



# FIRST DESCRIPTION OF WHITE GRUB BETLE, *MALADERA INSANABILIS* BRENSKE, 1894 (COLEOPTERA: MELOLONTHIDAE: MELOLONTHINAE) FROM ERBIL GOVERNORATE, KURDISTAN REGION – IRAQ

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## Abstract

White grub beetle, *Maladera insanabilis* Brenske, 1894 is collected from the flowers of some ornamental plants in different localities of Erbil governorate, Kurdistan Region-Iraq, from the period, March till July / 2018. Diagnostic characters of the species are figured, Mandibles high sclerotized, irregular shaped, apical part with seven short teeth. apical part of galea with seven well developed teeth. Antenna brown consist of 10 ending in a unilateral three lamellate club sub-equal in length. Fore tibia flattened, bidentate. Parameres is a symmetrical, the left part is hook like, the end with a curved pointed apical tooth.

**Key words:** *Maladera insanabilis* Brenske, 1894, Kurdistan Region-Iraq.

## Introduction

Melolonthidae Samouelle, 1819 is one of large family of Scarabaeoidea, there are currently about 750 genera and 11.000 species recorded worldwide (Houston and Weir, 1992 ). The identified of the family is well established and is based on the following characteristics. Adult antennae are lamellate apex, the fore legs are adapted for burrowing, with large fore coxae and tibiae with a series of teeth, galea with strong tooth on the dorsal face (Triplehorn and Johnson, 2005, Coca-Abial Robbins, 2005). The family are primary consumers or decomposers. The adults feed on leaves, stems, roots, exudates, flowers, fruits and tubercles of angiosperms, as well as on leaves and roots of gymnosperms. Some adults are predators of other insect species. Usually the larvae develop in the soil, consuming roots or humus, as well as rotting tree trunks and the larvae of a few species are associated with ants and termites, feeding on detritus or on immature of those insects (Endrodi, 1966, Moron 1997, 2001, 2004, Moron *et al.*, 1997). The family plays an important role in decomposition and nutrient recycling in the environment (Placencia *et al.*, 2013). The taxonomy of the family is not well understood, despite the efforts of numerous workers (Luginbill and Painter 1953, Vaurie, 1958, **\*Author for correspondence** : E-mail: zayoor.omar@epu.edu.iq

Woodruff and Beck, 1989, Coca-Abia *et al.*, 1993, Coca-Abia and Martin-Piera, 1998, Coca-Abia, 2000, Evans, 2003).

The genus *Maladera* Mulsant and Rey, 1871 is one of the largest groups consisting of more than 500 described species widely distributed in Palearctic, Oriental and Afrotropical regions (Ahrens, 2003). Rose beetle, *Maladera insanabilis* is one of the important economic insects of the genus, that attack a wide range of plant families. Both the larvae and the adults of this beetle cause economic damage. The adults by nibbling on the foliage of avocado, cherry, citrus, guava (which it may defoliate) and macadamia, the larvae by feeding on the roots of sweet potato, peanuts and strawberry plants (Ahrens, 2006). The larvae of this insect live in the soil and feed by chewing the root hairs and young roots of the transplants causing deterioration of plants and leading to an inevitable death, depending on the larva density and plant age (Pathania *et al.*, 2015). In Iraq there are not any taxonomic study of the family species except, Derwesh (1965) indicated six genera include *Rhizotrogus escherichia* Brenske and Al-Ali (1977) recorded one species belonging the family Scarabaeidae. Al-Jassany, *et al.*, (2016 ) found that the species *M.insanabilis* as one of the important economic insect in several nurseries

of different sites in Baghdad governorate. The main aims of this work are a detailed description of khomeini beetle, *Maladera insanabilis* Brenske, 1894 which collected in many localities of Kurdistan region - Iraq, mention the geographical distribution of the species in Erbil governorate, Kurdistan Region-Iraq and to provide diagnoses of the species (including male genital characters).

### Materials and Methods

The specimens were collected from the flowers of some ornamental plants in different localities of Erbil governorate, Kurdistan Region-Iraq from the periods of March till July 2018, using Arial net and hand-picking methods. The specimens were placed in boiling water for 10-15 minutes to soften their parts. The mouthparts and abdomen were separated and cleared in solution of 10% KOH for 24 hours. Then these parts washing and studied under immersion in distilled water. (Mawlood *et al.*, 2016). A digital camera (Ucmas series microscope camera) was used to photographing the important parts. The measured proportions of body parts are given in points of an eye piece linear micrometer in a binocular microscope. The species were identified with the help of available literature of (Singh, 2014, Ahrens *et al.*, 2006).

