

# Order Hymenoptera, family Leucospidae

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## INTRODUCTION

The hymenopterous family Leucospidae belongs to the superfamily Chalcidoidea and is subdivided into 4 genera. In the Palaearctic region only the genus *Leucospis* Fabricius occurs; it has 109 species worldwide and 67 species in the Old World. The genus includes medium-sized to large wasps (6–15 mm) and represents the largest species of Chalcidoidea. *Leucospis* species have often a black and yellow colour pattern and a specially shaped female ovipositor. It is curved forwards above the metasoma, reaching the scutellum in some species. Black colour may be replaced by red, and yellow color by white. The hindfemora are markedly thickened, with a row of teeth below. Leucospidae are rather specialized in their host relations and develop as parasitoids in nests of Aculeate Hymenoptera. Most Palaearctic species parasitize solitary bees of the family Megachilidae.

The world species of Leucospidae have been revised by Bouček (1974). He listed only *Leucospis elegans* Klug, 1834, for Saudi Arabia and *Leucospis insularis* Kirby, 1900, from Socotra island. Other Leucospidae from Arabia are not known.

## MATERIALS AND METHODS

This chapter is based on material collected by E. Sugden (deposited in the California State Collection of Arthropods, Sacramento, USA), by A. van Harten (deposited in the Canadian National Collection of Insects, Ottawa, Canada = CNC), and by the author during a trip to the UAE in March 2009 (deposited in the author's collection). The CNC also includes a few other specimens from the Arabian Peninsula, which are mentioned here. The systematic account follows that of Bouček (1974). Fifth tergite sensu Bouček (as used here) is the third visible tergite in dorsal view, because second and third tergites are hidden laterally.

## SYSTEMATIC ACCOUNT

### *Leucospis elegans* Klug, 1834

Plates 1–2

Specimens examined: Al-Ajban, 1♀, 2.4.2008, in Malaise-trap, leg. A. van Harten. Dubai, Nakhalai, 1♀, 24.iv.1984, in Malaise-trap, leg. E. Sugden; Dubai, al-Awir, 1♀, 26.v.1984, in Malaise-trap, leg. E. Sugden. Wadi Bih, 1♀, 1♂, 19.iii.2009, collected with hand-net, leg. C. Schmid-Egger. EGYPT: Oasis Al-Fayium, Birkat Qarun, 1♀, 25.ix.1992, collected with hand-net, leg. C. Schmid-Egger. OMAN: Muscat, 23°36'N 58°24'E, 1♀, 10.iv.1989, in Malaise-trap. leg. M. Gallagher. YEMEN: Lahj, 1♂, 1♀, 17.xii.2001-31.i.2002, in Malaise-trap, leg. A. van Harten & A. Sallam.

Remarks: The females from the UAE agree in morphology with the description of Bouček (1974) and with the examined female from Egypt. They differ in colour as follows: Scape completely reddish in one female (with yellow band in specimens from Egypt and remaining females), Tergum I reddish (with two oval yellow spots above in female from Egypt), pale gaster colour whitish-yellowish (lemon yellow in female from Egypt), and medial brownish spot on hind femur smaller than half hind femoral surface (larger than half surface in female from Egypt). In the specimens from Yemen, the black colour is completely replaced by light red. Ovipositor is just reaching hind margin of tergum I in all examined specimens. It is shorter according to the description of Bouček (1974).



Plates 1–2. *Leucospis elegans* Klug. 1: Female, 2: Male. Body length of both: 6 mm.

Distribution: Egypt, Sudan, Saudi Arabia, Pakistan (Bouček, 1974). New to the UAE, Oman and Yemen.



Plate 3. *Leucospis* aff. *namibica* Bouček, female, from Yemen.

***Leucospis* aff. *namibica* Bouček, 1974**

Plate 3

Specimens examined: YEMEN: Lahj, 2♀, 17.xii.2001-31.i.2002, in Malaise-trap, leg. A. van Harten & A. Sallam. BOTSWANA: Serowe, Farnes Brigade, 1♀, x.1984, in Malaise-trap, leg. P. Forchhammer.

Remarks: The two examined females from Yemen key out to *namibica* in Bouček (1974) and agree with description in most characters. They mainly differ in lack of any pronotal carina. Black colour is partly replaced by red. Otherwise, the main characters are: ovipositor very short and just reaching horizontal surface of tergum V (= apical third of tergum V), latero-dorsal surface of hind coxa markedly striate with a smooth shiny area. Another female from Botswana also agrees with specimens from Yemen, and differs from the description of *namibica* by a completely black mesonotum. Also, the dorso-lateral surface of the hind coxa is microsculptured, not striate. Only type comparison and revision will reveal the true taxonomical state of the specimens from Yemen; provisionally they are treated as aff. *namibica*.

The finding of *namibica* or a closely related taxon in the Arabian Peninsula is unexpected, because it is known from Namibia only. On the other hand, such a distribution pattern (southern Africa – Arabia) is also known from other wasp species, eg. in Sphecoidea (Schmid-Egger, in preparation).

Distribution: Namibia (Bouček, 1974). New to Yemen and Botswana.

***Leucospis vanharteni* Schmid-Egger nov. spec.**

Plates 4–7

Specimens examined: Holotype: ♀, United Arab Emirates, Wadi Helo, near tunnel, 24°97'N 56°22'E, 19.iii.2009, collected with hand-net, leg. C. Schmid-Egger (deposited in Museum für Naturkunde Berlin, Germany).

