kassalina* f. *semiaurata* Bischoff, 1920, described based on a male from Eritrea, has not yet been clarified. BISCHOFF (1920: 96) based the distinction of this taxon from the typical form on the absence of the apical fringe of golden pubescence on T1. After the examination of the types of both taxa, we can confirm their morphological identity, as well as that in both specimens fringe on T1 is lacking. Furthermore, according to the original description (MAGRETTI 1898: 42), the fringe has not been indicated as occurring on *M. kassalina*; that suggests that the distinction of the Bischoff's taxon may have been based on a misinterpretation of the diagnostic characters truly given by Magretti. In any case, Bischoff expressly gave it an infrasubspecific rank; therefore, according to the articles 45.5 and 45.6.4 of ICZN (1999), the name is unavailable.

**Distribution.** *Pseudophotopsis aurea* is known from Eritrea, Djibouti and Somalia, and has been recently recorded also from continental Yemen (LELEJ & HARTEN 2006). **First record from the Socotra Island.**

### *Pseudophotopsis maura* Bischoff, 1920

*Pseudophotopsis kokpetica maura* Bischoff, 1920: 98.

*Pseudophotopsis maura*: INVREA (1965: 62); NONVEILLER (1974: 103); LELEJ & HARTEN 2006: 9.

**Type locality.** Gabes, Tunisia.

**Material examined.** 'SOCOTRA: dint. Detwa / lagoon 26.ii.2009 leg. P. Lo / Cascio & F. Grita', 1 ♂ (PLFG); 'S. Sokotra Island, / Wadi Difarroha / south side / 15.i.2010 / Saldaitis leg.', 1 ♂ (MRCI).

**Notes.** This species is known only from the male sex.

**Distribution.** Tunisia, Algeria, Libya, Israel, Chad, and Yemen (including Socotra Island) (NONVEILLER 1974, LELEJ & HARTEN 2006).

### Subfamily Myrmillinae Bischoff, 1920

#### Genus *Myrmilla* Wesmael, 1851

#### *Myrmilla* (*Pseudomutilla*) sp.

**Material examined.** 'YEMEN: Soqotra / Zum Hum, 8.iv.2008 / B. Massa leg.', 1 ♀ (PLFG).

**Notes.** The only examined female clearly differs from the congeners recorded from Yemen (see LELEJ & HARTEN 2006), while it shows a remarkable similarity to *Myrmilla capitata* (Lucas, 1848) in the structure and shape of clypeus, mandibles, mesosoma, and sternal carina, as well as in the general pattern of punctuation, colour and pubescence. However, it is characterized by the occurrence of some light erect setae on T4 and T5, while the same are usually black in the latter species. This character was considered of diagnostic importance in the keys of Myrmillinae given by LELEJ (1985: 96) to distinguish the latter species from a large group that includes *M. mavromoustakisi* Hammer, 1950, *M. tenuitruncata* Skorikov, 1935, *M. vutshetitshi* Skorikov, 1927, *M. badchysiana* Lelej, 1980, *M. atalanta* Nagy, 1967, *M. filippovi* Lelej, 1985, *M. meda* Skorikov, 1927, and *M. skorikovi* Lelej, 1985. The identity of the studied specimen can be definitively confirmed only by examination of *Myrmilla* males from Socotra. In fact, *M. capitata* was not previously recorded from Yemen by LELEJ & HARTEN (2006), and so far has been known only from the Mediterranean area (LELEJ 2002).

Subfamily Mutillinae Latreille, 1802  
**Genus *Strangulotilla* Nonveiller, 1979**

***Strangulotilla dioscoridea* sp. nov.**

(Figs. 1–2)

**Type locality.** YEMEN, Socotra Island, Di Hamri, 12°37'59"N, 54°15'40"E.

**Type material.** HOLOTYPE: ♀ (NMPC), 'Socotra Island: NW, Di Hamri, 20 m a.s.l. / N 12°37'59" – E 54°15'40" / 27.ii.2010, L. Purchart leg.'. PARATYPE: ♀, 'Samha Island: W[est] / N 12°09' – E 52°59' / 23-24.ii.2008 / A. Saldaitis leg.' (MRCI).

**Diagnosis.** A female of *Strangulotilla* mainly characterized by a median hourglass-shaped belt of white sparse pubescence on T2 and by a weakly striated pygidial area.

**Holotype description.** Body length: 7.1 mm. Habitus as in Fig. 2. Head pale red, subrectangular, 1.24 broader than long and 1.15 wider than pronotum, with rounded posterior angles, slightly depressed in occipital area. Surface densely punctate, with punctuation large and shallow, but smaller on frons and completely lacking on frontal carina, which gives head vaguely rugulose appearance. Eyes oval, moderately convex, slightly protruding from profile of head; maximum orbital diameter 0.6 of interocular distance; ratio between maximum and minimum orbital diameter 1 : 0.53. Clypeus arcuate and slightly prominent, with small, shiny basal median tubercle and two small protruded and darkened tubercles at ends of clypeal carina. Mandibles ferruginous, curved, with prominent tooth on inner margin at basal third, then narrower and darkish in apical third. Antennae entirely pale reddish, with scape slightly curved; ratio between scape, pedicel and F1 is 1 : 0.23 : 0.38.

Mesosoma pale red, 1.09 longer than broad, slightly enlarged in anterior third, broader in posterior one; pronotum moderately arched, with obtuse anterior angles; lateral margins indefinitely jagged, with concave profile; on basal margin row of five prominent denticles above propodeal declivity, median ones longer than lateral; posterior angles feebly rounded. Surface moderately rugulose, irregularly and densely punctate, with punctuation larger than that of head. Scutellar scale indistinct; metanotal carina consisting of just two weak furrows converging backwards but not connected to each other, where mesosoma is enlarged posteriorly. Pleurae weakly concave, with smooth and shiny surface; upper margin of mesopleurae marked by darkish suture. Propodeum strongly truncated, with shiny surface; angle between propodeal and dorsal surface of mesosoma is 95°.

Legs entirely pale red, except calcaria and spurs which are white, without salient characteristics.

