

## Study of Morphological and Diagnostic of Two Beetles (Coleoptera: Scarabaeidae) in Al-Muthanna Province

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### Abstract

The study was conducted in Al-Muthanna Governorate during the year 2018 for the presence of two species of beetles belonging to the scarabaeidae family, namely *Oryctes elegans* (Prell, 1914) and *Kheper aegyptiorum* (Latreille, 1823), and the study also showed the presence of two species of beetles. Clear morphological differences between the parts of the two species in terms of body length and head composition, wings, legs and abdomen.

**Key words:** scarabaeidae, beetles, *Oryctes elegans*

### Introduction

Coleoptera is the largest order in terms of the number of species it contains, It is also the most widespread order in the world( McGavin 1999). The family of Scarabaeidae shows remarkable morphological and environmental diversity (Anonymous ,1999).

This family includes more than 30,000 species spread around the world and they are called scarab or beetles. The classification of this family has undergone a major change in recent years, as it raised

many sub families to family (Bouchard *et al.* ,2011)

Date palm trees are infested by a wide and varied pests that cause extensive that cause severe damage to the trees, leading to weak palm trees, reduced productivity, and possibly death. Among the most famous agricultural pests that infect palm trees (dust spider, dubas bug, palm stem borer, Palm raceme borer, palm frond borer) these pests are characterized by their seriousness and wide spread causing large economic losses. Excavators are one of the major pests of palm trees in

different regions of the world (Carpenter and Elmer, 1978).

The palm raceme borer is genus *Oryctes* (coleoptera: scarabaeidae) the species is *Oryctes elegans* Prell. which are spread in the Gulf countries (Soltani, 2010) and North Africa (Rochat *et al.*, 2004). Palm borers cause varying economic damage in severity, quality, and place of occurrence. The larval stage digs into the stem and attacks the lower part of the palm tree and causes significant damage (Soltani, 2008; Al-Deeb., 2012). Larvae also feed on the roots and lead to their death, and adults attack palms and fronds and fresheners causing their fracture (Al-Beker, 1972; Swayir *et al.*, 1979). But if they attack the green fronds close to the developing summit, they will dig in it until it reaches the developing summit, where it feeds on the soft tissue causing it to stop growing and then the death of the palm tree (Zaid *et al.*, 2002).

### **Materials and methods**

Adult samples were collected by optical traps installed using light traps installed by the Al-Muthanna Agriculture Directorate in some palm orchards in Al-Muthanna Governorate.. The samples were placed in tubes and the following information was recorded on them (sample number,

collection area, collection date) and taken to the laboratory for diagnosis.

In the laboratory, Adult insects were placed in petri dishes, and the adult body parts were cut by anatomy kit (head, sensing pods, wings, legs, abdomen) for the purpose of examination and diagnosis. The species was diagnosed and photographed using a mobile camera and under the dissection microscope. The distinctive classification characteristics of each type were adopted to distinguish between the types such as length, body color, head shape, appendages attached to it, length and shape of the wings, length and shape of the legs and abdomen.

### **Results and discussion**

#### ***Oryctes elegans* (Prell, 1914)**

##### **Scarabaeidae: Coleoptera**

**General Description:** The body is Shiny black oval in shape, 2-2.7 cm in length (Fig1).

**Head** (Fig 2): Oval in shape, black color, length 4-5 mm, on both sides, thick and long hair, white front, convex upward, black color, Shiny, there are three simple eyes, large compound eyes, dark gray color, Shiny Lamellate Antennae 1-1.5 mm dark brown color, Flagellum brown (Fig3), mouth parts rodent type topped by long

brown hair, jaw contacts 4 pieces, oral contacts 3 pieces.

