A New record of Sap feeding- beetles, *Nitidula flavomaculata* Rossi, 1790 (Nitidulidae: Coleoptera) from Iraq

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**ABSTRACT**

A New record of sap feeding beetles, *Nitidula flavomaculata* Rossi, 1790 as an important insect species in the field of entomology was described in Iraq. The species was collected from the animal corpses Carrion during the period of November 2015 until May 2016. The taxon is easily distinguishable, where the mandibles are bidenticles. The lacinia membranous with high density of yellow setose. 3rd segment of labial palps elongated oval 1.1 times as long as the 2nd. 4th segment of maxillary palps is elongated oval 1.2 times as long as the 2nd segment. Antenna is capitate, 9th segment inverted flask shaped 1.2 as long as the 10th. Pronotum dark brown, yellow laterally. Tegmen extended and elliptical, anterior part wide at posterior, apical margin of median lobe broad, V-shaped. Aedeagalapophysis long, tubular, 1.7 times as long as the tegmen. The important taxonomic parts have been photographed. Localities and date of the collection have been mentioned.

**1. INTRODUCTION**

The Nitidulidae are commonly known as sap feeding beetles a large family in the superfamily Cucujoidea in the suborder polyphaga that belongs to order Coleoptera. The family currently contains more than 4,000 species classified in ten subfamilies worldwide (Cline et al., 2014). There are eight species of Nitidulidae beetle recognized from the Western palaearctic region were introduced from outside of this area (Jelinek and Audision, 2007). A few nitidulids are predaceous and feed on scale insects or have symbiotic relationships with ants or other social Hymenoptera organism (Kirejtshuk, 1998). Hayashi (1978) indicated that the family have been found in various habitats feeding on flowers, fruits, and decomposed fungi and animal tissue tissues. Abogast and Throne (1997) studied many species of sap beetles that regards as agricultural pests weather in the field or inside stored products the dusky sap beetle on corn field Dobson and Erichson found some species on stored maize. Dowd (1991) mentioned the damage of sap beetles via either there feeding as a vector of fungi. In this family, three genera of *Nitidula* (Fabricius), *Omosita* (Erichson) and
Carpophilus (Stephens) include species that are useful in forensic entomology (Zanetti et al., 2013). Nitidula is an important genus in the family which contain three to four generations years (Dowd and Nelson, 1994). Nitidula flavomaculata is on of important species in the family; The species of has previously been reported from animal carcasses in Tehran and Lorestan provinces of Iran (Lason and Ghahari, 2013). The main aim of this study was a detail description of the species.

2. MATERIALS AND METHODS

The present paper is based on, 40 specimens which collected from the period of November 2015 till May 2016 from the animals corpse (goat, dogs and sheep) in many localities of Erbil governorate (Khostapa, Grdarasha and Darato). 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, placed on fire with shaking for about (4-5) minutes for dissolving of lipids materials of the body and destroying the muscles. After that specimen, placed in distilled water for 2-3 minutes in order to A digital camera (Ucmas series microscope camera) was used to photographing the important parts. neutralize the alkali. The parts are placed in ethyl alcohol 25% then transferred to ethyl alcohol 50%, 75% and 100% respectively for two minutes for each concentration to dehydration of water, then placed in xylol for two minutes for translucency finally placed in Canada Balsam or DPX to support slides for subsequent examination under dissected microscope (Lane and Grosskey, 1993; Mawlood et al., 2016). The measured proportions of body parts are given in points of an eyepiece linear micrometer in a binocular microscope. And species were identified with the help of available literature of( Hinton, 1945; Hatch, 1961 ). The species confirmed by Dr. Michael Geiser the curators of Coleoptera (beetles) from University of Basel, Switzerland, London and Prof. Dr. Mohammed S. Abdul Rassoul in Iraq Natural History Research Center and Museum.

3. RESULTS AND DISCUSSION

Nitidula flavomaculata Rossi, 1790

Body: Oval, board, subparallel, dark brown, feebly convex. Length 2.5-3.4 mm and width 1.1-1.5 mm. Dorsal surface with moderately dense, short, recumbent hairs.

Head: Globular shaped, with narrow dark brown sutural edge, the punctures much coarser the facets of eyes. length 0.9-1.2 mm, width 1.0-1.3 mm. Eyes dark yellow, oval. Vertex shiny black, weakly convex, with low fine of dense punctures. Coronal suture present. Frons shine black, slightly concave, with low density of fine punctures. Clypeus weakly concave, triangular, laterally with low dense of fine punctures and short yellow setae. Labrum (Fig.1a) transverse, pale yellow, 0.3-0.5 mm length, posterior margin slightly emarginated at the middle, densely short pale yellow setose. Mandibles high sclerotized, a bifidicate, outer denticles long, 3 times as long as the inner, molar area with density, fine yellow setae. Maxilla (Fig.1c) pale yellow, lacina elongated oval apical and outer margin densely high short yellow setose, 1-3 maxillary palp cup shaped, 2nd segment 1.2 times as long as the 3rd segment, 4th segment elongated oval, 1.2 times as long as the 2nd segment. Labium (Fig.1d) brown, 2nd segment of labial palp cup shaped 4 times as long as the 1st segment, 3rd segment elongated oval, 1.2 times as long as the 2nd segment, each segments with 2-4 short setae. Antenna (Fig.1e) brown, capitate, 11 segmented, 1.0 – 1.4 mm long, 1st segment elongated oval, 1.3 times as long as the 2nd segment, 3rd segment cylindrical, 1.2 times as long as the 4th
segment, 9th and 10th segments cup shaped, 10th segment 1.2 times as long as the 10th, 11th segment nearly triangular, 1.1 times as long as the 9th segment.