Metasoma black except for T1 which is slightly reddish on its anterior face, 1.32 broader than mesosoma in its maximum width; T1 as broad as hind width of mesosoma. T2 dorsally with fine and shallow punctuation, which laterally becomes more spaced and foveolate. Pygidial area weakly striated, with impressions arranged in herring-bone pattern coming down from inner to outer upper half, and horizontally disposed in lower half (Fig. 3).

Pubescence on head whitish, sparse and recumbent, backward facing, except on genae where it is forward facing; few scattered erect, long setae close to eye margin; dense erect, long setae on occipital side. Short and yellowish erect setae occur on clypeus and on basal half of mandibles, as well as on scapes, while all following flagellomeres are finely covered by

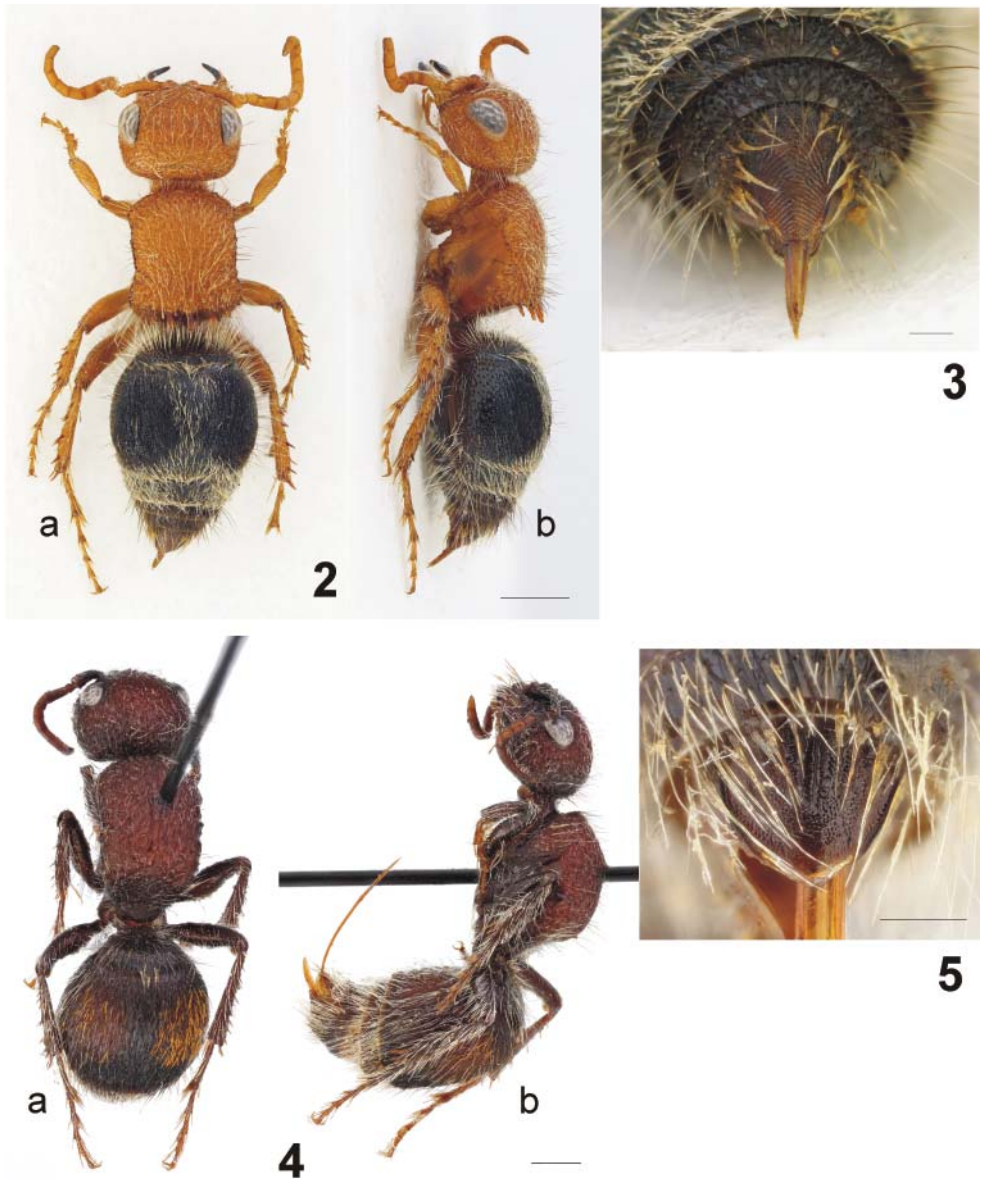
very short pubescence. Mesosoma dorsally covered by whitish, sparse and recumbent setae; scattered erect setae, mainly whitish but mixed with reddish ones, occur along anterior and lateral margins. Very short and almost evanescent pubescence sparsely covers the meso- and metapleuron surface. T1 with erect and long whitish setae, densely distributed on anterior side, toward propodeum, and black sparse setae covering surface, except for whitish fringe on posterior margin; T2 dorsally and laterally covered by recumbent black setae mixed with few scattered, erect whitish setae on sides, and crossed by median hourglass-shaped belt of white sparse pubescence starting from T1 fringe and merging in T2 basal fringe; T3 almost entirely covered by whitish pubescent belt; T4 and T5 covered by sparse and black pubescence and with scattered erect whitish setae, which occur also around pygidial area. Felt lines whitish and barely visible; distance from basal margin 1.37 longer than their distance from posterior margin of T2.

Male. Unknown.

**Variability.** The paratype from Samha Island is slightly reddish, stronger and longer (length: 7.6 mm) than the holotype, with head 1.37 broader than long and 1.16 wider than pronotum, mesosoma as broad as long, seven denticles irregularly spaced on epinotal row, more dense pubescence on head and mesosoma, more abundant sparse recumbent pubescence on T2. Maximum orbital diameter 0.5 of interocular distance, and ratio between maximum and minimum orbital diameter 1 : 0.57; ratio between scape, pedicel and first flagellomere 1 : 0.21 : 0.39.

