مجلة جامعة كركوك للعلوم الزراعية ... المجلد (9) العدد (3) 2018
Journal of kirkuk University for Agricultural Sciences ...Vol (9) No. (3) 2018

Description of click beetle, *Melanotus dichrous* (Erichson,1841) (Coleoptera: Elateridae: Melanotinae) from Kurdistan region-Iraq

Nabeel A. Mawlood[1] Nazar M.T.Al-Mallah[2] Shatha H. Ahmmed[2]

- **[1] Salahaddin University – College of Agriculture**
- **[2] Mosul University – College of Agriculture and Forestry**
- Date of research received 11/5/2016 and accepted 18/12/2016
- Part of dissertation of PhD for the 3rd author

Abstract

Click beetle ,*Melanotus dichrous* (Erichson) was described from Kurdistan region-Iraq/ Erbil. Distinctive characteristics of this species are, Mandibles bidenticate, Fourth palpomereare axe shaped , Median lobe of male genitalia cone shaped and Parameres sub-parallel, apically beveled funnel shaped sparsely, yellow setae. The important parts especially Labrum, Mandibles, Antenna and Male genitalia were illustrated.
Key words: Description, Elateridae, Melanotinae, *Melanotus dichrous*, Kurdistan region - Iraq.

وصف حشرة الدودة السلكية *Melanotus dichrous* (Erichson, 1841) (رتبة غمدية الأجنحة : عائلة الديدان السلكية : عويلة الديدان السلكية) في إقليم كردستان - العراق

نبيل عبدالقادر مولود[1] ونزار مصطفى طه الملاح[2] شذى حسين أحمد[2]

- **[1] جامعة صلاح الدين- كلية الزراعة**
- **[2] جامعة الموصل – كلية الزراعة**
- تاريخ تسلم البحث 2016/5/11 وقبوله 2016/12/18

الخلاصة

وصفت حشرة الدودة السلكية *Melanotus dichorus* (Erichson) التي جمعت من محافظة أربيل أقليم كوردستان – العراق . وكانت الصفات المظهرية لهذا النوعهي ، احتواء الفكوك العليا زوج من الأسنان .القطعة الرابعة للملمس الفكي فأسية الشكل،الفص الوسطي للسوة الذكرية مخروطي الشكل . القطعتان الجانبيتان شبه متوازية،ذو نهاية قمعية الشكل مائلة عليهما شعيرات قليلة الكثافة صفراء اللون. رسمت الأجزاء المهمة بدقة وخاصة الشفة العليا والفكان العلويان واللامس والسوة الذكرية
الكلمات المفتاحية : الوصف، عائلة الديدان السلكية، عويلة الديدان السلكية *Melanotus dichrous*، إقليم كوردستان – العراق.

Introduction

The Elateridae is a family of beetles with some 400 genera and more than 10.000 described species. The family is distributed worldwide but the highest species diversity is to be found in the tropics (Johnson, 2002). The adults can be recognized by the characteristic shape of their pronotum and overall elongated body. Most of these beetles are capable of righting themselves from an overturned position by arching their body and then in stantaneously straightening out, a process which hurls the insect into the air, hence their common name of click beetles (Bousquet, 1991).Adults may be found in diverse habitat types such as in leaf litter, dead wood, under stones, on flowers and leaves , as they feed on pollen and plant tissues and may also be present under rocks and rotting wood (Borrer, and Delong;1954; Chinery, 1982 ; Triplehorn and Johnson, 2005) . Luliana and Grigore (2003) Pointed that there are 21 species of this family are attacking maize farms, barley, wheat and sorghum in Romania, where the loss ratio up in these crops to 70-80%. Peter and Johnson (2005) mentioned that many species of the family are pollinate many plants, especially species that feed on pollen.

