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New species and subspecies of Apterogyninae (Insecta, Hymenoptera, Bradynobaenidae) from the Arabian Peninsula

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ABSTRACT – Description of new species of Apterogyninae from the Arabian Peninsula (Insecta, Hymenoptera, Bradynobaenidae). The study of several Bradynobaenidae collected in Yemen and the United Arab Emirates has led to the identification of one new species and one new subspecies belonging in the genus *Apterogyna* Latreille, 1809: *A. vanharteni* sp. n.; *A. dhofarensis yemenensis* subsp. n., and one new species belonging in the genus *Macroocula* Panfilov, 1954: *M. vanachterbergi* sp. n. The *Apterogyna* have white spurs and *M. vanachterbergi* sp. n. have black spurs, unusual in Apterogyninae. The *A. dhofarensis yemenensis* subsp. n. is characterised by the presence of a conspicuous distal fascia of white setae on the II metasomal tergum, absent in *A. dhofarensis dhofarensis*. The key to the species of male *Apterogyna* and *Macroocula* in the Arabian Peninsula is provided.

Key words: Apterogyninae, new species, Yemen, United Arab Emirates, identification keys.

RIASSUNTO – Nuove specie e sottospecie di Apterogyninae (Insecta, Hymenoptera, Bradynobaenidae) della Penisola Arabica. Lo studio di un lotto di Imenotteri Apteroginini raccolti nello Yemen e negli Emirati Arabi Uniti ha messo in evidenza l’esistenza di tre nuove entità per la scienza, *Apterogyna vanharteni* sp. n., *Apterogyna dhofarensis yemenensis* subsp. n. e *Macroocula vanachterbergi* sp. n. qui descritte. *Macroocula vanachterbergi* sp. n. è caratterizzata dalla presenza di una evidente fascia distale di pubescenza bianca sul II tergum del metasoma assente in *A. dhofarensis dhofarensis*. A seguito delle raccolte di Apteroginini effettuate negli ultimi 10 anni da numerosi ricercatori entomologici nella Penisola Arabica sono state descritte 4 taxa di *Apterogyna*, 9 di *Macroocula* ed 1 di *Micatagla*. In precedenza erano noti 2 taxa di *Apterogyna* e 6 di *Macroocula*. In questa area non risulta presente alcuna specie di Gynecaptera. La chiave di determinazione dei generi degli Apteroginini è riportata in PAGLIANO (2008). Viene qui fornito la chiave di determinazione dei maschi delle specie di *Macroocula* delle Penisola dove risulta che *Macroocula vanachterbergi* sp. n. è l’unica specie finora conosciuta avente gli speroni delle tibie neri, inusuale tra gli Apteroginini, in quanto le altre specie hanno gli speroni bianchi.

Parole chiave: Apterogyninae, nuove specie, Emirati Arabi Uniti, chiavi di determinazione.

Introduction

The fauna of Apterogyninae present in the Arabian Peninsula was almost unknown until a decade ago, and only very recently the scientific significance of this area been revealed. Two scientific expeditions led by the Museo di Storia Naturale e del Territorio di Calci (University of Pisa), as well as the collections of Antonius van Harten (United Arab Emirates) and Anithakumari Saji (Abu Dhabi) led to the publication of a series of volumes entitled "Arthropod Fauna of the UAE" which considerably improved knowledge of the Apterogyninae of the Peninsula. In addition to the species previously listed for this region (PAGLIANO, 2004; 2008), three new taxa collected in Yemen and UAE are added here. These include many males of *Macroocula arabica* Pagliano, 2008 captured with a Malaise trap and special night lamps, well as males of taxa new to science, the description of which will be the focus of the present work. The description of *Apterogyna vanharteni* sp. n., *Apterogyna dhofarensis yemenensis* subsp. n. and *Macroocula vanachterbergi* sp. n. can be added to previously reported closely-related taxa, that is: from Saudi Arabia: *Apterogyna* 1 species, *Macroocula* 6 species, *Micatagla* 1 species. UAE: *Macroocula* 7 species. Oman: *Apterogyna* 1 species, *Macroocula* 7 species. Yemen: *Apterogyna* 1 species, *Macroocula* 7 species, *Micatagla* 1 species. Thus far, no species of the Genus *Gynecaptera* has been reported from the Arabian Peninsula.

Description of new species and subspecies

The taxonomic material described here is preserved in the National Museum of Natural History of Leiden (Olanda) (NMNH), in the collection of Marcello Romano in Sicilia (MR) and in my personal collection (PG). The terms used for describing the species follow PAGLIANO (2002). The key to the Genera of Apterogyninae present in Arabian Peninsula is reported in PAGLIANO (2008); the key to the males of the species of *Apterogyna* can be found in PAGLIANO (2004) and those of the males of *Macroocula* in PAGLIANO (2002).

Genus **Apterogyna** Latreille, 1809

Apterogyna vanharteni sp. n. (figure 9)

Description of the Holotype ♂.

Body length 7 mm

Colour. Head red, black on the frons and on the vertex; mouthpart apparatus yellow; antennae red; mandibles yellow at the base and dark for the distal 2/3. Mesosoma red; hyaline wings with dark veins; legs I red; II red with tarsi lighter at the base; trocanther with white apophysis; III red with femurs and tibias slightly darker, tarsi yellow, reddish on the extremities. Metasoma or gaster with segment I dark red, remaining segments black; sternum VII with curved apical hook reddish on top. White pubescence with a fascia of silver at the ends of the terga II and III of the gaster.

Morphology. Head with vertex, seen from the dorsal side, very convergent posteriorly; ocelli with diameter inferior by half of the diameter of the III articulation of the antennae; antennae of the usual form; frons and vertex with large punctures spaced less than their diameter apart.

