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TWO NEW RECORDS OF THE GENUS *APHODIUS* ILLIGE, 1798 (COLEOPTERA, APHODIIDAE) IN IRAQ

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ABSTRACT

In this study, the dung beetles *Aphodius (Bodilus) ictericus* (Laicharting, 1781) and *Aphodius (Planolinellus) vittatus* Say, 1825 which belongs to the family of Aphodiidae (Order: Coleoptera) are redscribed here as to being found for the first time in Iraq.

The specimens were collected from different regions in the middle of Iraq; the main diagnostic characters and some morphological features of males were drawn and pictured.

Keywords: Aphodiidae, *Aphodius*, Coleoptera, Dung beetles, Iraq, Scarabaeoidea.

INTRODUCTION

Aphodiidae family belongs to superfamily (Scarabaeoidea) and consists of nearly 358 genera and 3395 species distributed randomly in the world (Şenyüz, 2017); there are 1084 species that belong to 155 genera from 6 tribes in the Palaearctic region (Dellacasa *et al*., 2006). The adults of aphodiid are in most cases coprophagous (dung feeding) and are fed directly on the dung. Besides, most species of Aphodiidae simply release their eggs within or inside the dung of herbivorous mammals where the larvae will develop (Borghesio and Palestrini, 2002).

Aphodius Illige, 1798 is a large genus of scarab beetles with more than 1650 species distributed world-wide (Dellacasa, 1988).In most species, both the adults and larvae are coprophagous (Valiela, 1974); However, some species have herbivorous or saprophagous larvae (Cambefort and Hanski, 1991). Other species have trophic habits that are closer to saprophagy than coprophagy and tend to lay eggs in the interface between the trophic resource (dry dung, accumulations of manure, decomposing leaves) and the soil. In this case, the larvae never enter the dung (Verdú *et al*., 1997); some members of the genus dominate dung beetles are found in the Palearctic and Nearctic regions (Frolov and Akhmetova, 2005).

The members of genus *Aphodius* are diagnosed according to the following features: size, length, mostly less than 2-10 mm and body more or less elongated. Head nearly always with clips covering mouthparts, sometimes exposing tips of the mandibles; mandibles usually reduced and membranous, rarely sclerotized as well. Furthermore, antennae with 9 segments, club pubescent and with 3 segments; elytra nearly or entirely covering pygidium; mesocoxae contiguous or nearly so; metatibiae variable, but usually dilated at apices, usually with 2

apical spurs; tarsi with distinct claws, and rarely reduced. Femora smooth or with grooves on anterior or posterior margin. Abdomen is with 6 visible sternites; pygidium smooth, without transverse ridge or longitudinal groove at the base, often exposed (Cambefort and Hanski, 1991; Smith and Skelley, 2007).

In Iraq, the following species are recorded for the genus *Aphodius*: *A. suturalis*, *A. elermonti* (Derwesh, 1963), *A. pruinosus* (Derwesh, 1965), *A. erraticus*, *A. lividus*, *A. hydrochoeris*(Kaddou, 1967) and *Aphodius* sp.(Khalaf and Al-Omar, 1974). The aim of the current study to provide additional information to these dung beetles to Iraqi fauna.

MATERIALS AND METHODS

Many specimens of genus *Aphodius* species were collected from agricultural regions where livestock are represent (Presence of dung) from different regions in the middle of Iraq (Babylon, Najaf and Karbala) by light trap containing ethyl alcohol (concentration of about 70%). The specimens were washed with distilled water to remove alcohol from them; then, they were saved by freezing. After that, they were examined with a binocular dissecting microscope; the Dino-lite digital microscope was used to film the species being studied.

Finally, several references have been used that contain a description of the *Aphodius* species as well as references that contain taxonomic keys to identify and diagnose species, such as: Jessop (1986); Cooper and Gordon (1987); Frolov (2001); Almquist (2001); Dellacasa and Dellacasa (2005); Carlsson and Jansson (2014); Akhmetova and Frolov (2014) were used.

RESULTS AND DISCUSSION

In this study the survey showed two new record species of the genus *Aphodius* as follows:
Male of *Aphodius (Bodilus) ictericus* (Laicharting, 1781) (Pl. 1A)**.**

Diagnosis: Small, body length 4.0-5.5 mm, head is tubercular; antennae and maxillary palps are light brown; pronotum contains pits of highly concentration, brown to dark brown with lighter fore angles or sides. Elytra intervals sparsely punctate; elytron disc glabrous, and there is a distinctive dark central band on elytron, and bristles of low density on the base of elytra (Pl.1B). Legs are light brown and the hind tarsi are shorter than or as long as hind tibiae. Aedeagus is rounded at the apex, its base is semi-rectangular, clearly curved at the lateral view. Apices of parameres are broadly rounded in a lateral view (Fig.1A, B).