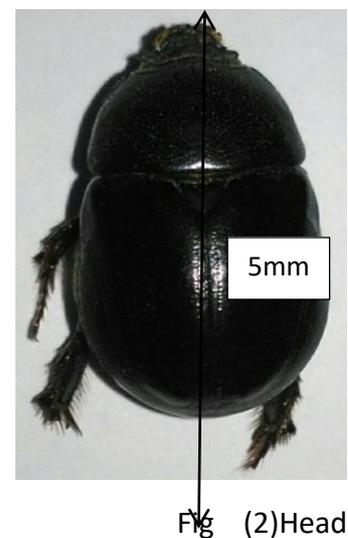
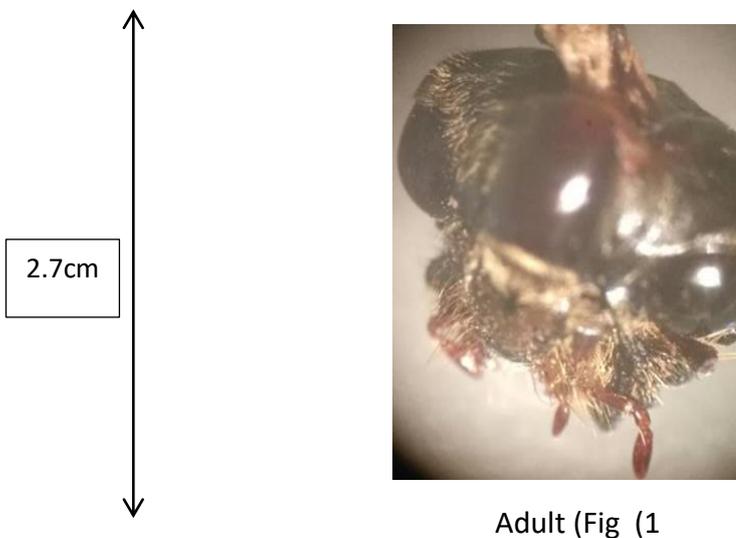
**Thorax:** Fig (4): oval in shape, length 6 - 7.5 mm, the back plate is covered with a shield in a black color, Shiny with a large number of clicks in white color, its front edge has a yellow line and its back edge bears thick short white hair, the abdominal plate of the chest is covered with thick brown hair the color. Forewing of the sheath is 1.2-1.5 cm long, Shiny black in color, with indentations in the form of longitudinal stripes of 8 ( Fig 5-A).

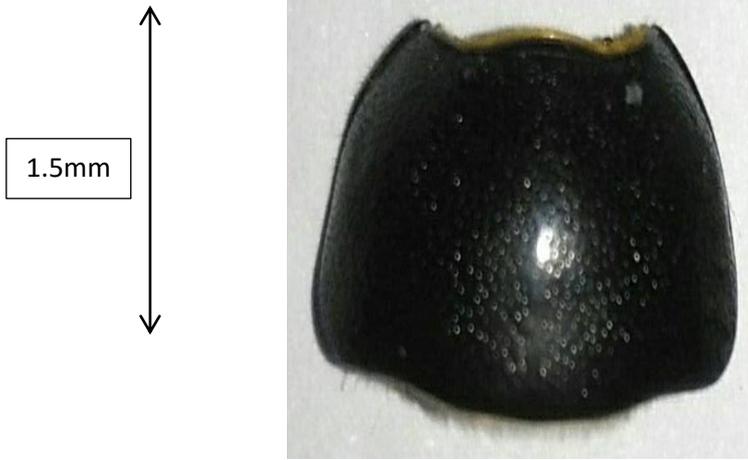
Hand wing membranous, length 2.4-2 cm, transparent veins brown up to the outer edge of the wing (Fig 5 – B).

**For legs:** Fig (6-A), length 1.3-1.6 cm, an enlarged femur, 3-4 mm long, thick white

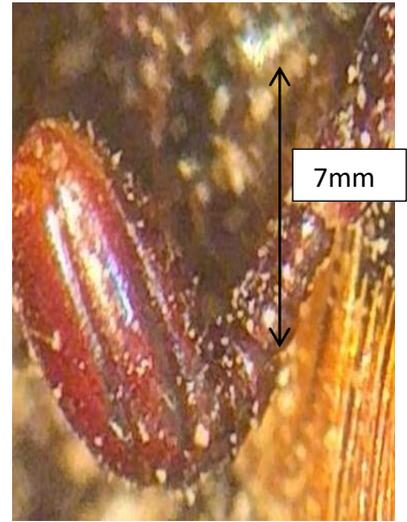
hair, a five-wrist wrist length of 0.8 - 1 cm, thick hair, and the middle legs (Fig 6-B), length 1.6- 2 cm, femur length 4-5 mm, leg length 5-6 mm with thick hair, length of black color, there is a long spur of black color on the inner lower end of the leg, wrist length 0.9 -1.2 cm, hind legs (Fig 6-C) length 2-2.2 cm, long femur length 5-8 mm, leg length 4-6 mm with thick hair in black color, there is a pair of spurs on the inner lower end of the leg, the wrist length is 1-1.2 cm.

**Abdomen:** Fig (7): elongated oval length of 1.2-1.6 cm, brown color, containing 9 rings, the end of the seventh and eighth abdominal rings, with a brown line and thick white short hair.