Mesosoma. Pronotum U-shaped, just visible on the dorsal side, with punctuation on the sides and small striae intermingled; mesonotum ample with notauli just visible; scutellum ample, separated anteriorly by a deep transversal impression; mesonotum with appressed punctures larger than those on the head; scutellum with punctuation similar to those on the mesonotum but farther apart at the centre; wings with 5 hamuli on one wing and 6 on the other. Metanotum with dense longitudinal striae at the centre. Propodeum with large foveae.

Metasoma. Peziolo longer than wide in the ratio 32:28, the tergum is foveate, the sternum is foveate with striae intermingled; pubescence uniformly distributed, without a tuft of setae on posterior margin. Tergum II with felt lateral lines hidden by a distinct tuft of white pubescence and a distal fascia of white hairs as on III, IV e V terga; tergum II with large appressed punctuation; tergum III with deep ellipsoid punctures forming small longitudinal ridges; terga IV-VII punctate-striated on the apical fasciae; sterna II and III with large punctures spaced at a distance at least equal to their diameter, denser on the sides with a smooth area in the centre-posterior margin; sterna III-V with a fasciae of white hairs on the distal margin, with fasciae slightly less dense than on their corresponding terga.

Variability of the paratypes. One specimen had a length of 6 mm; the heads of

both paratypes are less brownish than that of the holotype.

Distribution: Yemen.

Specimens examined. Holotype ♂ - **Yemen**: Lahj, 1 ♂ IV.2001, Mal. trap. n° 5691/92, leg. A. v. Harten & A. Sallam, RMNH'01 (PG).

Paratypes – **Yemen**: 1 ♂ Lahj, 1 ♂ IV.2001, Mal. trap. n° 5691/92, leg. A. v. Harten & A. Sallam, RMNH'01 (NMNH); Lahj, 1 ♂ XI.2000, Mal. trap. n° 5202, leg. A. v. Harten & A. Sallam, RMNH'01 (PG).

Derivatio nominis. The species is dedicated to Antonius van Harten, editor of the fauna of the UAE and noted collector and entomologist.

Female unknown.

Apterogyna dhofarensis yemenensis subsp. n. (figure 1)

Description of the Holotype ♂

Body length 8.5 mm.

This subspecies differs from the nominal subspecies for characters listed below. The admedian lines are barely visible, more evident in *A. dh. dhofarensis*; anterior wings lightly brownish along their anterior margins, between the discoidal cell and the margin of the wing; tergum II with a layer of silvery pubescence on the distal margins, missing in *dh. dhofarensis* for which the tergum II may have a few hairs along the apical margin; the punctuation on sternum III is farther apart and individual spots are smaller with, in addition, a large fascia transversal sub-distal smooth and without punctures and thence one apical series of appressed punctures.

Female unknown.

Variability of the paratypes. All the samples examined had the same body length; one paratype has the wings completely hyaline, excluding the brown colour of the wing veins.

Distribution. Yemen.

Specimens examined. Holotype ♂ - **Yemen** (7585), 12 km NW Manakhan, mal. trap., 1 ♂ 15/V-23/VI. 2003, leg. A. v. Harten, RMNH '03 (PG).

Paratypes. **Yemen**, 3 ♂♂ ibidem of the holotype (2 ♂♂ in PG, 1 ♂ in NMNH); **Yemen** (7547), 12 km NW Manakhan, mal. trap., 1 ♂ 1/I-7/V. 2003 (NMNH) (sample lacking the last 6 segments of the metasoma).

Derivatio nominis. Dedicated to the region where the type specimens were collected.

Female unknown.

Key to **Apterogyna** from Arabian Peninsula

♂ ♂

1. Head, mesosoma and metasoma (or gaster) black..... 2
– At least tergum I of gaster red 4
2. Terga II and III of gaster with apical fascia of silvery setae (figure 1)
..... **dhofarensis yemenensis** sp. n.
– Terga II and III of gaster without apical fascia of silvery setae 3



Figure 1 Habitus of *Apterogyna dhofarensis yemenensis* ♂

3. Habitus in figure 2; notaui of mesosoma very wide and deep, with considerable perpendicular carinae, at caudal end wide as the eye (figure 3).....
..... **saidensis** Pagliano
– Head: figure 4; notaui of mesosoma linear and superficial (figure 5); gaster: figure 6; genitalia: figure 7 **dhofarensis dhofarensis** Pagliano