**Differential diagnosis.** According to NONVEILLER (1979), *Strangulotilla* is distinguished from the closely related genera *Ctenotilla* Bischoff, 1920, *Cephalotilla* Bischoff, 1920, and *Chaetomutilla* Nonveiller, 1979 by having the pygidial plate not sculptured, and from *Montanomutilla* Nonveiller, 1979, which is characterized by the mesosoma strongly restricted anteriorly by the propodeum. Surface of the pygidial plate in *Strangulotilla* is smooth or finely shagreened, with the only exception of *S. bechuana* (Hesse, 1935) from Botswana, where the basal half is covered by little-pronounced striae. The striated feature of the pygidial plate of *S. dioscoridea* sp. nov. therefore excludes any possibility of this species being identical to any other species of this genus; at the same time, its occurrence exclusively in this species and *S. bechuana* represents the only morphological character which suggests a certain affinity among them within the genus. Although the type of *S. bechuana* has not been examined by us, we compared our material with two female specimens of this species respectively kept at IMCT (labelled 'Mr Stone / Bechuanaland [beneath] May-June / 1930' '*Strangulotilla / bechuana* / det. Nonvll. 1978'; images of this specimen are available at: [www.waspweb.org](http://www.waspweb.org)) and at BMNH (labelled 'L. Ngami / 12 mls NE Sehitwa / 16/17-IV-1972' 'Southern Africa / Exp. B. M. 1972 - I' '*Strangulotilla / bechuana* / det. Nonvll. 1978'). Also according to the descriptions given by HESSE (1935: 517, fig. 4, sub *Ctenotilla*) and by NONVEILLER (1979: 56, fig. 5c), *S. bechuana* remarkably differs from the new species by having metasoma pale reddish except for a narrow black basal belt on T2, head 1.3 wider than pronotum, ratio between maximum and minimum orbital diameter 1 : 0.73, T1 narrower than hind margin of mesosoma and T2 significantly wider than T1, different pattern of pubescence on T2 and striae pattern on pygidial plate and, finally, small size. Another species, *S. samharica* (Magretti, 1906), has





Figs. 2–4. Socotran Mutillidae. 2–3 – *Strangulotilla dioscoridea* sp. nov.: 2 – habitus of holotype (a – dorsal view, b – lateral view, scale bar = 1 mm), 3 – pygidial plate of the holotype (scale bar = 200 μm). 4–5 – *Macromyrme bezdeki* sp. nov.: 4 – habitus of the holotype (a – dorsal view, b – lateral view, scale bar = 1 mm), 5 – pygidial plate of the holotype (scale bar = 300 μm).

been recently recorded for continental Yemen (LELEJ & HARTEN 2006), but it can be easily distinguished from *S. dioscoridea* sp. nov. due to smooth pygidial area, different pattern of pubescence on T2, as well as entirely black head; NONVEILLER (1979: 52) assigned to this species the form *clariceps*, described based on a female from Sudan and characterized by reddish head, however, resembling the nominal form in all the above mentioned characters.

**Etymology.** The species epithet is intended to recall one of the ancient names of Socotra, Dioscorida, mentioned in the *Historia Naturalis* by Pliny the Elder and in the *Periplus Mari Erythraei* by Anonymous (both dating to the 1<sup>st</sup> century A.D.).

**Biological notes.** Data from the labels indicated the occurrence of *Strangulotilla dioscoridea* sp. nov. in arid coastal areas of the islands of Socotra and Samha, both characterized by sandy-rocky mixed substrate and covered by sparse dwarf scrubland. Other traits of its biology are still unknown.

**Zoogeographical notes.** The genus *Strangulotilla* currently includes one species from Sri Lanka (LELEJ 2005) and seventeen species from Africa (NONVEILLER 1979), some of them previously assigned to *Ctenotilla*, *Mutilla* Linnaeus, 1758 or *Smicromyrme* Thomson, 1870 (see ANDRÉ 1902, 1905; MAGRETTI 1906; CAMERON 1908; BISCHOFF 1920, 1921; BRADLEY & BEQUAERT 1928; HESSE 1935). Most part of these species occurs in the Ethiopian realm, including the Cape subregion; among them, *S. samharica* (Magretti, 1906), also recorded for continental Yemen (LELEJ & HARTEN 2006), was considered as a vicariant of the widely distributed *S. thoracosulcata* (Magretti, 1906) in the arid Eastern African areas by NONVEILLER (1979). Although the phylogenetic relationships within this genus need to be clarified, the occurrence of a *Strangulotilla* that is supposedly related to African species in the Socotra Archipelago can be explained by palaeogeographic data that show that these islands definitively detached from Africa about six million years ago (BEYDOUN & BICHAN 1970, FLEITMANN et al. 2004); moreover, the so far known distribution of *S. dioscoridea* sp. nov. suggests that i) the species is probably endemic to the archipelago, ii) that land connections between Samha and Socotra, that occurred during the Last Glacial Maximum (about 18,000 years ago: see FLEITMANN et al. 2004, DAMME 2006), undoubtedly contributed to the present distribution pattern. Insular endemics, such as *Strangulotilla minor* (André, 1905) from São Tomé Island (Gulf of Guinea, W Africa), and *S. krombeini* Lelej, 2005 from Sri Lanka (NONVEILLER 1979, LELEJ 2005), are already known within this genus.

### Genus *Macromyrme* Lelej, 1984

#### *Macromyrme bezdeki* sp. nov.

(Figs. 4–5)

**Type locality.** Yemen, Socotra Island (without detailed data).

**Type material.** HOLOTYPE: ♀ (NMPC), ‘Socotra / 1.iv.1997 / B. Pražan lgt.’.

**Diagnosis.** A female of *Macromyrme* closely related to *M. chrysophthalma* (Klug, 1829), from which it differs mainly in the width ratio of head and mesosoma, the shape of pronotum, the occurrence of scutellar scale, and the pattern of tergal pubescence and punctuation, as well as of the pygidial streaks.

