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Andrena (*Chlorandrena*) *harisi*, a new bee species from Libya (Hymenoptera: Anthophila, Andrenidae)

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Schwenninger, H. R.: *Andrena (Chlorandrena) harisi new species from Libya (Hymenoptera: Anthophila, Andrenidae).*
Abstract: *Andrena* (*Chlorandrena*) *harisi* **n. sp**. from Libya is described and illustrated. Characters for separation of this new species from similar *Andrena* (*Chlorandrena*) *pyrrhula* Pérez, 1895 are provided.

Keywords: New species, taxonomy, Libya, Hymenoptera, Andrenidae

Introduction

Attila Haris (Budapest) collected bees in the subcoastal area of the Cyrenaica at Marsa El Brega (Libya). He sent a number of *Andrena* specimens from this site to the author for identification. Among them were several specimens belonging to an *Andrena* species new to science, which is described below.

Material and methods

In this study specimens of intensively red coloured *Andrena*-species of the subgenus *Chlorandrena* were examined. Beside the specimens collected by Attila Haris, the author also checked other collections, especially the extensive ones of Maximillian Schwarz and the Upper Austrian State Museum Linz. Thomas J. Wood provided a male of the subgenus *Chlorandrena* with intensively red pubescence

Acronyms of depositories

OÖLL	Collection of the Upper Austrian State Museum, Linz, Austria
SCMK	Collection of the Rippl-Rónai Museum, Kaposvár, Hungary
Scer	Collection Erwin Scheuchl, Ergolding, Germany
Scwe	Author's collection, Stuttgart, Germany
Scwz	Collection Maximilian Schwarz, Ansfelden, Austria

The morphological studies were carried out with a stereo microscope SZX16 (Olympus). For the photographs the digital camera SC180 (Olympus) was used. The objects were focused up by several steps beginning at the bottom. The software

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"Olympus cell" revealed a photo in combining the different shootings that were taken during the up-stacking process. All measurements were done using the SZX16 and the software "Olympus cell".

For morphometric measurements the following characters were chosen (abbreviation and used magnification in brackets):

Body length (BL, 100x) from antennal base to tip of pygidium; head length (HL, 160x) from top of vertex to lower margin of clypeus excluding process of labrum; head width (HW, 160x); wing length (WL, 125x) length of forewing from tip to insertion at thorax; Antenna flagellum and scape (AN and SC, 160x); flagellomeres length (FL1-12, 200x) measured on ventral surfaces of flagellomeres when antenna stretched forward.

Each studied specimen was labelled with a unique identification number and letter sequence (= ID-No.) which is also recorded in the author's database. Each data record includes, as far as available, information about locality, geographic coordinates, date, collector, collection (= depository), and identifier.

Abbreviations:

Morphological terms and abbreviations used in this paper mainly follow MICHENER (1944, 2007).

AN – antenna, BL – body length, coll. – collection, FL – flagellomere(s), HL – head length, HW – head width, L, W – maximum length, respectively width, leg. – legit, N, E – latitude respectively longitude, Pd – puncture diameter, S – metasomal sternum, SC – scape, T – metasomal tergum, WL – length of forewing.

Results

Andrena (***Chlorandrena***) ***harisi*** sp. n.
(Figs. 1-5)

Diagnosis

Based on the typical characters of the females, i.e. a row of spines on the back side of the hind femur and plumose (strongly branched) hairs on the corbiculae (see Fig. 1), the new species belongs to the subgenus *Chlorandrena* Pérez, 1890. The species of this subgenus are heterogeneous and differ in both sexes in several traits. WARNCKE (1968) divided *Chlorandrena* in three parts: the humilis-, taraxaci- and livens -group (named after the most characteristic species). The shape of the facial foveae is the main tool to separate the females of the different taxa-groups within the subgenus *Chlorandrena*. The females of the new species are characterized by elliptical-shaped facial foveae, extending about as half as long as the compound eyes. The terga are without typical crater punctures (see also SCHWENNINGER 2015). Therefore, the new species is assigned to the *Andrena* livens-group.

Holotype (♀): LIBYA: Munizip al-Wahat, Marsa el Brega, 30.424225°N, 19.640458°E: 12.III.2013, leg. A. Haris, coll SCMK (ID-No. 130126scwe062).

Paratypes (7 ♀♀): LIBYA: Munizip al-Wahat, Marsa el Brega, 30.424225°N, 19.640458°E: 8.III.2013 (ID-No. 130126scwe001), 12.III.2013 (ID-No. 130126scwe023), 15.III.2013 (ID-No. 130126scwe004), 17.III.2013 (ID-No. 130126scwe002), 20.III.2013 (ID-No. 130126scwe022), all leg. A. Haris and coll SCMK; 5.III.2013 (ID-No. 130126scwe003), 13.III.2013 (ID-No. 130126scwe005) all leg. A. Haris and coll Scwe.