Figure 2 Habitus of *Apterogyna saidensis* ♂

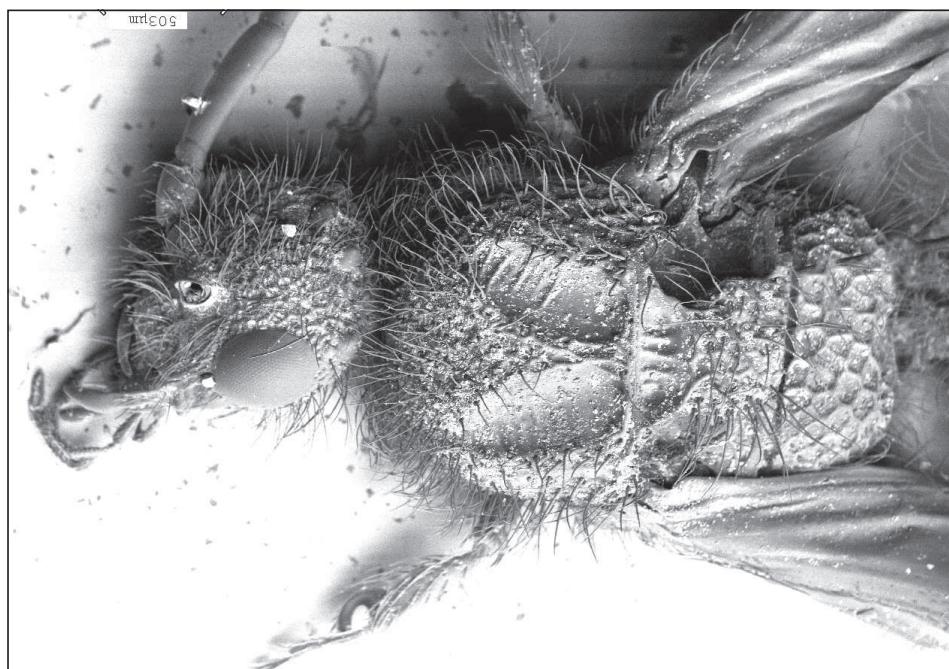


Figure 3 Notauli of *Apterogyna saidensis* ♂

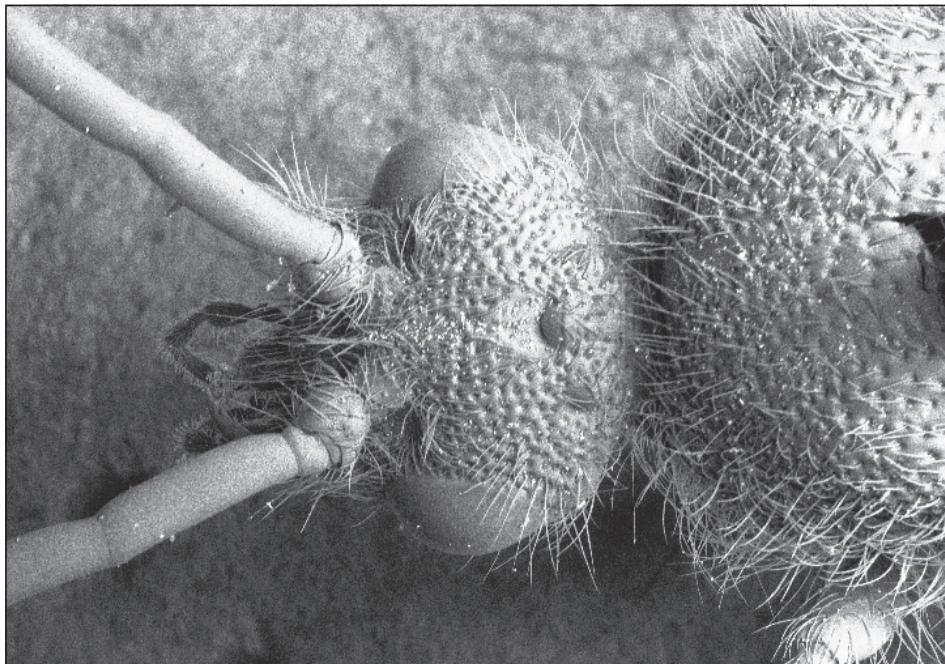


Figure 4 Head of *Apterogyna dhofarensis dhofarensis* ♂

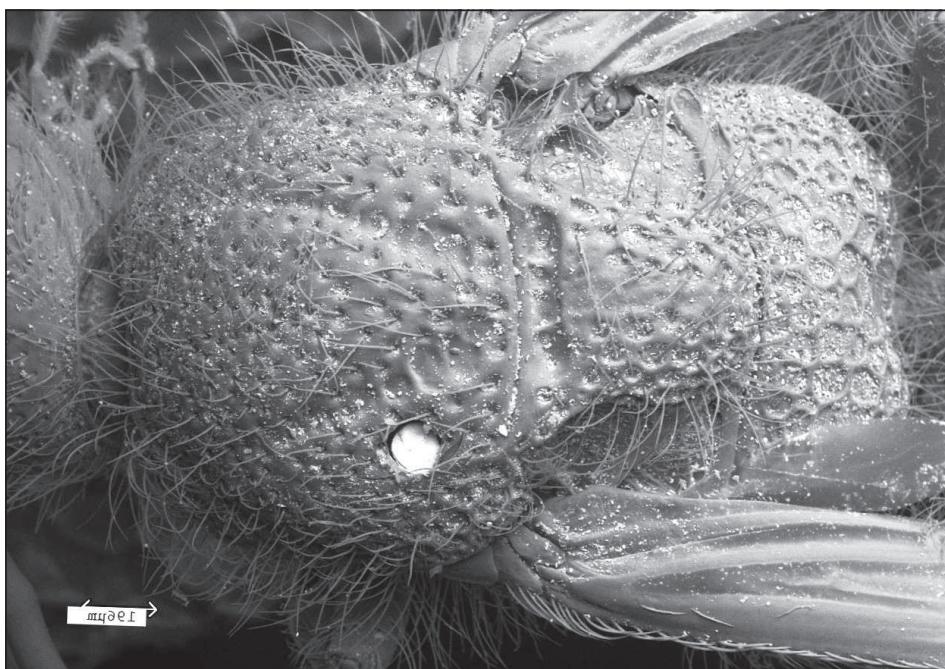


Figure 5 Notauli of *Apterogyna dhofarensis dhofarensis* ♂

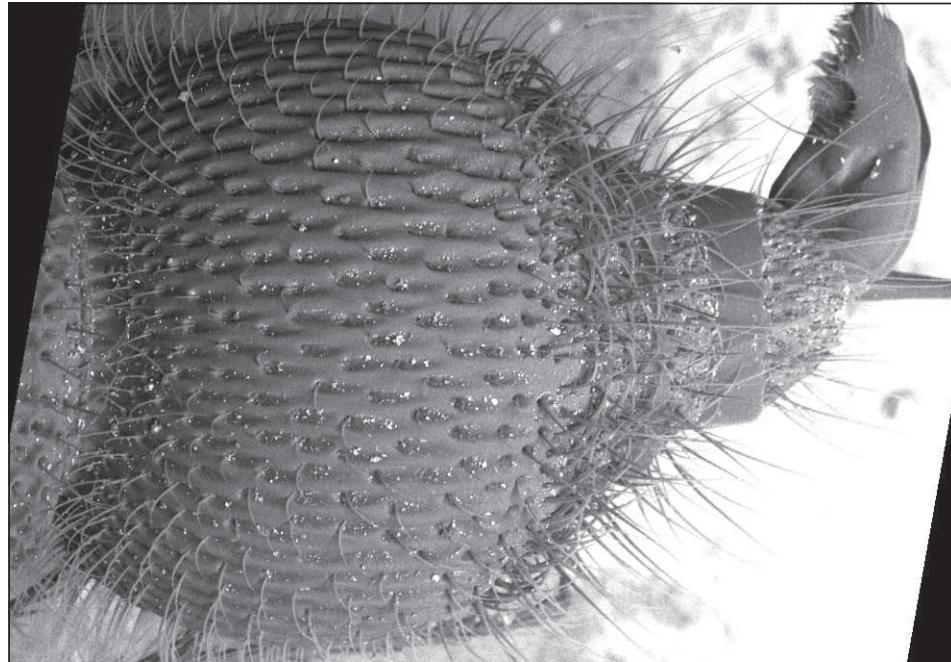


Figure 6 Gaster of *Apterogyna dhofarensis dhofarensis* ♂



Figure 7 Genitalia of *Apterogyna dhofarensis dhofarensis* ♂

4. Ocellar diameter about equal to that of antennal article III; genae markedly convergent posterad; mesosoma bright red; tergum I longer than wide **concii** Invrea
- Ocellar diameter less than one half that of antennal article III; genae barely convergent posteriorly 5
5. Body length 10-13 mm. Mesosoma black except propodeum red; terga I and II apicomesally each with ill-defined tuft of white setae; genitalia: figure 8 **olivieri** Latreille
- Body length 6-7 mm. Habitus: figure 9. Mesosoma red; terga II and III of gaster with a well-defined apical fasciae of silvery setae **vanharteni** sp. n.

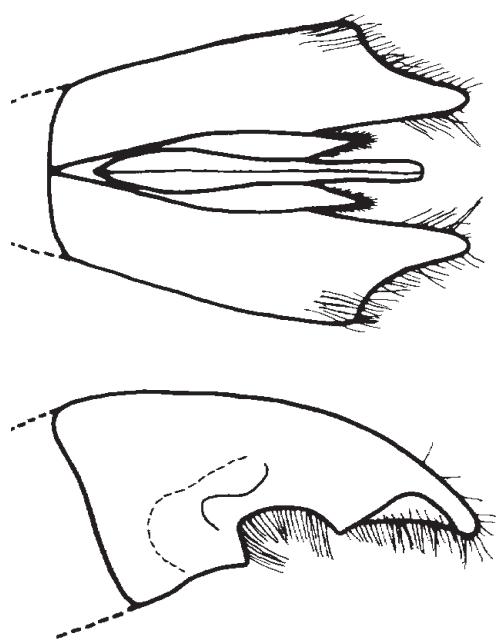


Figure 8 Terga I-II of *Apterogyna olivieri* ♂



Figure 9 Habitus of *Apterogyna vanharteni* ♂

Genus ***Macroocula*** Panfilov, 1954

Macroocula vanachterbergi sp. n. (figures 10a, 10b)

Description of the Holotype ♂

Body length 14 mm.

Colour. Head, mesosoma and I segment of the metasoma reddish brown; mandible blackish; base of the antennae similar to the head, lighter from the V-VI articulations where they become paler red. Segments II-VI of the gaster are black, the VII reddish brown including the apical hook. Body with white pubescence; metasoma lacking silvery pubescence on the distal margins.

Morphology. Head robust, transversal; ocelli large, with diameter equal to the diameter of the III articulation of the antennae. Eyes very large, from the side as wide as the head; malar space as long as the diameter of the III articulation of the antennae; the antennae are of the usual form and are as long as the body; frons with appressed punctuation, the punctures spaced on vertex where is one transverse fascia without punctuation.