**Holotype description.** Body length: 10.1 mm. Habitus as in Fig. 4. Head dark red, considerably darkened both in malar and occipital region, roundish, 1.09 broader than long and



1.12 broader than pronotum. Sculpture uniformly distributed on whole head, with large and appressed lacunose punctuation, whose inner surface and interpunctual spaces are shiny. Eyes oval, flattened and totally visible from above; maximum orbital diameter 0.47 of interocular distance; ratio between maximum and minimum orbital diameter 1 : 0.89; malar space 0.38 of maximum orbital diameter. Clypeus with deeply concave median area, triangular and delimited by slightly prominent lateral margins, clypeal anterior margin straight, laterally distinctly tuberculate. Mandibles dark red, black in apical two thirds, robust, slightly blunt apically, with tooth on inner margin at apical third. Antennae entirely dark red, with scape slightly curved; ratio between scape, pedicel and F1 6.25 : 1 : 2.5; ratio between F1, F2 and F3 1 : 0.6 : 0.6.

Mesosoma dark red, slightly darker on pronotal and lateral margins, rectangular and just enlarged anteriorly, 1.18 longer than broad; in lateral view, the profile of the mesosoma is arched; pronotum almost straight, with rounded angles; lateral edges irregularly serrated. Surface punctuation areolate, elongated and often merged, forming irregular longitudinal rows; interpunctual spaces smooth and shiny. Scutellar scale very small but visible. Pleurae smooth, feebly punctate on the propleural and metapleural area, with just wider punctuation on this latter. Propodeum with areolate and dense punctuation on the upper part that becomes more spaced and variolate on lower one, whose interpunctual spaces along lateral margins resemble small but prominent denticles.

Legs entirely red-brown, darker than mesosoma.

Metasoma entirely dark red, 1.44 broader than mesosoma. T1 0.58 narrower than T2. Surface of T1 sparsely and superficially punctate; very small tooth at each side of anterior articulation of T1; T2 substrigulate on whole surface, with foveolate-punctulate feeble punctuation occurring on spaces among striae, this latter more evident near posterior tergal margin. S1 with large blunt tooth; S2 smooth and shiny, with small and spaced variolate punctuation. Pygidial area as in Fig. 5.

Silvery-yellow sparse pubescence with short and erect setae on head and antennae; same occurs dorsally on mesosoma, where there are also very short and erect reddish-brown setae, and on legs. T1 forward with scattered, long and erect silvery-yellow setae; posterior margin covered by belt of black recumbent setae, interrupted on middle by small, just visible silvery-yellow spot. T2 with scattered erect brown setae and covered by black recumbent pubescence with long and thick setae; two ovoidal spots with scattered and short orange-gold recumbent pubescence, separated by distance equal to half of their width, extending from anterior margin to two thirds of tergal surface; scattered and sparse silvery-yellow setae covering the posterior margin; long silvery-yellow setae, visible in lateral view, covering laterally T2 and S2. Pubescence of T3-T5 consisting of silvery, sparse and long setae. Felt lines barely visible, 1.42 longer than their distance from posterior margin of T2.

Male. Unknown.

**Differential diagnosis.** Thanks to the courtesy of our colleague Arkady Lelej, who provided us with an unpublished list of the African species identified by him as belonging to the genus *Macromyrme* Lelej, 1984 (see LELEJ 1984, LELEJ & BROTHERS 2008) and previously placed within the genus *Pycnotilla* Bischoff, 1920, it was possible to exclude any identity between the specimen from Socotra and its congeners distributed in the Ethiopian realm. In fact, according to the keys given by BISCHOFF (1920: 182), the occurrence of features such as the

uniformly red colour of head and mesosoma and the light-coloured pubescence on T3–T5 is indicated just for *Mutilla rufoguttata* Magretti, 1892 (now *Macromyrme*). We examined the type of this species, collected at Ogaden (Ethiopia) (MAGRETTI 1892) and kept at MSNG, and found it to differ strongly from *M. bezdeki* sp. nov. in the shape of mesosoma, particularly with regard to the distinguishing, irregular conformation of the lateral edges, as well as in the pattern of pubescence on T2, which is characterized by two smaller and more distanced silvery spots and by a posteromedially triangular silvery spot; also, a large silvery spot occurs on the posterior margin of T1, and the head is slightly narrower than mesosoma. The only representative of this genus so far known for Yemen is *Macromyrme chrysophthalma*, described based on a female collected at ‘Arabia felici’ (KLUG 1829: 19, Tab. 5, Fig. 3, as *Mutilla*; see also ANDRÉ 1901: 283–285 for a detailed description of the species) and also recently recorded by LELEJ & HARTEN (2006). This species, a specimen of which kept at ZMAN (labelled ‘Yemen: near Sanaa / iii-iv.1998, PT / A. van Harten leg.’) has been examined, differs from *M. bezdeki* sp. nov. in the following main features: head remarkably broader than mesosoma; F1 as long as F2 and F3 together; pronotum less arched with well-marked angles; scutellar scale absent; T1 without spot of pubescence in the middle of its posterior fringe; space between the two spots on T2 equal to one quarter of the width of each spot; golden-whitish pubescence forming spots on T2; T2 densely punctate; pygidial plate more widely striate longitudinally.

**Etymology.** We are pleased to dedicate the new species to our colleague Jan Bezděk, who has greatly facilitated the study of the significant entomological material collected during the Czech expeditions to Socotra.

**Zoogeographical notes.** Although many uncertainties remain about the taxonomic affinities within this genus, both *Macromyrme bezdeki* sp. nov. and *M. chrysophthalma* differ remarkably from the Palearctic *Macromyrme* (see EL-TORKEY et al. 2011) and seem to be more related to the Ethiopian species.