### Results and Discussion

#### *Maladera insanabilis* Brenske, 1894.

Description: Body ( Fig. 1, a, b and c ): oval, brown, uniformly reddish brown. Length 8.4-9.7mm and width 4.1-4.8 mm.

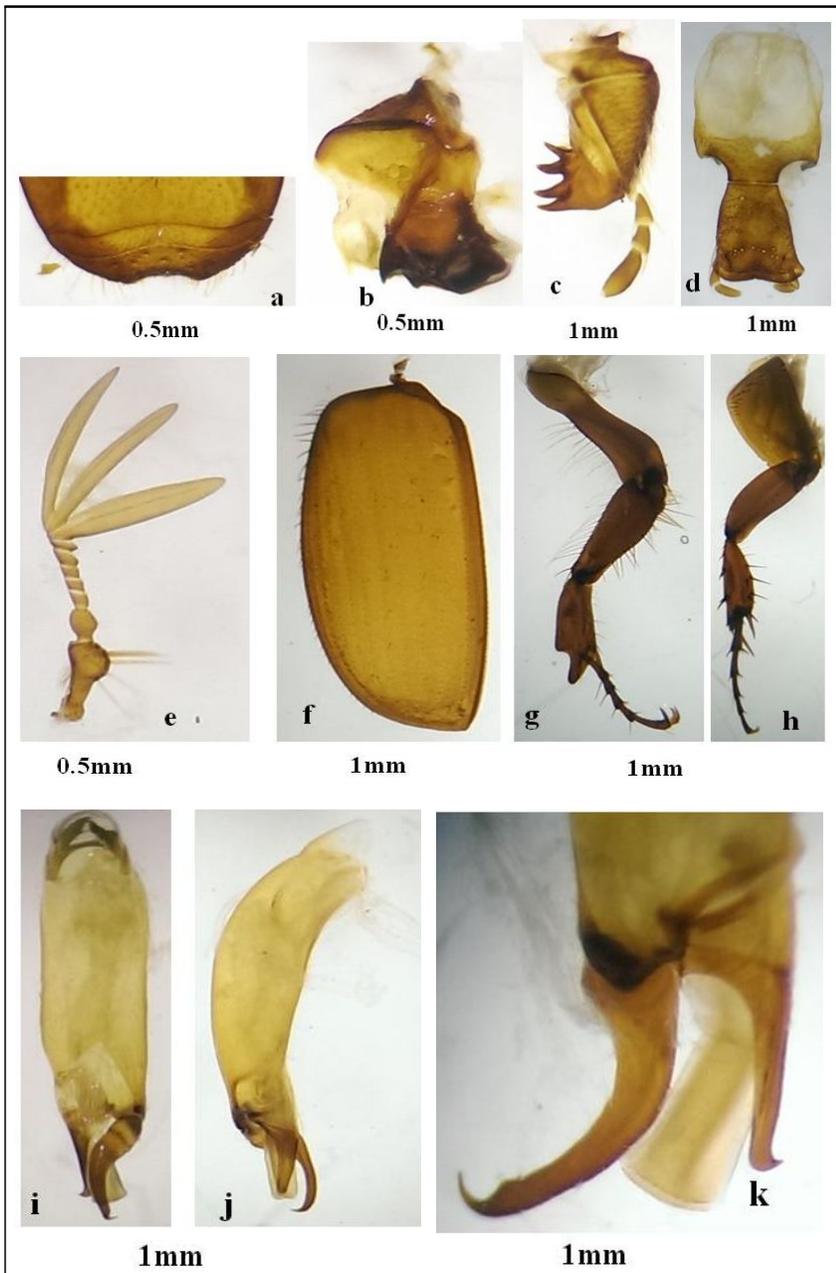
Head: Brown, length 1.8-2.2mm and width 1.5-1.9 mm, surface bare, laterally sparsely setose. Vertex U-shaped. Frons finely, shallowly and sparsely punctate, frontal suture distinct. Frons finely, shallowly and sparsely punctate, frontal suture. Genal canthus present. Clypeus finely and deeply punctate, outwardly expanded, fused with labrum forming labro-clypeus (Fig. 2a). Eyes black, rounded, 0.6-0.8 mm long. Mandibles (Fig. 2b) high sclerotized, irregular shaped, apical part with seven short teeth. Labrum obliterated, externally visible. Maxilla (Fig. 2c) brown, cardo triangular, bare, stipes nearly trapezoid shaped, densely long, black setose, galea dark brown, apical part with seven well developed teeth, 1<sup>st</sup>-3<sup>rd</sup> segments of maxillary palps cup shaped, sparsely yellow setose, 2<sup>nd</sup> segment 1.2 times as long as 3<sup>rd</sup> segment, 4<sup>th</sup> segment elongated oval, bare 2 times as long as 2<sup>nd</sup> segment. Labium (Fig. 2d) brown, posterior edge of mentum moderately concave, surface sparsely yellow short setose,