Vernon et al., (2001) pointed that the larvae of these beetles feed on roots and seeds of many economic crops as potatoes, corn, sugarcane, carrots, strawberries, onions, tobacco, grain, forage crops, vegetables and small fruits, as causing the death of seeds and seedlings, and this leads to significant economic losses. *Melanotus* Eschscholtz, 1829 is important genus of the subfamily Melanotinae , Platia and Schimmel (2001) divided the genus into four groups (on the basis of bidentate parameres) and described the new species. Platia and Schimmel (2002) examined the material and described 64 new species. Platia and Schimmel (2004) described 10 new species from China. In Iraq, Abdul-Rassoul, (1976) recorded four species. Al-Ali (1977). mentioned three species, the larvae of some species attacking the seeds of cotton, carrots, potatoes, sugar beets, alfalfa, and grains in Baghdad and Mosul . Muhammad et al.(2011) mentioned two new species, *Melanotus kalamensis* and *M. usrae* are described from Kalam, Swat Valley Pakistan and compared, with closely allied species.

Materials and Methods

The specimens were collected from the period of April / 2015 until November / 2015 from the Pistachio trees in some localities in Erbil region (Ankawa and Iasky Kalak).The specimens were placed in boiling water for 10-15 minutes to soften their parts. Then the parts were separated and put in 10% KOH which placed in water bath for 10-15 minutes; after that placed in distilled water for 2-3 minutes. The parts are placed in ethyl alcohol 25% and dissected under Binocular microscope, then transferred to ethyl alcohol 50% , 75% and 100% respectively for two minutes of each concentration , then placed in xylol for two minutes, for translucency, finely placed in Canada balsam to support slides for subsequent examination under binocular microscope. The length of parts measured by ocular micrometer. The species was identified by using description and taxonomic keys of (Akrawi, 2010).

Result and Discussion

Description

Melanotus dichrous (Erichson, 1841)

Head: Nearly oval with dense and simple punctuation, interstices of points half to one their diameter, pubescence short and inclined to apex. Head inclined from center to apex. Frons slightly raised above the base of antennae, and completely edged. Eyes small, spherical, and little prominent. Labrum (Fig.1a) brown semispherical, anterior margin straight, posterior margin truncate, surface and posterior margin long densely yellow setose. Mandible (Fig.1b) dark brown, triangular, height sclerotizes, apical part bidenticate, apical dentical long, acute, lower dentics very small with apical straight, apical surface of mandible sparsely brown long setoase. Maxilla (Fig.1c) brown, cardo triangular, stipes triangular sparsely red settees, galea and lacinia densely brown setose, 1stsegment ofmaxillary palps(palpomere) small, rectangular sparsely setose, 2nd and 3rdpalpomere cup shaped, 2ndpalpomere 1.1 times as long as 3rdpalpomere, apical part of each with 5-6 brown setae, 4thpalpomereaxe shaped,1.3 times as long as 3rd segment. Antennae (Fig.1d) dark brown 5.5-6.5 mm long, thin and serrate from 4th-10thantennomeres, 1stantennomere oval 3.5 times as long as the 2nd; 2ndantennomere globular, very short, as long as wide. 3rdantennomere of the same length, but semi-globular, truncate at apex, 4th-10thantennomere nearly same length; last antennomere oval elongated 1.1 times as long as 10thantennomere.

Thorax:Pronotum (Fig.1e) campaniform, along median line slightly longer than wide at the posterior angles, prominently raised at center, barcuate laterally, Posterior angles of pronotum slightly divergent, and with a prominently raised carina, apical margin slightly truncate, posterior margin straight. Pronotumsurface dense, coarse, simple, and rounded to drop-forming, punctate. Scutellum wedge-shaped, slightly convex at base, laterally straight, andsharp at apex. Surface slightly raised, and edged at basis, densely pubescence and punctate. Elytra sub-parallel, elongate and wedge-shaped, middle narrowed to apex. Apex acute, base of elytra slightly smaller than that of pronotum, margins raised shoulders prominent. Striae of elytra covered with fine and