Thorax (Fig 4)



Antenna (Fig 3)



Hindwing (Forewing)

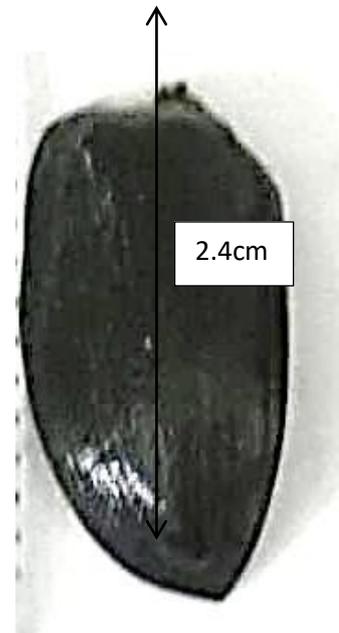


Fig (5-B) (Fig (5-A)

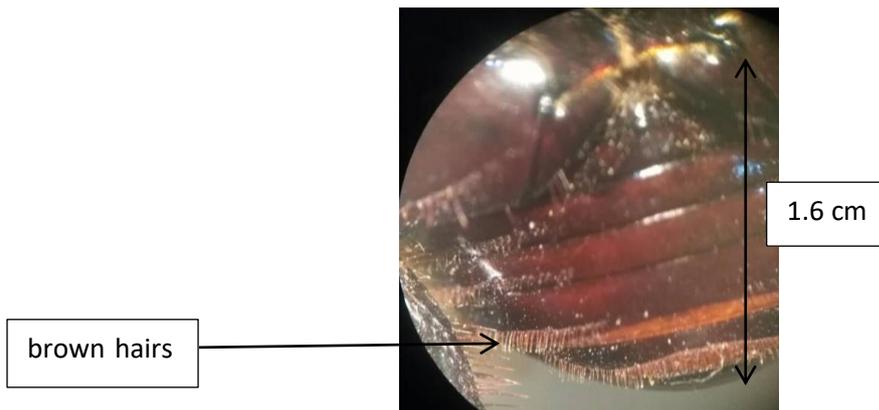
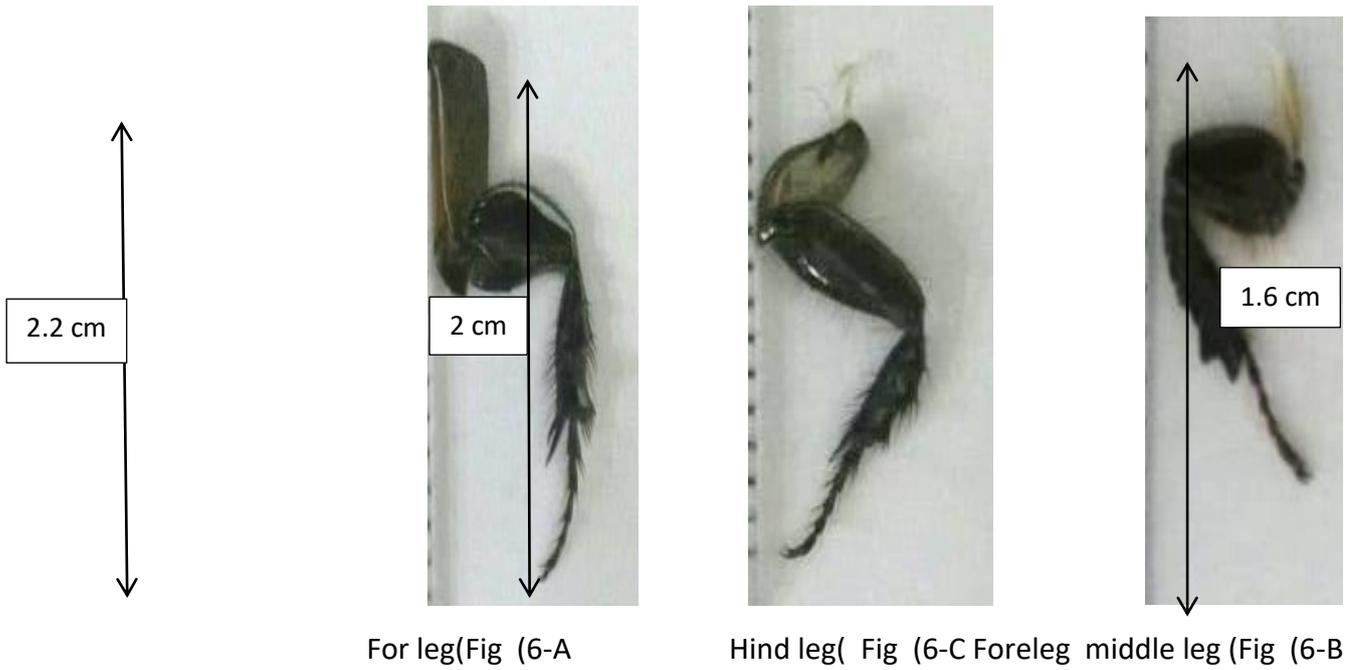