### Genus *Dentilla* Lelej, 1980 in LELEJ & KABAKOV (1980)

#### *Dentilla purcharti* sp. nov.

(Figs. 6–10, 12)

**Type locality.** Yemen, Socotra Island, Firmihin (Diksam plateau), 12°28.5'N, 54°01.1'E.

**Type material.** HOLOTYPE: ♂ (NMPC), ‘YEMEN, SOCOTRA Island / Dixam plateau / Firmihin (*Dracaena* forest) / 12°28.5' N, 54°01.1' E, 490 m / J. Bezděk leg., 15-16.xi.2010'. PARATYPES: 6 ♂♂, ‘YEMEN, Socotra island / Wadi Ayhaft / 12°36.5' N, 53°58.9' E, 200 m / Jiří Hájek leg. 7-8.xi.2010' (NMPC); 4 ♂♂, ‘Socotra is. (YE) / Wadi Ayhaft 12°36.5' N / 53°58.9' E, 200 m / J. Batelka leg. 7-8.xi.2010' (NMPC); 1 ♂, ‘YEMEN, SOCOTRA Island / Dixam plateau / Firmihin (*Dracaena* forest) / 12°28.5' N, 54°01.1' E, 490 m / Jiří Hájek leg., 15-16.xi.2010' (NMPC); 3 ♂♂, YEMEN, SOCOTRA Island / Dixam plateau / Firmihin (*Dracaena* forest) / 12°28.5' N, 54°01.1' E, 490 m / J. Bezděk leg., 15-16.xi.2010' (NMPC); 2 ♂♂, YEMEN, SOCOTRA Island / Wadi Ayhaft / 12°36.5' N, 53°58.9' E, 200 m / J. Bezděk leg., 7-8.xi.2010' (NMPC); 3 ♂♂, ‘Republic of Yemen / Socotra isl., Firmihin plato / Dracena tree forest / N12°28'475", E54°00'89830" / V. Hula lgt. 22-25.vi.2009' (NMPC); 3 ♂♂, ‘YEMEN, Socotra Isl., 4-5.vi / Qualentiah env., 2010 / slopes 5 km SE from Quaysoh / N 12°39.691', E 053°26.658' / V. Hula & J. Niedobová leg.' (NMPC); 4 ♂♂, ‘YEMEN, SOCOTRA Island / Dixam plateau / Firmihin (*Dracaena* forest) / 12°28.5' N, 54°01.1' E, 490 m / J. Bezděk leg., 15-16.xi.2010' (NMPC); 6 ♂♂, ‘YEMEN, SOCOTRA island / Kesa env., 220-300 m / N 12°39'37", E 55°26'42" / 28-29.i.2010 L. Purchart lgt.' (NMPC); 2 ♂♂, ‘Yemen, Socotra isl., Wadi Faar / GPS 12 433N, 54 195E, 65 m / I.iv.2001 / leg. V. Bejček & K. Štastný' (NMPC); 1 ♂, ‘Yemen: Soqotra is., 21.xi-12.xii.2003 / HADIBOH env. / N 12°65'02" E 54°02'04" / 10-100 m [GPS]; Jan Farkač lgt.' ‘YEMEN – SOQOTRA 2003 / Expedition; Jan Farkač, / Petr Kabátek & David Král' (NMPC);



Fig. 6. Habitus of *Dentilla purcharti* sp. nov. (holotype) in dorsal view. Scale bar = 1 mm.

1 ♂, 'Yemen: Soqotra is., 9-10.xii.2003 / Qalansiyah env. / N 12°38'50" E 53°27'45" / 85-592 m [GPS]; Jan Farkač lgt.' 'YEMEN – SOQOTRA 2003 / Expedition; Jan Farkač, / Petr Kabátek & David Král' (NMPC); 1 ♂, 'Yemen Soqotra is., 24-26.xi.2003 / WADI AYHAFT / N 12°36'38" E 53°58'49" / 190 m [GPS]; Jan Farkač lgt.' 'YEMEN – SOQOTRA 2003 / Expedition; Jan Farkač, / Petr Kabátek & David Král' (NMPC); 1 ♂, 'Yemen, Soqotra is.; / 5-6.xii.2003 / Noked plain; QAAREH / (waterfall) / N 12°20'10" E 53°37'58" / 57 m [GPS]; Jan Farkač lgt.' 'YEMEN – SOQOTRA 2003 / Expedition; Jan Farkač, / Petr Kabátek & David Král' (NMPC); 2 ♂♂, 'YEMEN, SOQOTRA Island / wadi Ayhaft / 12°36.5'N 53°58.9'E, 200 m / P. Hlaváč leg., 7-8.xi.2010' (NMPC); 11 ♂♂, 'N. Sokotra isld. / S. from Di Hamri / Rocap loc. / 26.iii.2009 / Saldaitis leg.' (MRCI); 6 ♂♂, 'E. Sokotra Island, / Dishaall loc. / (Shey) / 16.i.2010 / Saldaitis leg.' (MRCI); 12 ♂♂, 'N. Sokotra / Island, / Wadi Kam / 13.i.2010 / Saldaitis leg.' (MRCI); 2 ♂♂, 'Sokotra Isld. / Ayhft valley / 22.xi.2008 / Saldaitiene & Saldaitis leg.' (MRCI); 8 ♂♂, 'N. Sokotra isld. / Qadab loc. / 25.iii.2009 / Saldaitis leg.' (MRCI); 5 ♂♂ 'N. E. Sokotra / Island / Wadi Difarroha / North side / 19.i.2010 / Saldaitis leg.' (MRCI); 2 ♂♂ 'Sokotra isld. / Di Hamri loc. / 20-21.xi.2008 / Saldaitiene & Saldaitis leg.' (MRCI); 1 ♂, 'Sokotra Island N. / Di Hamri env. / 1.iii.2008 / Saldaitis leg.' (MRCI); 2 ♂♂, 'N. Sokotra / isld., Hills near / Hadibu / 21.iii.2009 / Saldaitis leg.' (MRCI); 1 ♂, 'Central part of / Sokotra Island, / Diksam loc. / 14.i.2010 / Saldaitis leg.' (MRCI); 1 ♂, 'Sokotra (Yemen) / Zam Hom / 7.iv.2008 at lamp / leg. A. Carapezza' (MRCI); 4 ♂♂, 'N. Sokotra / isld., Haghier Mt. / Ayhft val[]ley / 20.iii.2009 / Saldaitis leg.' (MRCI); 1 ♂, 'Sokotra Island N. / Haghier Mts. / h 900 m / near Diksam loc. / 05.iii.2008 / leg. A. Saldai[tis]' (MRCI); 1 ♂, 'Sokotra / Island W. / 30 km E. from / Qalansiya / 06.iii.2008 / leg. A. Saldaitis' (MRCI); 1 ♂, 'C. Sokotra / isld., Diksam / canyon / 23.iii.2009 / Saldaitis leg.' (MRCI); 6 ♂♂, 'YEMEN,



Figs. 7–14. 7 – Fore wing of *Dentilla purcharti* sp. nov. (holotype). Scale bar = 1 mm. 8–10 – Genitalia of *D. purcharti* sp. nov. (holotype) in dorsal, lateral and ventral view. Scale bar = 200 µm. 11 – Mandibles of *D. ehrenbergi* Lelej, 2006 (paratype). Scale bar = 200 µm. 12 – Mandibles of *D. purcharti* sp. nov. (paratype from Wadi Da’arho). Scale bar = 200 µm. 13 – Pygidial plate of *D. arabica* (Hammer, 1962). Scale bar = 200 µm. 14 – Pygidial plate of *D. socotrana* sp. nov. (holotype). Scale bar = 200 µm.