Description

Female (holotype, BL = 13,87 mm)

Coloration: Integument predominantly red except head and mesosoma black, terga 1 basally darkened except for the middle, T1 and T2 lateral on each side with black spots, T2 in the middle with black spots, T3 and T4 with black bands in the middle of the discs, T5 except the base brownish, T6 brownish and pygidium black (see Fig. 2), sterna 3-6 distally darkened brownish. – Scapus and pedicellus except at the apex black, FL 3-10 at the apex dark striped. – Trochanter, femur and base of tibia brown, distally lightened reddish. Tarsae and tibial spurs red. – Wing membrane hyaline, brownish obfuscated, and pterostigma brown, veins light to dark brown, tegulae transparent red, distally hyaline.

Pubescence: Hairs intensively red except hind margins of sterna T5 and T6 with brown hairs, black bands of T3 and T4 with dark brown hairs. – Hind margins of T1-T4 fimbriate with bands of red hairs, on T3 and T4 covering the entire depressions, T5 and on caudal fimbria with brown hairs; sterna with erected red hairs, shorter on the discs (160 µm), more than twice as long at the depressions (420 µm). – Middle and hindlegs on apex of femur and base of tibia (knees) with dark brown hairs. – Facial fovea on upper side with golden pubescence, downwards whitish yellow; hairs on head faintly plumose as long as FL 2 + 3, on meso- and metasoma hairs shorter, scopa with hairs heavily plumose, longer than length of the hind spur.

Head: transverse, HL = 3.1 mm, HW = 3.7 mm, HL/HW = 0.8. – Facial foveae: distance between fovea and lateral ocellus (175 µm) smaller than the width of the ocellus (239 µm) (space = ¾ of the width) (see Fig. 3), fovea ellipsoid, width 596 µm, length 1,5 mm, extending 220 µm below the insertion of the scapus. – Occiput fine shagreened with moderate dense punctuation (interspaces > 1 Pd), upper side of fovea with fine imbricate punctuation, frons with longitudinal rugulae, looking like longitudinal stripes. – Supraclypeal area with fine dense punctuation, laterally imbricate. – Malar space: linear. – Genal area about as wide as compound eye. – Antennae length: scapus 1 mm, pedicellus 150 µm, FL2 (405 µm) almost as long as FL3+4 (391 µm), FL3-FL10 transverse, gradually longer towards the apex, FL11 square, FL12 about 1.5 times as long as wide [FL4: L = 185 µm, W = 231 µm, FL5: L = 190 µm, W = 231 µm, FL6: L = 222 µm W = 243 µm, FL7: L = 217 µm, W = 243 µm, FL8: L = 222 µm, W = 256 µm, FL9: L = 212 µm, W = 250 µm, FL10 weakly transverse (L = 242 µm, W = 252 µm), FL11 square (L = 256 µm, W = 261 µm), FL12 longer than wide (L = 366 µm, W = 257µm). – Clypeus: slightly convex, with coarse punctures, interpunctural spaces about 1 Pd, towards the apex lateral punctuation increasingly denser; interpunctural spaces glossy. – Labrum: process trapezoid, in the middle weakly emarginate, about ¾ as wide as labrum, glossy (see Fig. 4).

Mesosoma: Pronotum: punctuation more or less scattered (interspaces 1–2 Pd), surface weakly shagreened, shiny. Humeral angle: distally densely punctured (interspaces ½-1 Pd), proximal punctuation more scattered (1-2 Pd), surface shiny, weakly shagreened. – Scutum: punctuation shallow and dense (interspaces <½ Pd), towards the posterior part punctuation more scattered (interspaces 1-2 Pd) towards hind margin more dense (interspaces <½ Pd), surface shiny. – Scutellum and postscutellum: shiny, punctuation in the middle scattered (interspaces 1,5-2 Pd), laterally fine, extremely dense (interspaces <1/2 Pd). – Propodeum: propodeal enclosure indicated by a fine boundary line, anterior margin with wrinkles; lateral area of propodeum with coarse imbricate punctuation, inter-

spaces about 1 Pd; marginal area medially strigulate, laterally finely shagreened, transversely shagreened on the median part, lateral part colliculate. – Mesopleurae: shiny, upper part with fine and dense punctuation, downward with coarse, more scattered punctuation (interspaces < ½ to > 1 Pd). – Wing: nervulus antefurcal, distance from basal vein usually 1 times the width of nervulus. – Legs: Hind femur with a row of 14 dark brown spines, tarsal claws all bidentate (see Fig. 5).