Material examined: (2♂♂): Babylon, 5. III.2018; Najaf 1♂♂, 6.V. 2018.
Distribution: This species is widely distributed in the western Palaearctic region, and its natural habitat includes entire Europe, and South Siberia. (Frolov, 2001). North Africa, the Transcaucasus, Asia Minor, Iran and North Kazakhstan (Akhmetova and Frolov, 2014).

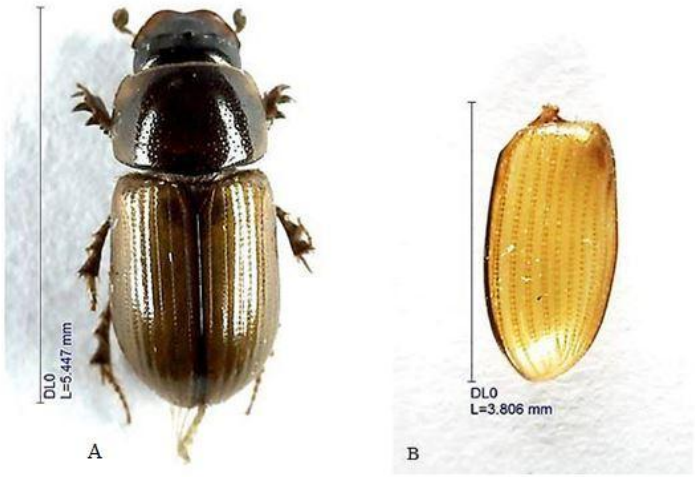

Plate (1): *Aphodius(Bodilus)ictericus*; (A) Male, (B) Elytron

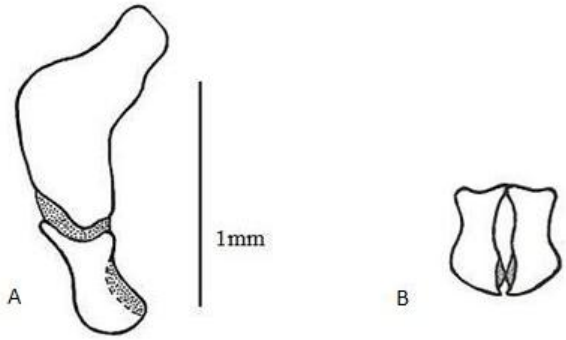

Figure (1): Male of *Aphodius (Bodilus) ictericus*; (A) Aedeagus (lateral view), (B) Parameres (dorsal view).

The male of *Aphodius* (*Planolinellus*) *vittatus* Say, 1825 (Pl.2)

Diagnosis: Body length is about 3.2-4.4 mm, elongate, parallel-sided, somewhat robust, and black with reddish maculations on each elytron. Head with frontal suture pronounced bearing median tubercle; clypeus alutaceous, anterior margin is narrowly semicircular; metatibial apical spinules are short, and equal in length; pronotum contains pits of highly concentration. The base of elytron contains a few bristles; fore tibiae are distally tridentate and proximally serrulate at the outer margin with upper smooth side; middle and hind tibiae with distinct transverse carinae on the outer side. Aedeagus is with parameres moderately membranous apically; in lateral view, distinctly curved apically (Fig.2 A, B).

Material examined: (3♂♂): Karbala, 2.IV.2018; Najaf 2♂, 13.V. 2018).
Distribution: The species occurs in South and Eastern Europe, the transcaucasus, Turkey, Syria, Kazakhstan, Middle Asia, Mongolia, and China (Dellacasa *et al*., 2006), Northern Africa (Frolov, 2001), Russia (Almquist, 2001), North America into Mexico and Canada (Gordon and Skelley, 2007).

Plate (2): Male of *Aphodius* (*Planolinellus*)*vittatus*

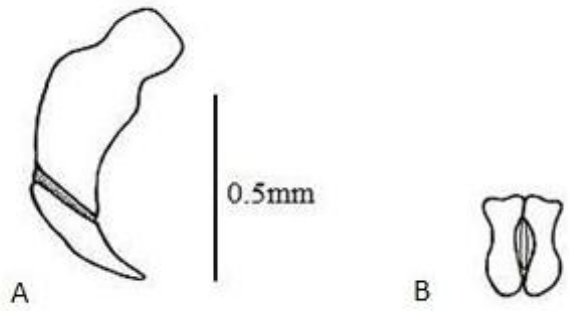

Figure (2): Male of *Aphodius* (*Planolinellus*) *vittatus*; (A) Aedeagus (lateral view), (B) Parameres (dorsal view).

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تسجيلان جديدان للجنس *Aphodius* Illige, 1798 **في العراق** (COLEOPTERA, APHODIIDAE)

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الخلاصة

في هذا البحث، تم وصف خنافس الروث *Aphodius (Bodilus) ictericus* (Laicharting, 1781) و *Aphodius* (*Planolinellus*) *vittatus* Say, 1825 التي تعود لعائلة Aphodiidae رتبة Coleoptera لأول مرة في العراق.

جُمعت العينات من مناطق مختلفة من وسط العراق؛ صورت و رسمت الصفات التشخيصية و بعض الصفات المظهرية الأساسية لذكور النوعين اعلاه.