Socotra isl. / Zemhon area, 270-300 m / N12°20'56", E054°06'39" / 16-17.vi.2010 V. Hula leg.' (PBHK); 1 ♂, 'YEMEN, SOCOTRA island / Zemhon area, 270-350 m / N 12°30'58", E 54°06'39" / 3-4.ii.2010 / L. Purchart & J. Vybiral lgt.' (PBHK); 7 ♂♂, 'YEMEN, SOCOTRA island E / Firmihin, 400-500 m / N 12°28'27", E 54°00'54" / 6-7.ii.2010, at light / L. Purchart & J. Vybiral lgt.' (PBHK); 3 ♂♂, 'SOCOTRA: W. Da'arho / 21.ii.2009 – leg. P. Lo / Cascio & F. Grita' (PLFG, MZUF); 1 ♂, 'SAMHA I. (Socotra / Archipel.) 27.ii.09 leg. / P. Lo Cascio & F. Grita' (PLFG); 3 ♂♂, 'SOCOTRA: W. Ayheft / 28.ii-1.iii.2009 leg. P. / Lo Cascio & F. Grita' (PLFG).

**Diagnosis.** A male of *Dentilla* closely related to *D. ehrenbergi* Lelej, 2006, from which it differs mainly in the size of ocelli and their distance from occipital carina, the shape of eyes, mandibles, and apical margin of T7, the darkening spot on the fore wings, as well as in the colour of body and pubescence, and conformation of genitalia.

**Holotype description.** Body length: 11.9 mm. Habitus as in Fig. 6. Head, including antennae, mandibles (except for the darkish apex) and palpi pale red, 1.14 wider than long and 0.88 narrower than mesosoma, with strongly rounded posterior angles. Eyes large and bean-shaped, clearly protruding from head profile and strongly convex, with small and blunt indent along inner margin, anteriorly reaching base of mandibles; posterior margin of eyes weakly but distinctly concave; ratio between maximum and minimum orbital diameter 1 : 0.74. Genae densely and irregularly punctate. Vertex surface densely punctate around ocelli, sparsely and irregularly punctate laterally and posteriorly, rugose forward the median ocellus. Ocelli large and globose; ratio between LOD and OOD 0.75 : 1; LOD 0.93 of maximum diameter of lateral ocellus; distance between lateral ocelli and occipital carina 1.73 LOD. Frontal carina almost unperceivable in upper part, forming straight and acute ridge between toruli. Scape slightly curved and compressed in third quarter, distinctly bicarinate beneath; ratio between scape, pedicel, F1, F2 and F3 1 : 0.19 : 0.41 : 0.77 : 0.70. Antennal sockets with arcuate carina. Clypeus deeply concave except in middle, with transversal carina close to lower margin and protruded in short and acute median tubercle; clypeal surface densely and finely punctate. Mandibles quadridentate with curved upper carina and large tooth beneath base. Both labial and maxillar palpi flattened.

Legs including calcaria and spurs red, paler than head and mesosoma, without salient characteristics.

Mesosoma pale red. Pronotum with anterior margin slightly arched; maximum pronotal width 1.22 propodeal width on spiracle line. Scutum with well-developed parascutal carinae; surface sparsely foveolate. Propodeum surface areolate. Metasternal process with denticles. Metacoxae with inner carina. Tegulae slightly projecting over mesoscuto-scutellar suture; surface barely punctate, shining and very finely wrinkled. Wings hyaline with brown veins; fore wings as in Fig. 7, with infusate belt at distal margin of veins, darker toward anterior margin, not reaching distal margin of wing; hind wings not infusate.

Metasoma black except for S1 and anterior part of T1 which are reddish, and S2 which is irregularly reddish streaked. T1 1.04 wider than its maximal length, 0.45 narrower than T2; surface sparsely but deeply punctate except for smooth median longitudinal narrow strip. T2 surface shiny and punctate, with basal punctuation larger than apical one. T3–T6 sparsely punctate. Apical margin of T7 polygonal with rounded angles; surface almost scabrous with double punctuation, larger punctures arranged in groups, smaller widely and finely sparse. S1 with strongly punctate longitudinal carina, whose edge is irregularly shaped. S2 densely and regularly punctate.



Head, mesosoma and metasoma with long scattered yellowish setae; flagellomeres clothed by dense and very short yellow pubescence, scape with just longer yellow-reddish erect setae; clypeus densely covered by recumbent and short pubescence and with setae tuft on tubercle; mandibles with short and recumbent setae along edges; legs covered with long scattered yellowish setae, denser on median and posterior ones, and with dense and very short recumbent yellowish pubescence. Short and recumbent black setae on scutum, tegulae and T2. Mesosoma ventrally with erect yellowish setae, shorter than dorsal ones. T2–T6 and S2–S6 with yellow-whitish apical fringes of appressed setae. Felt lines on T2 and S2 golden; tergal felt lines 2.65 longer than their distance from posterior margin and 2.4 than the sternal ones.

Genitalia as in Figs. 8–10.

Female. Unknown.