dense, simple punctures, interstices of striae finely punctured, shiny, and flat, not raised. Pubescence short, bristly, and inclined to apex. Pro-, meso- and metathorax with dense and rugose punctate, interstices of points raised and shiny. Legs brown fore coxae spherical. Trochanter triangular, femur cylindrical same length with tibia. Tibia tubular gradually expanded forward apical part, tibia covered with longer and protruding bristles. Apices with two small spurs.1st-4th tarsal segment cup shaped, 1st segment 1.3 times as long as 2nd segment, 2nd segment 1.2 times as long as 3rd segment, 3rd segment 1.2 times as long as 4th segment, 5th segment 1.7 times as long as 4th segment. Claws simple, slightly curved. Middle legs resemble forelegs except, tibia thin, 1.2 times as long as femur. Hind legs resemble with fore legs except, coxae plate shaped, trochanter oval, tibia 1.2 times as long as femur.

Abdomen:Oval, dark brown consist of five visible segments, surface densely yellow setose, densely spherical punctuate.1st-4th abdominal sternite rectangular, 2nd segment is the largest 1.1 as long as the 3.rd-5th segment nearly triangular posterior margin oval. 1st-4th abdominal tergites rectangular.5th segment nearly oval.9th abdominal tergites cup shaped, anterior margin straight, posterior truncate. 9th abdominal tergites cup shaped, anterior margin straight, posterior truncate.9th abdominal sternite oval, apical part ring shaped.10thabdominaltergites oval, anterior margin strongly concave,middle emarginated, posterior margin oval, surface densely yellow setose.

Male genitalia: Aedeagus (Fig. 1 f) brown, 5.5- 6.5 mm long, median lobe cone shaped 1.1-1.3 mm long, noticeably extending parameres. Parameres sub-parallel, in middle conspicuously thick, apically beveled funnel shaped sparsely yellow setose. Phalloapodeme crescent-shaped, with prominent, hook-like lateral edge.

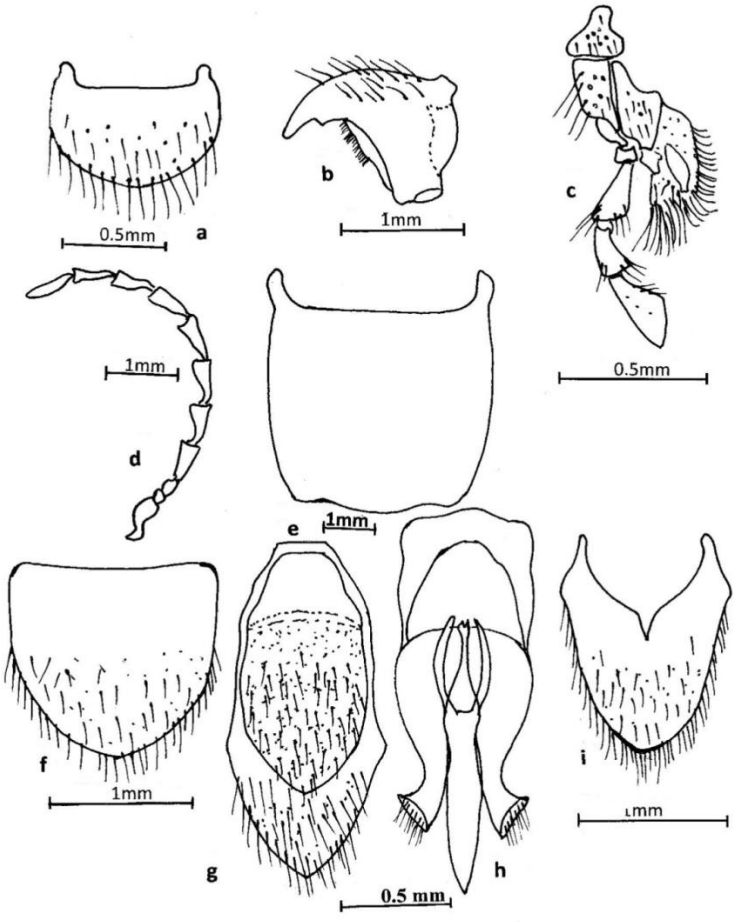

Figure 1 : *Melanotus dichrous* (Erichson).