Labial palps brown setose. 1<sup>st</sup> and 2<sup>nd</sup> segments of labial palps cup shaped, 2<sup>nd</sup> segment 1.2 times as long as 1<sup>st</sup> segment, 3<sup>rd</sup> segment cylindrical shaped, 1.2 as long as 2<sup>nd</sup> segment. Antenna (Fig. 2e) brown, 1.4 -1.8 mm long, consist of 10 ending in a unilateral three lamellate club sub-equal in length, 1<sup>st</sup> segment of antenna is long, lamellate, 2.2 times as long as 2<sup>nd</sup> segment, sparsely long yellow setose, 2<sup>nd</sup> segments rounded 1.2 times as long as 3<sup>rd</sup> segment, 3<sup>rd</sup> - 5<sup>th</sup> segments nearly square shaped subequal in length.

Thorax: Pronotum dark brown, moderately convex, finely, thickly and deeply densely punctate, fore angles acute, hind angles roundly obtuse, lateral margins with few bristles. Scutellum triangular finely and sparsely punctate. Prosternum transverse nearly cup shaped, prosternal processes triangular. Notopleural suture absent, mid coxae widely separated, mesosternum finely and sparsely punctate with long bristles, metasternum deeply and thickly punctate without bristles. Legs dark brown, fore coxae long, cylindrical, 1.3 times as long as the femur, apical part with dense, long yellow bristles, trochanter with dense, long yellow bristles, fore femur clavate shaped with moderate dense of long yellow bristles, fore tibia flattened, bidentate, outer and inner margins of fore tibia bare, apical part with single spur, fore tarsus filliform, 5<sup>th</sup> segmented, apical part of segments 1-4 with 3 spines, 1<sup>st</sup> segment 1.3 times as long as the 2<sup>nd</sup> segment and same long with the 5<sup>th</sup> segment, claw simple. Middle legs resemble with fore legs except, coxa conical shaped, femur cylindrical, 1.7 times as long as the coxae, tibia tubular shaped, outer margins with two groups of short spines at 1/3 apical and base part, with comb of short bristles and two spurs. Hind legs resemble with fore legs except, coxae taprozoid, apical part of hind tibia with 2 spurs,



Fig. 1: *Maladera insanabilis* Brenske 10 X.



**Fig. 2:** *Maladera insanabilis* Brenske. **a.** Labrum, **b.** Mandible, **c.** Maxilla, **d.** Labium, **e.** Antenna, **f.** Elytra, **g.** Fore leg, **h.** Hind leg, **i.** Aedeagus (Dorsal view), **j.** Aedeagus (Lateral view), **k.** Parameres.

outer margin with 7 spines, inner margin with 6 spines with thick, long, robust bristles on inner and ventral sides, ventral side with a row of small hairs. apical part of tarsal segments 1-4 with 4-5 spines, Elytra black, 5.2-6.5mm long, lateral margins costate, with long brown bristles. Hind wings yellow-dark yellow, membranous, costa with row of very short yellow seta ant the middle part, Radius vein moderately curved at 1/3 of apical region, stigma oval dark yellow.

Abdomen: Oval, dark brown with five visible sternites, 1<sup>st</sup>-4<sup>th</sup> abdominal sternites transverse, 1<sup>st</sup>-3<sup>rd</sup> same length,

4<sup>th</sup> 0.8 as long as the 1<sup>st</sup>, 5<sup>th</sup> sternite cup shaped, each segments with single transverse row of short black bristles and sparsely punctate. Pygidium triangular with fine shallowly and sparsely punctate, posterior margin with sparsely brown setae.

Male genitalia: Aedeagus (Fig. 2, i, j and k) yellow- brown, 4.0-4.8mm long, Phallobase elongated, membranous moderately curved, broad at the middle, length 3.0-3.5mm. Parameres (Fig. 2i) asymmetrical. Right paramere long, hook like 1.0-1.3 mm long, the end with a curved pointed apical tooth. Left paramere short 0.5-0.7mm, straight, bilobed at base, the end with an apical curved tooth.

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