Mesosoma. Pronotum fairly large with large dorsal foveae and small longitudinal impressions like little longitudinal ridges, lateral striae; humeral tubercles appressed at the tegulae. Mesonotum and scutellum with large punctures irregularly spaced; mesoscutum with distinct notauli along its entire length; pleura and propodeum with large foveae; metapleuron with ample foveae on the dorsal half, reduced on the ventral half where they tend to form small striae longitudinal. Wings burnished with a tendency to blacken in the anterior half of the I pair; posterior wings with 10 hamuli. Legs, unusually, with black spurs on the tibia instead of brilliant white.

Metasoma. Margins of the segments lacking evident adherent fasciae of silvery pubescence. Peziolo with convergent sides near the anterior margin, approximately as long as wide; tergum foveate; sternum foveate at the centre, the foveae are reduced to punctures at the anterior margin between which there is a short longitudinal carina, the posterior margin is marked by short but distinct longitudinal striae. Tergum II with evident lateral felt lines, with fairly regular foveae on both dorsal and ventral sides, the ventral side including a deep longitudinal impression. Tergum III with foveae which from the base gradually transform into oblong punctures, at first wider, then reduced gradually towards the distal margin; sternum III with oblong punctures which from the base are

spaced to leave a smooth area at the centre posterior position, and afterwards are present appressed punctures of size variable. Tergum and sternum IV-VII with dense punctures forming small striae except on the anterior margin of each segment, which are free of punctures. Hook on the last segment of the gaster has the expected form. Genital apparatus with median lobe of genitalia much shorter than parameres (figure 11).

