



## **A New Species of The Sand Bees, *Andrena Fabricius, 1775* (Hymenoptera, Andrenidae) From Kurdistan Region-Iraq**

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### **Article Info**

Received: April, 2019

Revised: April, 2019

Accepted: May, 2019

### **Keywords**

*Andrena*, Andrenidae, Hymenoptera, Iraq, New species.

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### **Abstract**

A New species of sand bees, *Andrena bakrajoensis* sp. nov. was described from Iraq. This species differs from closely related species *A. vetula* Lepeletier, 1841 by, the body and metanotum are brown-reddish colors; anterior and posterior margin of labrum strongly of convex; mandibles without dentition. The important taxonomic characters have been described and illustrated.

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### **Introduction**

*Andrena* Fabricius, 1775 (Hymenoptera: Andrenidae), typically referred to as sand or solitary mining bees; according to present day classification in numbers of species (Michener, 2007). The genus nearly worldwide in distribution, includes about 1500 valid species to date and about as many synonyms (Gusenleitner and Schwarz, 2002). The real number of species of *Andrena* might approach 2000 (Dubitzky, 2006). The genus *Andrena* is the most numerous bee genera within the Holarctic and can be considered as one of the great important pollinators of spring-blooming plants and bushes

(Delaplane and Mayer, 2000). The genus *Andrena* F. was first recorded by (Moraitz 1876) from central Asia mainly from Uzbekistan, he recorded 68 species (51 species were new to science). The taxonomy of *Andrena* for the western Palearctic region has been studied by (Warncke (1980). Many studies have been conducted from Central Asia by (Osytsnjuk et al., 2005, 2008; Tadauchi, 2006, 2008; Shebl and Tadauchi, 2009). In Iraq, Derwesh (1965) recorded 24 species of the family, included four species from the genus: *Andrena*, *A. cordialis* Morawitz 1877; *A. cyanescens*; Nyl. (= *Andrena*

viridescens Viereck, 1916; *A. flavipes* Panzer, 1799 and *A. vetula* Lepeletier, 1841). Shalli and Fat-hullah (1986) recorded a new species from the genus *Andrena* in Sulaimani. This work aims to describe of a new species *Andrena bakrajoensis* sp. nov. which was collected from the flower of a purple star thistle, *Centaurea calcitrapa* L. in Iraq.

## Material and Methods

The specimens were collected by sweep net from the flowers of a purple star thistle, *Centaurea calcitrapa* in Bakrajo, Sulaimani governorate Kurdistan Region-Iraq in 22. May.2014.

The specimens placed in boiling water for 10-15 minutes to soften their parts. The mouthparts and abdomen was separated and cleared in a hot solution of 10 % KOH; after clearing, they were studied under immersion in distilled water. Additionally, these were dehydrated in a progressive ethanol series (50%, 70%, 90% and 100%) respectively, for two minutes of each concentration, then placed in xylol for two minutes, for translucency and mounted in D.P.X solution on a microscopic slide (Lane and Grosskey, 1993; El-Aw et al., 2012; Mawlood et al., 2016). The habitat and important features photographs were taken using a digital camera (AmScope Microscope Camera); the measured proportions of body parts are given in points of an eye piece linear micrometer in a binocular microscope.

The genus were identified depending of available literature of (Michener, 2007; Scheuchl and Hazir, 2008; Ariana et al., 2009) and the help of Prof. Dr. Mohammed Salah Abdul-Rassoul, Iraq Natural History Research Center and Museum, University of Baghdad and Assist. Prof. Dr. Ali Raza Monfared in Yasuj University-Iran.

## Results and Discussions

### Discription

*Andrena bakrajoensis* sp. nov.

**Body:** Female (Pl.1 a, b), slender, reddish-brown, slightly convex, body length 12.5 mm.

**Head:** Nearly triangular, reddish-brown, much broader than it long, length 3.3mm; width 4.2 mm. Eyes oval, brown, bare, inner orbital margin are strongly concave, upper interorbital distance is 1.8 mm long, lower interorbital distance is 2.00 mm. Vertex slightly concave, densely yellow setae. Frons is strongly convex, sparsely yellow setae. Facial fovea is present. Clypeus slightly convex, brown, coarsely punctate, sparsely yellow setose, much broader than length, anterior margin strongly concave, with row of yellow setae apically; malar space narrow. Labrum (Fig. 1a) nearly rectangular, brown, length 0.55mm, impunctate, surface bare, anterior and posterior margin strongly convex, clothed by yellow setae, apical margin with densely yellow setae. Mandible (Fig. 1b) dark brown, length 1.8 mm, densely yellow setae laterally, base slightly broader than apex, without dentition. Maxilla (Fig. 1c) light-dark brown, stipes oval; inner margin densely long yellow hairs, without comb in strong concavity of posterior stipital margin; lacinia present scale-like lobe with hairs near base of galea; galea with postpalpal part usually much shorter than stipes and with densely yellow hairs. Maxillary palp consists of six segments without setae, 2nd segment tubular shaped, 1.4 times as long as 1st segment; 3rd segment 1.2 times as long as 4th segment; 5th and 6th segments equal in size. Labium, 1st segment elongate and flattened, 1.1 times as long as 2nd segment and without setae, 2nd and 3rd segments cup shaped like, equal in size 1.2 times as long as 4th segment, without setae, 4th segment tubular. Glossa short, 4.2 times as shorter than prementum and covered with densely yellow setae; paraglossa short and membranous. Antennae (Fig. 1d) reddish-brown, 1st flagellomere 4.3 times as long as 2nd.