Diagnosis: *Leucospis vanharteni* belongs to the *gigas* species group and the *miniata* subgroup sensu Bouček (1974). It is characterized by two weak pronotal cross-carinae, by a row of large hind femoral teeth, which are larger than basal tooth, and by a rounded metanotum (dorsellum). The metanotum is markedly bidentate in the related *L. gigas* subgroup. *Leucospis vanharteni* keys out with *miniata* in the key of Bouček (1974: 104). It differs from *L. miniata* by the following characters:

<i>Leucospis vanharteni</i>	<i>Leucospis miniata</i>
Colour pattern: Head and mesosoma all reddish, except upper head and lower mesopleuron. Abdomen: tergum I red with narrow yellow band, remaining terga all yellow.	Colour pattern: Head and mesosoma with a reddish or yellow colour pattern, leaving about 50% of surface black. Yellow or red bands of abdomen approximately half as wide as remaining black space.
Pronotum: Anterior transverse carina medially emarginated in contradistinction to posterior transverse carina. Minimal distance between both carinae less than diameter of hind ocellus.	Pronotum: Anterior transverse carina parallel to posterior transverse carina. Minimal distance between both carinae about one diameter of hind ocellus.
Metanotum (dorsellum) with indistinct transverse carinae in posterior third.	Metanotum evenly rounded.
Hind femur: Punctures of medial area 0.3–0.6 × its diameter apart, interspaces shiny.	Hind femur: Punctuation dense, interspaces very small or invisible.

Another similar species is *L. incarnata* Westwood, 1839, from South Africa. It is characterized by a sparser punctuation, compared with *miniata*, and differs according to description of Bouček (1974) by colour pattern (terga with yellow spots only in *incarnata*, all yellow in *vanharteni*).

Description: Body length 11.5 mm. Colour: Head, antenna, mesosoma and legs orange reddish with the following parts black: Lower half of clypeus, apical half of mandible, lower part of mesopleuron, mesosternum, teeth on hind femur. Tergum I dark reddish except for a narrow yellow medial band, remaining terga yellow with brownish margin. Hind femur medially somewhat yellowish-reddish. Fore and hind wings yellowish with reddish venation, apical third strongly fuscous. Indentation above antennal socket, upper frons and orbit behind eyes in upper part black. Morphology: Clypeus produced, similar to *L. miniata* or *L. gigas*. Flagellomere I 0.85 × as long as flagellomere II. Pronotum with two weakly expressed cross-carinae, anterior carina approximately the distance of one ocellar diameter apart from marginal carina, medially emarginated posteriorly. Metanotum with elevation, margin of punctures form a kind of cross-carina in apical fourth, metanotum apically vertical. Propodeum medio-basally with short, longitudinal and rounded elevation. Ovipositor reaching apical fourth of tergum I. Hind coxa evenly punctate. Hind femur with small basal triangular tooth (tooth I) and 6 longer apical teeth (teeth I–VII). Teeth II and III spine-like, remaining teeth apically truncate, tooth VI and VII connected. Hind tibia ending in a distinct tooth. Punctuation of terga I–III and of hind femur sparse, punctures on terga 0.1–0.5 diameters apart, those of



Plates 4–6: *Leucospis vanharteni* nov. spec. 4: Holotype female, laterally; 5: Frons with clypeus; 6: Hindleg.

hind femur  $0.3\text{--}0.6 \times$  diameters apart. Remaining terga with dense punctation, no interspaces visible.

Male unknown.

Discussion: *Leucospis vanharteni* differs from the closely related *Leucospis miniata* Klug, 1834, mainly by its colour pattern. *Leucospis miniata* occurs in a red and a yellow colour form. I could examine both (one red coloured female from Tunisia, two yellow coloured females from Israel). The colour pattern of both forms is more or less similar (see table below), and differs markedly from the colour pattern of *L. vanharteni*. Also, the punctation of hind femur is sparser in *L. vanharteni* than in *L. miniata*. For other characters, see below.

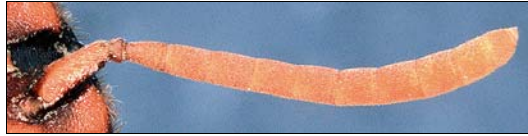


Plate 7. *Leucospis vanharteni* nov. spec., right antenna.

Ecology: The specimen was collected by hand-netting on flowering *Ochradenus aucheri* (Resedaceae).

Distribution: Only known from the Hajar mountains in eastern UAE.

Derivatio nominis: The species is dedicated to Antonius van Harten, the coordinator of the UAE Insect Project.

### Key to the Arabian species of *Leucospis*:

- 1 Pronotum with three distinct transverse carinae ..... 2
- Pronotum with at most two transverse carinae, carinae less developed ..... 3
- 2 Discal (basal) carina weak and straight, slightly lower than premarginal carina which may be slightly arcuate or angulate (Pubescence unusually long although thin; hind femur slender, pronotal sides converging, concave, ovipositor reaching hind fifth of first tergite which has distinct ovipositorial furrow in posterior third; medial teeth of hind femur small), Socotra ..... *Leucospis insularis* Kirby (not treated here)
- Discal carina very strong, at least as high as the premarginal one and both distinctly angulate ..... *Leucospis elegans* Klug
- 3 Middle teeth of hind femur distinctly longer than basal triangular tooth. Dorso-lateral surface of hind coxa evenly punctate. Female: Ovipositor reaching base of tergum I.....  
.....*Leucospis vanharteni* Schmid-Egger nov. spec.
- Middle teeth of hind femur shorter than basal triangular tooth. Dorso-lateral surface of hind coxa with longitudinal edge, above with smooth and shiny space, basally with fine striation. Female: Ovipositor much shorter, ending in apical third of tergum V.....  
.....*Leucospis* aff. *namibica* Bouček

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### REFERENCES

- Bouček, Z. (1974): A revision of the Leucospidae (Hymenoptera, Chalcidoidea) of the World. *Bulletin of the British Museum (Natural History). Entomology*. Suppl. 23, 241 pp.

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