Variability of the paratypes. No visible morphological differences; instead, the length of the body is rather variable with some individuals as long as 8 mm.

Specimens examined: Holotype ♂ - **United Arab Emirates**, Sharjah x Khor Kalba (6308+6311), light trap 31.V-7.VI-2006 A. V. Harten, RMNH'06 Paratypes: 7 ♂♂ **United Arab Emirates**, Sharjah x Khor Kalba (6308+6311), light trap 31.V-7.VI-2006 A. V. Harten, RMNH'06. One ♂ in the Romano collection (Sicilia) (MR), 3 ♂♂ in (PG), 3 ♂♂ in (NMNH).

Derivatio nominis. The species is dedicated to Kees van Achterberg, a Dutch specialist in Braconidae.



Figure 10a Habitus of *Macroocula vanachterbergi* ♂ from above (dorsal view)

Figure 10b Habitus of *Macroocula vanachterbergi* ♂ from the side (lateral view)

Figure 11 Genitalia of *Macroocula vanachterbergi* ♂

Key to **Macroocula** from Arabian Peninsula

♂ ♂

(*M. mahunkai* is not included)

1. Tibial spurs dark in colour **vanachterbergi** sp. n.
- Tibial spurs silvery white 2

2. Tergum III conspicuously silvery fasciate apically (figure 12); genitalia: figure 13 **soknaensis** (Invrea)
– Terga II and III inconspicuously silvery fasciate apically 3

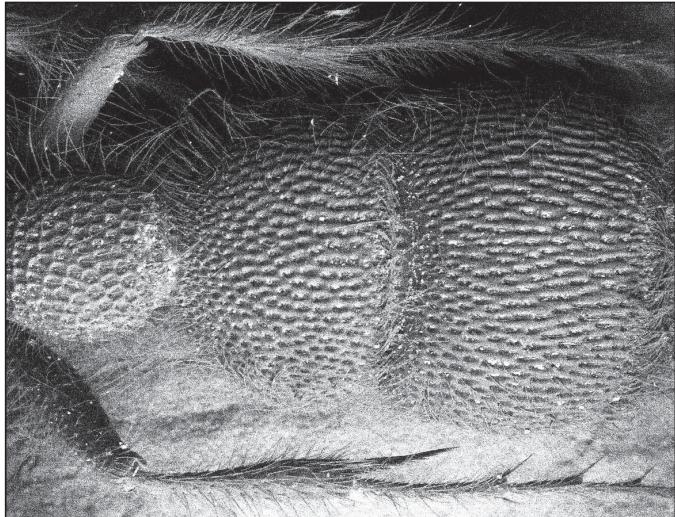


Figure 12 Tergum III of *Macroocula soknaensis* ♂

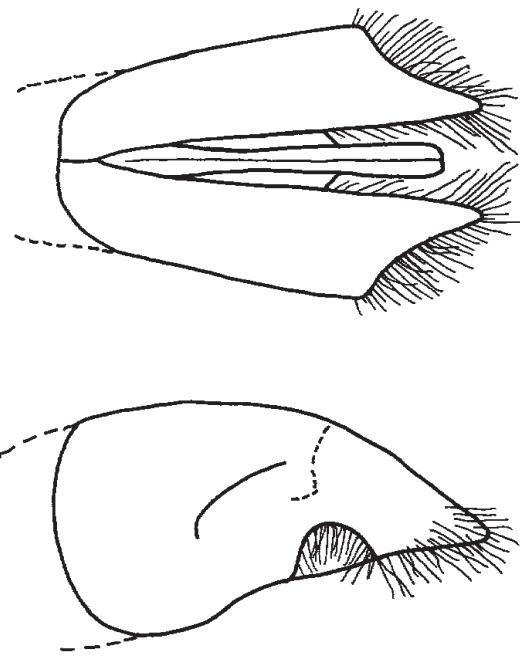


Figure 13 Genitalia of *Macroocula soknaensis* ♂

3. Tegument of body yellow pale; trochanter III with ventral protuberance or ventral tooth similar to that on II 4
– Tegument of body yellow pale or partly black and/or red; trochanter III without ventral protuberance or tooth 5

4. Length 14 mm; mesoscutum with confluent punctures and areolae; metapleuron with small ridges; length of tergum I about 1.2 times maximum width; terga II and III (figure 14) same color as thorax; terga IV and V densely punctatostriate apically; genitalia: figure 15 **ohli** Pagliano
– Length 10 mm; mesoscutum with punctures about 0.5 diameters apart; metapleuron punctate with smooth area at spiracle-level; length of tergum I (figure 16) about 1.3 times maximum width; terga II and III slightly darker than thorax; terga IV and V with punctures about 1 diameter apart apically
..... **silviori** Pagliano