**Thorax:** Pronotum black with densely yellow setae, anterior and posterior margins concave. Mesonotum rounded and brown-reddish color,

coarsely punctuate, densely yellow setose, anterior and posterior margin strongly convex. Parapsidal line linear. Axillae round. Metanotum brown-reddish color covered with sparsely yellow setae. Prosternum brown, impunctuate with densely yellow setae, anterior and posterior margin concave. Mesosternum brown, impunctuate, with densely yellow setae. Propodeum nearly rectangular, reddish-brown, coarsely punctuate with densely yellow setae, anterior and posterior margins concave. Forewing (Fig. 1e) hyaline, length 8.1- 8.6 mm, apex of marginal cell strongly rounded, gradually bent away from wing margin; basal vein slightly curved, about 1.8 times as shorter than marginal cell, three submarginal cells, 2r-m strongly arched, 1st submarginal cell as long as 2nd and 3rd submarginal cells combined. Metatibia and Metabasitarsus (Fig. 1f) densely yellow setae, metatibia with apical margin without comb of setae (Rastellum). Hind tibial spurs present. Pretarsi with arolia. Each claw with minute inner tooth.

**Abdomen:** Elongated oval, reddish- brown consist of six visible segments, abdominal sternites with fine punctures and sparsely setose, tergites covered by densely yellow hair bands apically. 6th abdominal sternite (Fig. 1g) triangular, apical part sparsely yellow setose. 7th abdominal sternite (Fig. 1h) cup shaped, apical part with densely yellow setae.

**Type Material:** (♂) (Holotype) Iraq-Kurdistan region-Sulaimani, Bakrajo district, 350 km N Baghdad, 22. May. 2014 from purple star thistle, *Centaurea calcitrapa*; Paratype (4 ♂♂ 6 ♀♀): from same locality; The Holotype is kept in the Insect Museum-Department of Plant Protection, College of Agriculture, Salahaddin University.

**Diagnosis:** *Andrena bakrajoensis* sp. nov.: This species differs from closely related species *A. vetula* Lepeletier, 1841 by the following characters: Body reddish-brown, length 12.5 mm. Labrum nearly rectangular, impunctuate, surface bare, anterior and posterior margins

strongly convex. Mandibles without dentition. Metanotum reddish- brown color.

Male: Unknown

### Acknowledgments

We sincerely thank the specialist Assist. Prof. Dr. Ali Raza Monfared in Yasuj University-Iran for his kind help in identifying the genus of this species. We deeply express our gratitude to Prof. Dr. Mohammed Salah Abdul Rassoul in Division of Entomology, Natural History Research Center – University of Baghdad, Iraq for his kind help and assistance in confirming of the genus.

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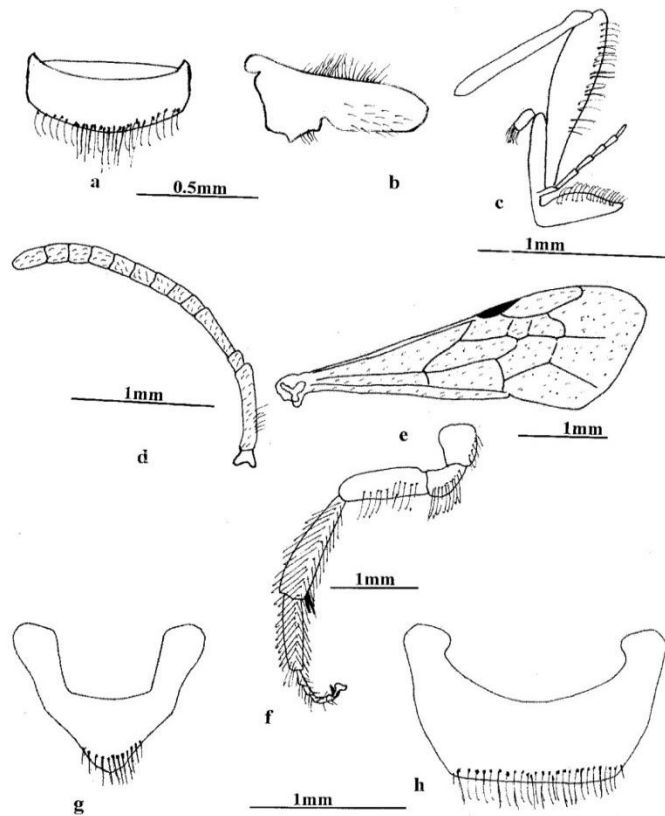
(a)

(b)

**Plate (1): *Andrena bakrajoensis* sp. nov.**

a. Female (Lateral view)

b. Female (Dorsal view)



**Figure (1): *Andrena bakrajoensis* sp. nov.**

- a. Labrum    b. Mandible    c. Maxilla    d. Antennae    e. Forewing    f. Foreleg    g. 6th abdominal sternite    h. 7th abdominal sternite