Fig (7) abdomen

( (*Kheper aegyptiorum* (Latreille, 1823

**General Description:** The body is black bronze, shiny and oval in shape, 1-1.5 cm in length ( Fig 8).

**Head:** Fig (9): flattened in shape, bronze black color, Shiny 3-4 mm in length, convex up front, black Shiny, there are three simple eyes on it, paper pods 1-1.5

mm long in dark brown color, shamrock color brown (Fig10), parts Mouth is rodent type, maxillofacial and oral contact consists of 3 pieces.

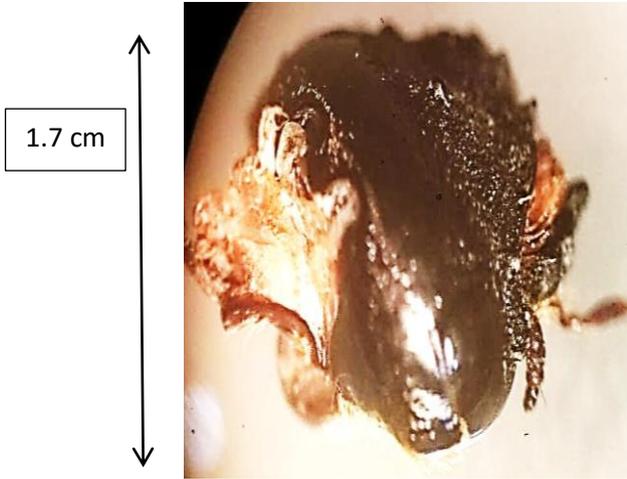
**Thorax:** Fig (11): oval in shape, length 4-6 mm, the back plate is covered with a shield of black bronze color, Shiny with a large number of percussion, the chest pad is covered with thick brown hair.

**Forewing:** Fig (12-A) Clear membranous length 1.6-1.8 cm, veins dark brown reaching the outer edge of the wing.

**Handwing:** Fig (12-B) sheath , 1-1.5 cm long, bright black bronze color, with indentations in the form of longitudinal lines of 8 lines.

**Forelegs:** are a solid Fig (13-A) , length 1.3-1.5 cm, an enlarged femur, length 5-6 mm, with long thick hair, brown color, wrist, pentagon, 1 cm long, thick hair, brown in color, middle legs, Fig (13-B), length 1.5-1.7 cm, femur length 3-4 mm, flat triangular leg bearing three large forks on the top side and one large rigid fork on the bottom, wrist length 5-6 mm five-sided, posterior legs Fig (13-C) The length is 2-2.3 cm, the femur is elongated 5-7 mm in length, the lower end has a large rigid fork, the flat triangular leg holds three large forks on the upper side and one large rigid fork with thick hair it is brown in color, and the wrist is 7-8 mm long with short, thick brown hair.

**Abdomen:** Fig (14): elongated oval length of 1.2-1.6 cm, brown color, containing 9 rings, the end of the eighth abdominal rings, containing thick short white hair.



Adult

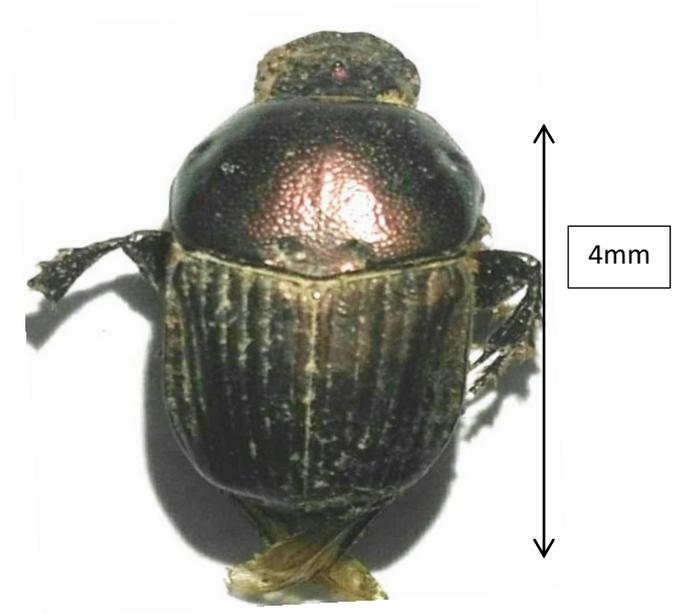
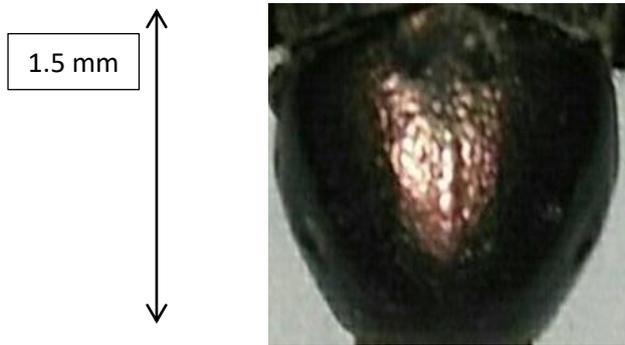
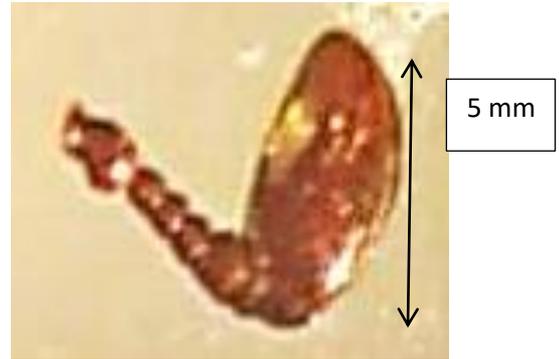