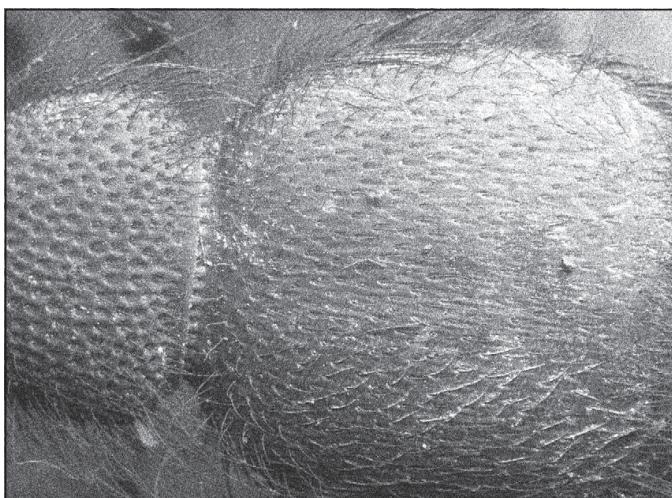


Figure 14 Terga II-III of *Macroocula ohli* ♂

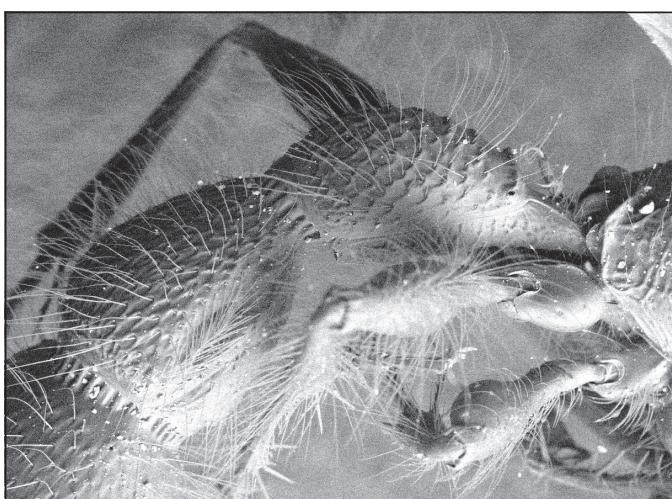


Figure 16 Tergum I of *Macroocula silviori* ♂

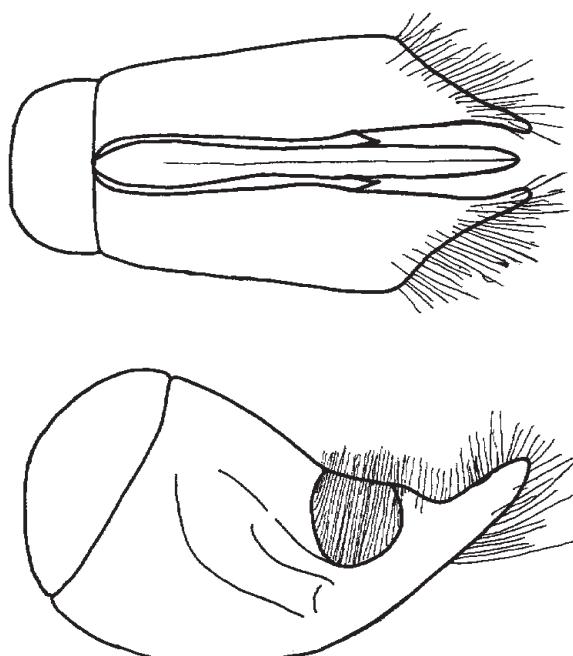


Figure 15 Genitalia of *Macroocula ohli* ♂

5. Length 10-13 mm; integument yellow, in some specimens terga II and III somewhat dark; minimum length of malar space about equal to diameter of antennal article III; legs yellow **6**
- Length 6-15 mm; tergum III darker than thorax; minimum length of malar space about equal to or less than diameter of antennal article III; femora, usually only hind femora, brownish in some specimens **7**
6. Frons between midocellus and antennal lobe punctate with intermingled small, large punctures; metapleuron with conspicuous longitudinal parallel ridges below spiracle; terga I and II: figure 17; genitalia: figure 18 **yemenita** (Invrea)
- Habitus: figure 19. Frons between midocellus and antennal lobe with uniform punctures in ventral half; metapleuron below spiracle with smooth, shiny area, with inconspicuous ridges beneath it; terga I and II: figure 20 ; genitalia: figure 21 **andreati** Pagliano