**Variability.** The averages of length and proportions taken from paratypes from Socotra (N = 10) are shown in Tab. 1. Ratio between scape, pedicel, F1, F2 and F3 of the same sample ranges as 1 : 0.18–0.19 : 0.37–0.41 : 0.74–0.77 : 0.70. There are no substantial differences from the holotype, except for the occurrence of a small tubercle on metanotum which is more or less developed in some specimens. The small closed cell (oblongum) between the second medial and second radial sector occurring in the fore wings of holotype (see Fig. 7) is an inconstant character in this species. The length of paratype from Samha Island is 11.0 mm; head 1.09 wider than long; LOD 0.91 OOD; distance between lateral ocelli and occipital carina 1.27 LOD; T1 1.04 wider than long and 0.5 narrower than T2.

**Differential diagnosis.** *Dentilla purcharti* sp. nov. is morphologically comparable with *D. ehrenbergi*, recently described from continental Yemen (LELEJ & HARTEN 2006). A paratype of the latter, kept at ZMAN and labelled ‘Yemen, Al Kowd / vii.2000 / A. v. Harten & S. Al Haruri, light trap’, has been compared with the specimens from Socotra. *D. ehrenbergi* differs from the new species in having ocelli slightly smaller and less globose, the lateral ones more distanced from occipital carina, and LOD equal to the maximum diameter of lateral ocellus; indent of the eye’s inner margin deeper and wider; eyes with posterior margin straight or just slightly concave; different shape of mandibles and their upper carina (Figs. 11–12; upper carina is indicated by the arrow); frons with deep longitudinal median furrow; T1 slender and thin; apical margin of T7 weakly rounded. Furthermore, the fore wings are infuscate on

Table 1. Average length and ratios of some morphological characters in paratypes of *D. purcharti* sp. nov. A – length (in mm); B – ratio width/length of head; C – ratio width/length of T1; D – ratio LOD/OOD; E – ratio distance between lateral ocelli and occipital carina/LOD. SD = standard deviation; SE = standard error.

	A	B	C	D	E
<b>No. of specimens</b>	10	10	8	10	10
<b>Average</b>	9.80	1.21	1.13	0.74	1.33
<b>SD</b>	1.80	0.12	0.13	0.09	0.23
<b>SE</b>	0.60	0.04	0.05	0.03	0.07
<b>Minimum</b>	6.90	1.10	0.91	0.57	0.90
<b>Maximum</b>	12.30	1.50	1.33	0.93	1.66

their distal fourth; the red colour of head and mesosoma is paler; the tibial spurs are whitish; the pubescence is entirely silvery-whitish, and tegulae are glabrous and impunctated. Another species known from Yemen is *D. testacea* (Klug, 1829), of which we have examined a specimen kept at ZMAN (labelled 'Yemen, Al Kowd, ii.2001 / A. v. Harten & S. Al Haruri / in light trap'), finding strong differences from *D. purcharti* sp. nov. such as shape and size of the head and the mandibles, pubescence pattern and uniform pale yellowish colour. Other two species, *D. rasnitsyni* Lelej, 2011 and *D. zarudnyi* Lelej, 1985, have been recently found in southern Arabian Peninsula (LELEJ & HARTEN 2011); both are characterized by T7 with straight apical margin, and the first also by the distinguishing darkened apical half of fore and hind wings. Together with several others, the above mentioned morphological characters allow to exclude any affinity with the new species.

**Etymology.** The new species is dedicated to our colleague Luboš Purchart, authority in darkling beetles taxonomy and active researcher of the entomofauna of the Socotra Archipelago, as a token of esteem and friendship.

**Biological notes.** *Dentilla purcharti* sp. nov. is undoubtedly the most common and widespread mutillid at Socotra, both geographically and phenologically. The species occurs from the coastal belt up to 1000 m a.s.l. and has been found in several different habitats, including sandy or rocky coastal plains, succulent and open deciduous shrublands of inland sheltered valleys, and *Dracaena* woodlands. Most of the collected specimens were attracted by light or captured in light traps; mutillids are in fact mainly nocturnal and crepuscular in the arid areas (see LELEJ & HARTEN 2011). Other traits of its biology are still unknown.

**Zoogeographical notes.** The genus *Dentilla* has a Palaearctic distribution which is extended in the Oriental region to western India (Rajasthan), and its probable centre of speciation lies between the Middle East and the Eastern Mediterranean (see LELEJ 2002, 2005). Its occurrence in southern Arabian Peninsula remained undetected until the recent contributions of LELEJ & HARTEN (2006, 2011), where new records for Arabia, Yemen, Oman and UAE are given, including some newly described species. The morphological affinity between the new species and *D. ehrenbergi* from continental Yemen suggests that the differentiation between the two taxa can be due to an allopatric speciation originated from the geographic isolation. Its simultaneous occurrence on the islands of Socotra and Samha, for which it is known on the basis of a single specimen, can be explained by the same hypothesis expressed for *Strangulotilla dioscoridea* sp. nov., that involves the palaeogeographic relationships among both islands.

### *Dentilla socotrana* sp. nov.

(Figs. 14–15)

**Type locality.** Yemen, Socotra Island, Wadi Ayhaft, 12°36.5'N, 53°58.9' E.

**Type material.** HOLOTYPE: ♀ (NMPC), 'Socotra Is. (YE), Wadi Ayhaft / 12°36.5' N – 53°58.9' E, 200 m / Jan Batelka leg., 7-8.xi.2010'. PARATYPES: ♀, 'Socotra: Homhil / 23-24.ii.2009 / leg. P. Lo Cascio & F. Grita' (PLFG); ♀, 'Yemen: Soqotra / Wadi Zerig, 8.iv.2008 / leg. B. Massa' (PLFG).

**Diagnosis.** A female of *Dentilla* belonging to the group that includes species without spots of pubescence on T2, head and mesosoma red.

**Holotype description.** Body length: 5.6 mm. Habitus as in Fig. 15. Head pale red, roundish, 1.14 broader than long and 0.9 narrower than pronotum. Surface of vertex shiny, with wide



Fig. 15. Habitus of *Dentilla socotrana* sp. nov. (holotype) in dorsal and lateral view. Scale bar = 1 mm.

and irregularly lacunose punctuation, while on occipital area surface is matt and rugose and punctuation is smaller; genae finely punctate. Eyes oval, large, clearly protruding from head profile and strongly convex; maximum orbital diameter 0.6 of interocular distance; ratio between maximum and minimum orbital diameter 1 : 0.69. Clypeus with prominent upper carina, clearly visible from above, ending in shiny basal tubercle. Mandibles ferruginous, weakly curved, darkish in apical half. Antennae entirely pale reddish, with curved scapes.