Fig (9)Head

(Fig (8



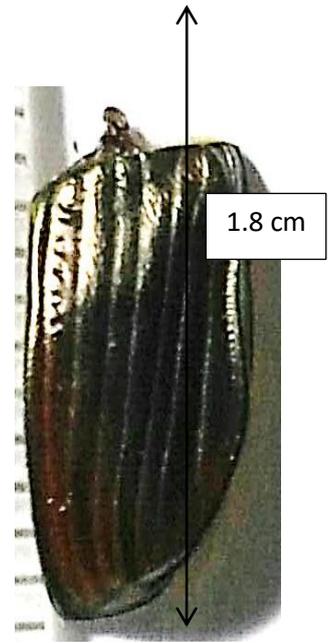
Thorax (Fig (11



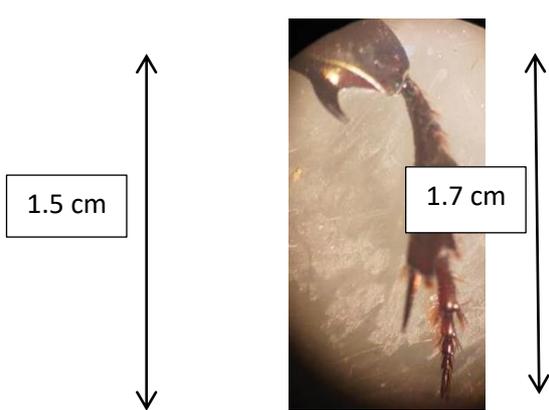
Antenna (Fig (10



Hindwing (Fig (12-B



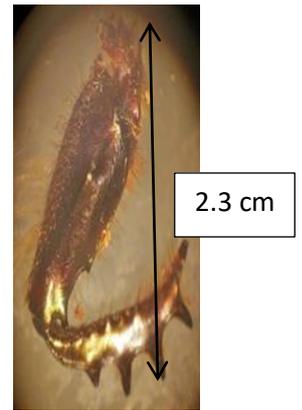
Forewing (Fig (12-A



Fore leg (Fig (13-A



Hind leg(Fig (13-C



Middle leg (Fig (13-B

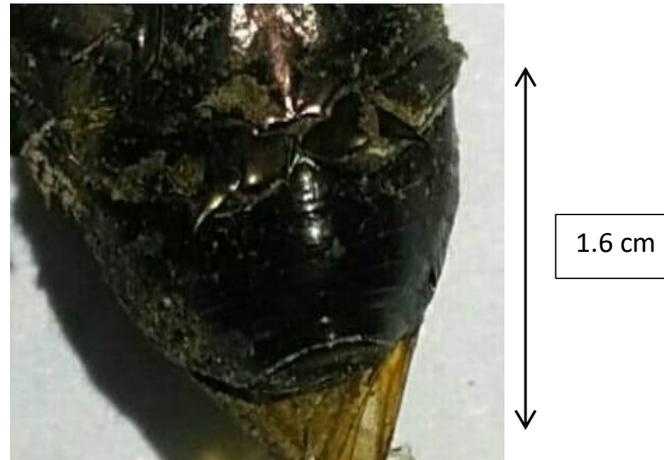


Fig (14) Abdomen

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