a. Labrum b. Mandible c. Maxilla d.Antenna e.Pronutum f. 9thabdominal tergite g. 9th abdominal sternite h.Male genitalia i.10thabdominal tergite

References

1.Johnson,P.J.(2002).*Melanotuscete* Candez,a second adventitious species of *Melanolotus* Eschscholtz in North America.Pan. Pac.Entomol.,74(2): 2PP.

2. Bousquet,Y.(1991).Checklist of beetles of Canada and Alaska. Agriculture Canada Publication 1861/E. Ottawa, 116 pp.

3. Borrer, D. J. and Delong, D. M. (1954). An Introduction to study of insects.Holt, Rinehart and Winston New York.1030 pp.

4. Chinery, M. (1982). A Field guide to the insects of Britain. William Collins sons and Co Ltd. London., 352pp.

5. Triplehorn,C. A. and Johnson, N. F. (2005).Borror and Delong. Introduction to study of insects.7th ed. Brook/Cole, Cengage Learning Learning. Australia .411pp.

6. Luliana, A. and Grigore, M. (2003). The species and the spreading of click beetles (Coleoptera: Elateridae) which are harmful to cereal culture in Romania. Lucian Blaga University, 10 Victoriei Bvd, 2400 Sibiv.

7. Peter, C. I. and Johnson, S. D. (2005). Anther cap retention prevent self– pollination by Elaterid beetles in the South African Orchid *Eulophia foliosa*, J. Ann. Botany , 11pp.

8. Vernon, R. S., Lagaasa E. and Philip, H.(2001).Geographic and temporal distribution of *Agriotes obscurus* and *A. lineatus* (Coleoptera:Elateridae) in British, Columbia and Washington as determent by pheromone traps surveys. J. Entomol. Soc., 98:9PP.

9. Platia, G. and Schimmel, R. (2001). Revisionedelle specie orientali(Giapponee Taiwan esclusi) delgenere *Melanotus* Eschscholtz, 1829 (Coleoptera, Elateridae, Melanotinae). MuseoRegionale di ScienzeNaturali, Torino. Monografie, 27: 638pp.

10. Platia, G. and Schimmel, R. (2002). Revisionedelle specie orientali(Giappone e Taiwan esclusi) del genere *Melanotus* Eschscholtz, 1829 (Coleoptera, Elateridae, Melanotinae). I Supplemento.Bollettino del Museoregionale di Scienzenaturali,Torino, 19(2):84PP.

11. Platia, G. and Schimmel, R. (2004). Revision edelle specie della Regioneorientale (Giappone e Taiwan esclusi) delgenere *Melanotus* Eschscholtz, 1829 (Coleoptera, Elateridae, Melanotinae).II Supplemento. Bollettino del Museoregionaledi Scienzenaturali,Torino, 21(1):23PP.

12. Abdul-Rassoul, M. S. (1976). Check list of Iraq natural history museum insect collection. Nat. Hist. Res. Cent. Iraq, Pub., 30:41pp.

13. Al-Ali, A. S. (1977). Phytophagus and entomophagous insects and mites of Iraq. Nat. Hist. Res.Cent.Iraq, pub.,33:142 pp.

14. Muhammad, A. A., Platia, G., Rizvi, S. and Ahmed, Z. (2011). Two new species of the genus *Melanotus* Eschscholtz (Coleoptera: Elateridae: Melanotinae) from Pakistan. Zootaxa,3101:47-52pp. P.www.mapress.com/ Zootaxa.

15. Akrawi, H.R. I. (2010).Taxonomic study of wireworm beetles (Coleoptera: Elateridae) in Kurdistan region – Iraq. MSc. Thesis, College of Agriculture, Salahaddin University.139PP.