Metasoma: Terga: shiny, predominantly with dense punctuation, becoming increasingly dense from T1 to T4 (interspaces on disc of T1 2-3 Pd, on T4-T5 < 0.5 Pd), fine punctures on T1-T 5 imbricate, depressions especially laterally clearly separated from the discs. – Sterna: weakly shagreened, punctuation towards posterior margin increasingly denser (interspaces 1 to 0,5 Pd), anterior margin of S1-S4 in the middle roughly semicircular impressed. – Pygidium: pygidial plate flat, without raised triangular area or carina, proximally fine shagreened.

The morphometrical data in table 1 show that the body length of the female is about 14 mm. The head is transverse (wider than long), the wing length about 8 mm and the antenna 3,5 mm incl. scape (0,99 mm)

Table 1: Morphometrics of the type series of *Andrena harisi* (in mm)

Specimens ID-No.	BL	HL	HW	HL/HW	WL	AN	SC
130126scwe062 (HT)	13,87	2,89	3,65	0,79	8,17	3,5	1,01
130126scwe001 (PT)	13,71	2,83	3,5	0,81	8,07	3,48	0,97
130126scwe002 (PT)	13,86	2,80	3,65	0,77	8,18	3,47	0,97
130126scwe003 (PT)	13,91	2,99	3,65	0,82	8,18	3,47	0,88
130126scwe004 (PT)	13,72	2,96	3,72	0,80	8,10	3,45	1,01
130126scwe005 (PT)	13,89	2,95	3,65	0,81	8,07	3,43	0,97
130126scwe022 (PT)	13,83	2,98	3,64	0,82	8,35	3,52	0,97
130126scwe023 (PT)	13,77	3,03	3,65	0,83	8,4	3,63	1,13
Ø	**13,82**	**2,93**	**3,64**	**0,81**	**8,19**	**3,49**	**0,99**

The dark coloring of the terga varies within the paratypes. Compared to the holotype, especially terga 2-4 of the paratype (No. 130126scwe005) are more darkly colored.

Male: Unknown.

Comparative notes

Within the subgenus *Chlorandrena*, *Andrena harisi* sp. n. is immediately recognizable by intensively red coloured hairs, the extended red coloured metasoma and antennae, and the predominantly orange-red colouring of all legs. It is probably closely related to *Andrena pyrrhula* Pérez, 1895, and matches with this species in size and appearance, especially the intensively red pubescence and usually red coloured abdomen. But the densely punctuated terga and the more shiny scutum and scutellum allow easy differentiation from *Andrena pyrrhula*, which is far less punctured on the terga and has a dull scutum and scutellum.

Andrena isis Schmiedeknecht, 1900, which also has extensive red-coloured terga, has a significantly shorter body length (8 mm).

The following specimens of *Andrena pyrrhula* were examined and compared to *Andrena harisi* **sp. n.**:

TUNISIA: 20 km N Métlaoui (Gafsa) 3♂, 2♀♀, 17.IV.1994, all leg. M. Schwarz, coll scwz (ID-No. 181212scwe328 -181212scwe333); Zarzis Khaffalah (Medenine) 1♀, 11. III.2008 (ID-No. 090102scwe275), Skhira Sidi Mheddeb (Sfax) 1♂, 25.III, 2010 (ID-No. 111001scwe014) all leg. et coll Scwe; Ksar Halada (Tataouine) 1♂ 4.-5.IV 1998 K. Denes leg. T.J. Wood det, coll OÖLL (ID-No. 170202scwe317).

Etymology

The new species is dedicated to Attila Haris, Hungarian sawfly specialist, who collected the types at the locality Marsa el Brega (Munizip al-Wahat).

Observation of flower visits

So far there are no records of flower visits.

Description of the locus typicus

The habitat is a subcoastal area of Sahara desert, partly covered with semi-desert spiny scrub vegetation (see Fig. 6). The location is close to an industrial area in Marsa el Brega (Munizip al-Wahat) where Attila Haris (the collector) did regular collection trips. between 30.428475° N, 19.640358° E and 30.412167° N, 19.633244° E from January to end of March in 2013.

Andrena harisi is not rare at the locus typicus (pers. comm. A. Haris).

The new species is yet known only from the eastern region of Libya, the Cyrenaica.