**Thorax**: Pronotum in dorsal view shine dark brown, laterally yellow, surface randomly irregular fine punctures and moderate short brown setae, the anterior margin moderately concave, posterior margin nearly straight; the anterior and posterior with row of pale yellow setae, anterior and posterior angle slightly acute. Pronotum with punctures as fine or finer than those of elytra, disk of pronotum more or less flat. Procoxal cavity open, prosternal process nearly globular. Scutellum shine yellow, semi rounded, surface sparsely fine punctures. Elytra (Fig.1f): shine brown, flat, nearly 3/4 of basal part dark brown, surface densely short brown setose with fine punctures. Epiphragm straight, dark brown, with fine punctures. Hind wing pale white, veins weakly developed, stigma oval, yellow. Fore legs (Fig.1g) brown, for coxa cone shaped, fore legs isosceles triangle, apical with 2 short spurse, apical part with a row of spines and without spurs, for tarsus 5 segmented, 1-2 segments cup, 3rd segment bilobed, 4th segment is the smallest hidden in bilobed of 3rd segment, 5 segment tubular, 4 times as long as the 1st, the segments 1-3 with high densely, short, fine yellow setose. Claw simple, moderately curved. Middle legs resemble to fore legs except; the coxae nearly spherical. Hind legs resemble to fore legs except; the coxae boat shaped, hind tibia narrow and longer.

**Abdomen**: Dark brown, six segmented, covered with high densely brown setose, 1-4 abdominal sternites rectangular, 1st 1.2 as long as the 1st, the segments 2, 3 and 4 nearly same length, 5th segment trapezoidal shaped, 6th segment cup shaped, 1st - 5th tergites nearly triangular, 1st - 5th abdominal tergites rectangular, 6th tergite nearly triangle shaped. 9th abdominal sternite dark yellow, U-shaped, 1/2 posterior part moderately fine brown setose, posterior margin sparsely yellow setose, lateral arms tubular, apex rectangular. 9th abdominal tergite (Fig.1g) pale brown, posterior part bilobed nearly triangle, sparsely brown setose, anterior part long tubular shaped.

**Male genitalia**: Aedeagus (Fig.1i, j) pale brown, length 1.3-1.7 mm long. From dorsal view (Fig.1i), the tegmen 0.4-0.6 mm length, extended and elliptical, anterior part wide at posterior, with thin connection on medio-proximal, other lateral margins sclerotized from base to distal, median lobe contoured with highly sclerotized and U-shaped thin band, lateral margins distinctly arched through apical. Aedeagalapophysis tubular shaped, 0.9 - 1.2 mm, 2 times as long as the tegmen. From lateral view (Fig.1j), Tegmen sinuous, almost parallel through proximal, aedegalapophysis slightly curved and wavy on anterior half; median lobe arched and almost parallel with tegmen. Species of sap beetle, *N. flavomaculata* Rossi, is commonly distributed throughout the Turan-Mediterranean basin extending easterly to Turkey and southern parts of Iran (Mifsud and Audisio, 2008). The species on a human corpse has rarely been reported. This beetle is considered as an insect of forensic significance in the world and it has previously been reported from human corpses in line with the present study (Sims and Fothergill, 2014). This description agreement with study of (Hinton, 1945) the punctures much coarser the facets of eyes. Disk of pronotum and elytra more or less flat. (Hackson, 2017) mentioned that the pronotum very dull, flat. Elytra usually with large irregular reddish-yellow patch at the base and second, elongated patch over the suture beyond half-way which may be united with the basal patches. Ozdemir and Serto (2008) mentioned that the tegmen in dorsal view extended and elliptical, median lobe contoured with highly sclerotized and U-shaped thin
band, lateral margins distinctly arched through apical, apical margin broad V-shaped, anterior angles sharp, anterior part with a couple of horn-like projection.

**Examined specimens:** The specimens were collected from animal corpses (goat, dogs and sheep) in different localities of Erbil governorate- Iraq : Grdarasha, 30.11.2015; 22.12.2015; Qushtapa, 10 3.2016; and Darato, 5.4.2016.

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Conflict of interest
There is no conflict of interest

Figure (1) *Nitidula flavomaculata* Rossi

a. Labrum b. Mandible c. Maxilla d. Labial palps e. Antenna f. Elytra g. Fore leg h. 9th abdominal sternite i. 9th abdominal tergite j. Aedeagus (dorsal view) k. Aedeagus (lateral view)
REFERENCES


LARSON, D. (2013). Key to Saskatchewan species of Nitidulidae (sap beetles) and Kateretidae (short-winged flower beetles).