Mesosoma pale red, subrectangular, 1.14 longer than broad; pronotum just slightly arched, with sharp angles, less rounded and evanescent than posterior ones; lateral margins straight. Surface shiny, with punctuation larger and denser than head; in posterior half, interpunctual spaces very small but protruding in jagged denticles, aligned in arcuate rows parallel to back edge. Scutellar scale large and rounded. Pleurae with slightly rugose surface on mesopleural area. Propodeum feebly arched, without a distinct angle between propodeal and dorsal surface of mesosoma.

Legs including calcaria pale red, without salient characteristics.

Metasoma in holotype has lost the original black colour (see Variability) and became brown due to permanence in alcohol; metasoma 1.30 broader than mesosoma on its maximum width. T1 0.34 narrower than T2. Surface of T2 sparsely and finely punctate, dorsally

with variolate punctures that laterally are larger, denser, and sometime confluent. Pygidial area as in Fig. 14.

Pubescence on head yellowish, with recumbent and backward-facing short setae mostly on vertex; erect setae uniformly occurring, longer ones close to eyes and on occipital side; shorter erect setae occur also on clypeal margin and around upper carina, as well as on scapes, pedicels and F1, while all following flagellomeres are just clothed by short pubescence. Mesosoma dorsally covered with recumbent pubescence, with long erect setae on lateral and posterior margins, shorter setae occur on dorsum and on pronotal margin. T2 with long erect scattered yellowish setae and black recumbent setae, sparsely covering surface; posterior margin covered by continuous yellowish-whitish fringe with short and recumbent setae, just slightly forward extended in middle. Pubescence of T3–T5 mixed between long erect and short recumbent yellowish-whitish setae. Felt lines golden, 1.35 longer than their distance from posterior margin of T2.

Male. Unknown (see Remarks).

**Variability.** Length range of paratypes 5.5–5.6 mm. Head 1.09–1.19 broader than long and 0.87–0.91 narrower than pronotum. There are no substantial differences from the holotype, except for the colour of metasoma, which is black, and for the occurrence of long erect setae also on legs.

**Differential diagnosis.** *Dentilla socotrana* sp. nov. is morphologically comparable only with *D. arabica* (Hammer, 1962), originally described from continental Yemen as *Smicromyrme* (HAMMER 1962) and recently placed in *Dentilla* by LELEJ & HARTEN (2006). After the examination of a specimen of *D. arabica* kept at ZMAN (labelled ‘Yemen, Wadi Bana / 24.X.1992 / A. van Harten’, det. A. Lelej), we can exclude with certainty the identity between the new and the latter species, which differs in the following features: larger eyes, both in relation to the head size and in maximum orbital length; clypeus less pronounced and protruding; head in a lateral view truncated forward (more round-shaped in *D. socotrana*); mesosoma slightly narrowed in the anterior margin; surface of mesosoma finely and densely punctate; scutellar scale small and evanescent; propodeum more clearly truncated, with concave propodeal face; T2 less globose and slightly flattened; small pubescent spot on basal fringe of T2; different streaks pattern on pygidial area (Fig. 13).

**Etymology.** The specific epithet is based on the current name of the island where the species has been found.

**Biological notes.** Data from labels indicate a broad phenology for this species, extended at least from November to April, and a wide distribution on the island. One of the specimens was collected at Homhil (about 1000 m a.s.l.) in a stony area subject to intensive grazing. Other traits of its biology are still unknown.

**Remarks.** *Dentilla socotrana* sp. nov. is the only female belonging to this genus found at Socotra so far. Therefore, it cannot be excluded that it could represent the opposite sex of the above-described *D. purcharti* sp. nov. Since the faunistic knowledge of the Mutillidae of the study area is not exhaustive, however, further studies could reveal the occurrence of other species. Furthermore, as males and females of this family are highly dimorphic, it is strongly recommended to establish their proper association after a direct observation of mating pairs under natural conditions (see ROMANO 2004, MANLEY & PITTS 2007), rather than based on the assumption of their sympatry.

## Discussion

The species list includes seven taxa, six of which are new for the archipelago. This result does not sound unexpected because, as already noted in the introduction, the faunal knowledge on Mutillidae was rather incomplete, even though they do not seem to be rare on the island as evidenced by the remarkable number of captured specimens belonging to *Dentilla purcharti* sp. nov. This family is characterized by a remarkable level of endemism, confirming once more the importance of biological diversity of Socotra. Four of seven species (all those belonging to the subfamily Mutillinae) are likely to be endemic to this archipelago, even though a female species, *Dentilla socotrana* sp. nov., could represent the complementary sex of the male *D. purcharti* sp. nov., and in this case it would be treated as synonym of the latter. Conversely, further taxonomic studies are needed to clarify the status of the species within the genus *Myrmilla* recorded from Socotra. Endemics amounted to 57% of the whole fauna, a significant percentage compared with data for the neighbouring continental areas (southern Arabian Peninsula, including Yemen, Oman, southern Saudi Arabia and UAE: 44%; Somalia: 37%; data extrapolated from LELEJ & HARTEN 2006, 2010, 2011; NONVEILLER 1996). A zoogeographic assessment of the mutillid fauna would be premature, based on current knowledge. Anyway, this group constitutes a fitting example of the widely accepted zoogeographic views that consider the Socotran fauna more closely linked to the Ethiopian realm (WRANIK 2003): both Pseudophotopsidinae (*Pseudophotopsis aurea* and *P. maura*; the latter as Eremic element) and two Mutillinae (belonging to genera *Strangulotilla* and *Macromyrme*) can be clearly ascribed to this origin. On the contrary, Palaearctic elements seem to be surely represented only by species belonging to the genus *Dentilla*, which nevertheless includes also taxa exclusively distributed in the Eremic Zone (see LELEJ 2002). Further investigations may clarify some still unresolved taxonomic issues and improve the faunal knowledge, also with respect to the probable occurrence of mutillid wasps on the westernmost island of Abd al Kuri that so far has not been detected.

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