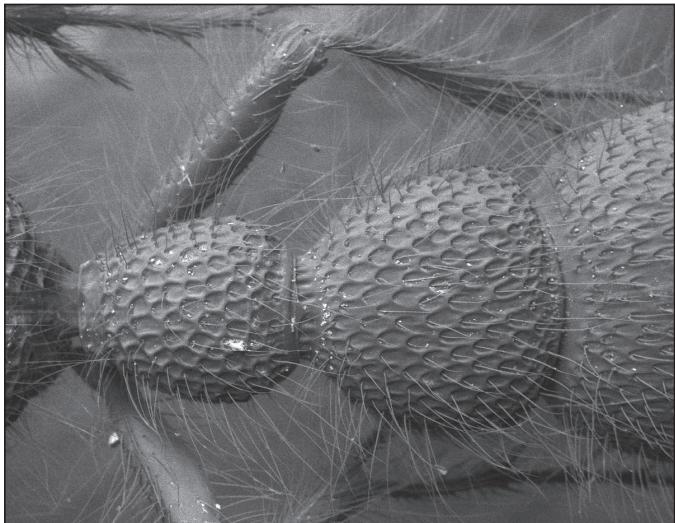


Figure 17 Terga I-II of *Macroocula yemenita* ♂

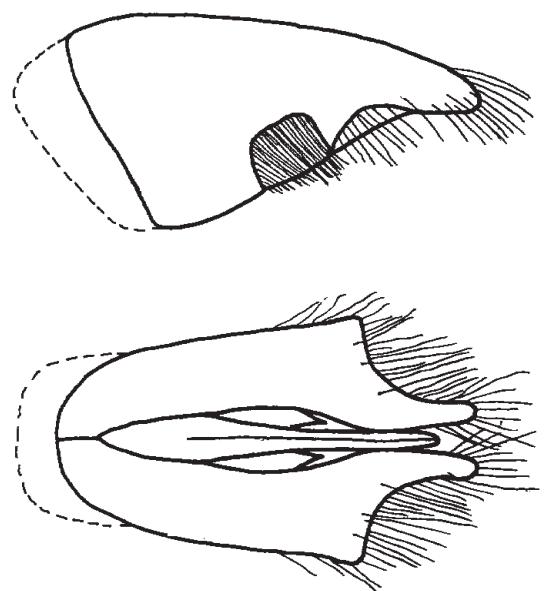


Figure 18 Genitalia of *Macroocula yemenita* ♂



Figure 19 Habitus of *Macroocula andrei* ♂

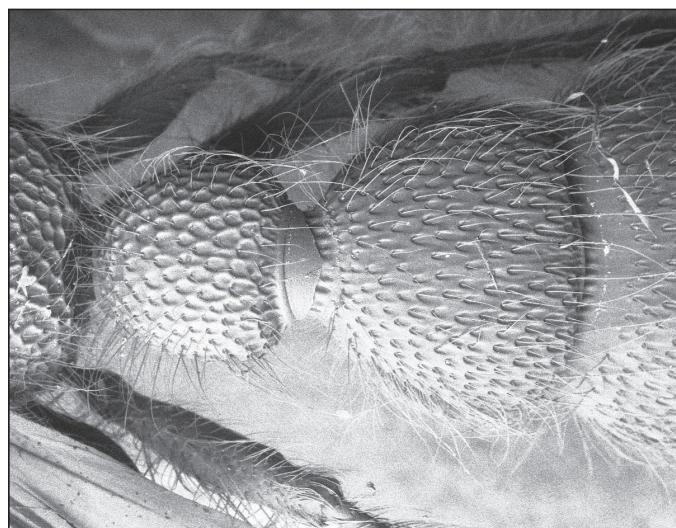


Figure 20 Terga I-II of *Macroocula andrei* ♂

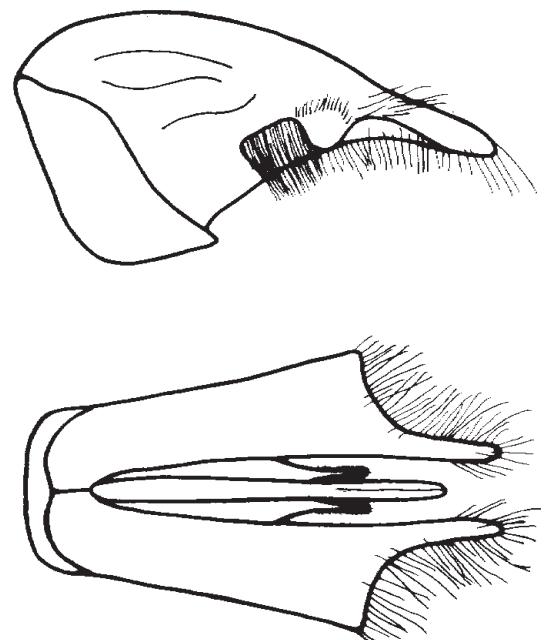


Figure 21 Genitalia of *Macroocula andrei* ♂

7. Frons, mesosoma and tergum I brown dark; terga II-VII black 8
– Frons differently coloured; only tergum I light brown as the thorax 9
8. Habitus: figures 10a, 10b; antennae and mandibles black; palpi brown; genitalia: figure 11 **vanachterbergi** sp. n.
– Habitus: figure 22 ; antennae yellow; mandibles yellow in basal half, black in distal half **arabica** Pagliano



Figure 22 Habitus of *Macroocula arabica* ♂

9. Metapleuron punctate; tergum I subcylindrical, in dorsal view, length 1.40 maximum width; punctures of sternum III 2-3 diameters apart **10**
 – Metapleuron striated, in some specimens with intermingled punctures between ridges; tergum I subconical, in dorsal view, length 1.36 maximum width; sternum III with punctures variously spaced **11**
10. Punctures of scutum 1 diameters apart; femora II and III partly brown; gaster: figure 23; genitalia with apex of median lobe reaching that of parameres (figure 24) **savignyi** (Klug)
 – Punctures of scutum 2-3 diameters apart; femora II and III yellow; terga II and III: figure 25; genitalia with apex of median lobe reaching midlength of parameres **huddlestoni** Pagliano