Fig. 1: *Andrena harisi* sp. n.: hind femur and tibia

Fig. 2: *Andrena harisi* sp. n. holotype: dorsal and lateral view

Fig. 3: ***Andrena harisi*** **sp. n. holotype: occiput**

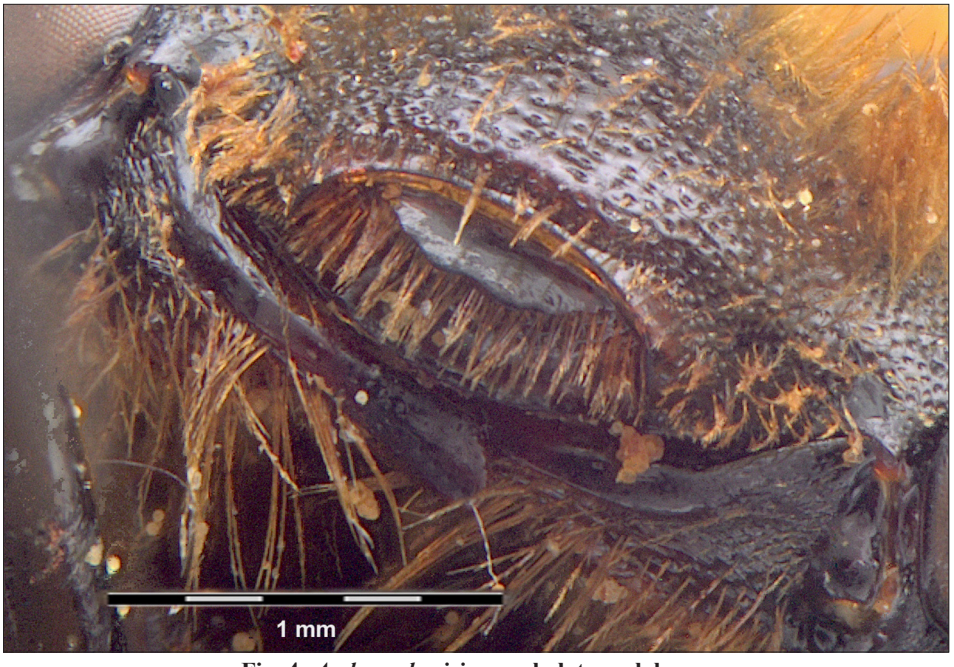

Fig. 4: ***Andrena harisi*** **sp. n. holotype: labrum**

Fig. 5: ***Andrena harisi*** **sp. n. holotype: bidentate claws of hind and middle leg**

Fig. 6: Subcoastal area of the Sahara desert, partly covered with semi-desert spiny scrub vegetation, the locus typicus of ***Andrena harisi*** **n. sp. (Photo: Attila Haris).**

The following bee species have been collected by Attila Haris at the locus typicus of *A. harisi* (30.424225°N, 19.640458°E) also in February and March 2013 and were also identified mainly by the author or by Erwin Scheuchl.

Andrena callida Warncke, 1974
5♀♀: 8.III.2013 (ID-No: 160303scwe579), 8.III.2013 (ID-No: 160303scwe581), 1. III.2013 (ID-No: 160303 scwe580), 20.III.2013 (ID-No.160303scwe421), 22.III.2013 (ID-No: 160303scwe578), all in coll SCMK; 2♀♀: 22.III.2013 (ID-No: 160303scwe422), 13.III.2013 (ID-No: 160303scwe582), in coll Scwe.

Andrena decollata Warncke, 1974
1♀: 3.III.2013 (ID-No 160303scwe418), in coll Scwe.

Andrena isis Schmiedeknecht, 1900
1♀: 3.III.2013 (ID-No 160303scwe420) in coll SCMK; 1♀: 20.III.2013 (ID-No 160303scwe419), in coll Scwe.

Andrena mara Warncke, 1974
4♀♀: 24.II.2013 (ID-No. 170202scwe325), 28.II.2013 (ID-No 170202scwe322), 16. III.2013 (ID-No 170202scwe326), 17.III.2013 (ID-No 160303scwe429), all in coll SCMK; 2♀♀: 23.II.2023 (ID-No 170202scwe324), 28.II.2023 (ID-No 170202scwe327), in coll Scwe; 2♂♂: 24.II.2013 (ID-No 170202scwe321), 20.III.2013 (ID-No 170202scwe323), det Scer, in coll SCMK; 2♂♂: 10.III.2013 (ID-No 160303scwe428), 15.III.2013 (ID-No 160303scwe431), in coll Scwe.

Andrena microcardia Pérez, 1895
1♂: 24.II.2013 (ID-No 160303scwe423), det Scer, in coll Scwe.

Andrena pyrrhula Pérez, 1895
4♀♀: 3.III.2013 (ID-No. 160404scwe584), 15.III.2013 (ID-No. 160404scwe575), 22.III.2013 (ID-No. 160303scwe427), 23.III.2013 (ID-No. 160404scwe576), all in coll SCMK; 2♀♀: 12.III.2013 (ID-No. 160303scwe426), 16.III.2013 (ID-No. 160404scwe577), all in coll Scwe.

Panurgus platymerus Pérez, 1895
3♀♀: 12.III.2013 (ID-No 160303scwe415), 13.III.2013 (ID-No 160303scwe414), 19.III.2013 (ID-No 160303scwe583), all in coll SCMK; 2♀♀: 2.III.2013 (ID-No 160303scwe425), 19.III.2013 (ID-No 160303scwe424), all in coll Scwe.

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