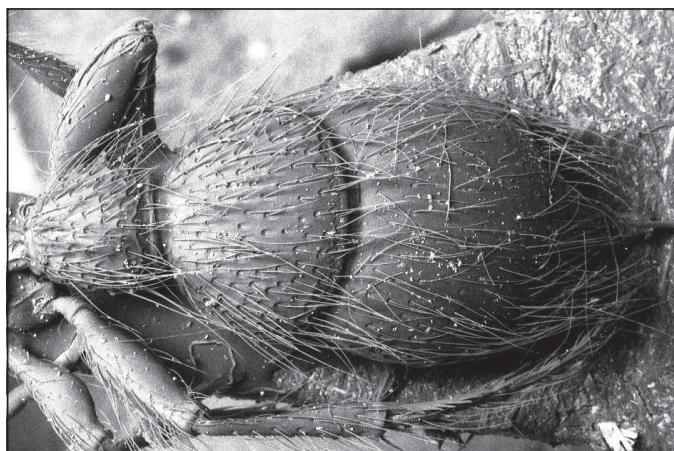


Figure 23 Terga II-III *Macroocula savignyi* ♂

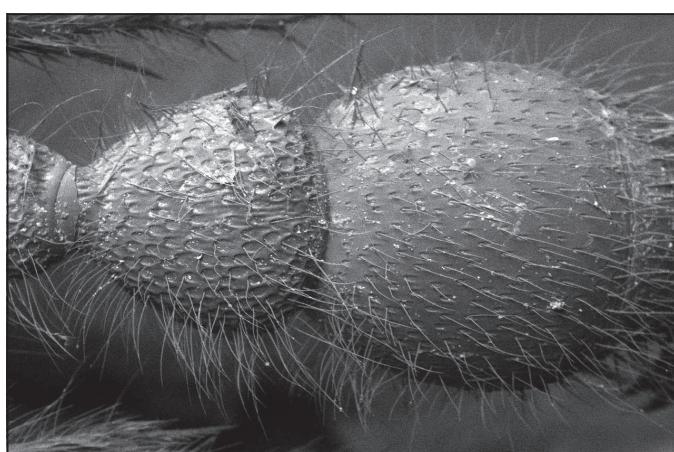
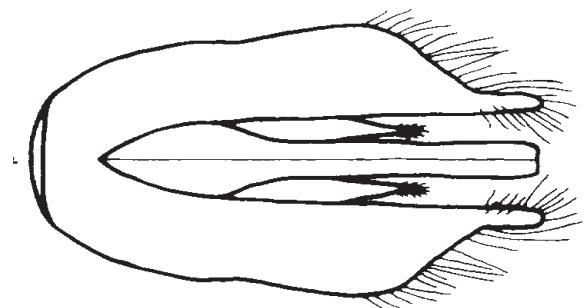


Figure 25 Terga II-III *Macroocula huddlestoni* ♂

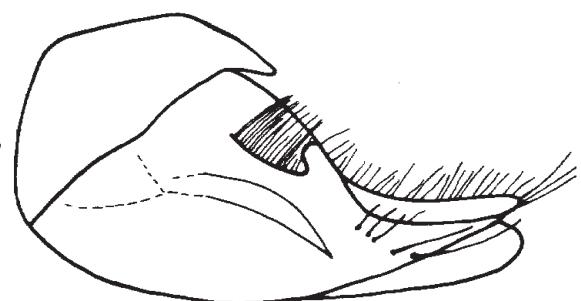


Figure 24 Genitalia of *Macroocula savignyi* ♂

11. Length 10 mm; frons almost all punctate between midocellus and antennal lobe; terga I and II: figure 26; metapleuron with small ridges that are intermingled with largely spaced superficial punctures; genitalia: figure 27 ... **sinaica** (Invrea)

– Length 12-13 mm; frons between midocellus and antennal lobe mostly smooth, unpunctuated and shiny; mesoscutum anteromedially surface with confluent, uniform punctures; metapleuron in ventral half with subparallel, regularly spaced, conspicuous ridges; terga I-II: figure 28; parameres of genitalia slenderer (figure 29) **mutilloides** (Smith)



Figure 26 Terga I-II of *Macroocula sinaica* ♂

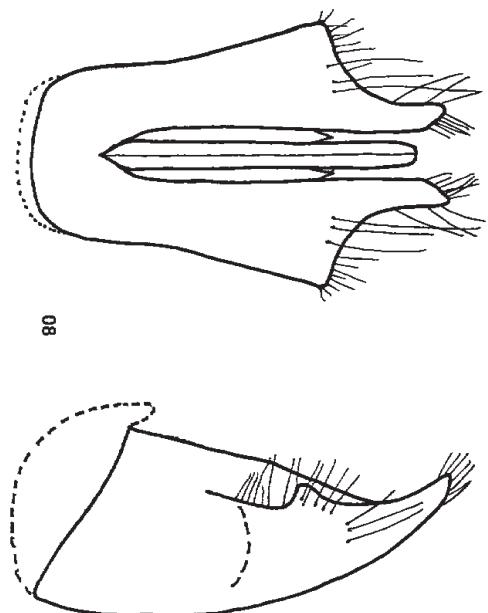


Figure 27 Genitalia of *Macroocula sinaica* ♂

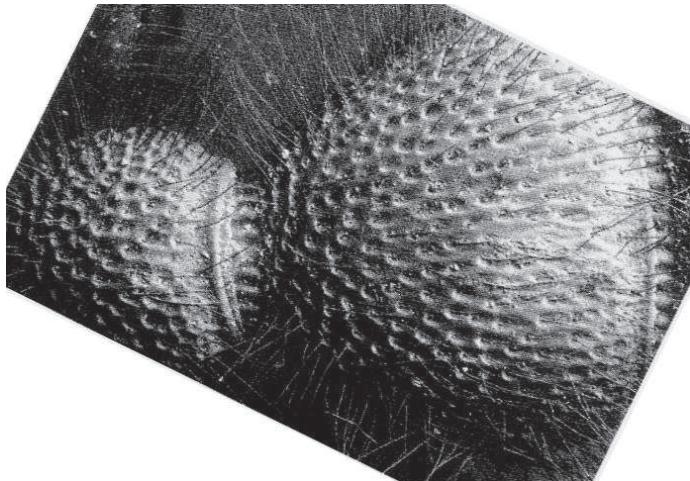


Figure 28 Terga I-II of *Macroocula mutilloides* ♂

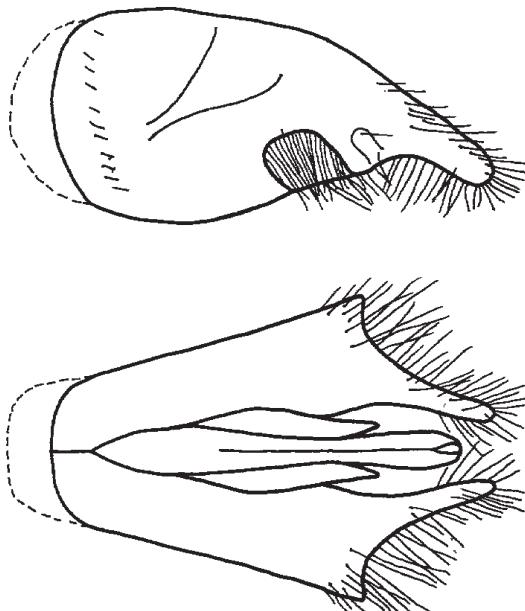


Figure 29 Genitalia of *Macroocula mutilloides* ♂

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