Taxonomic Studies of Family Nitidulidae (Coleoptera) Except Cypocephalinae In Egypt

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ABSTRACT

The taxonomy of Family Nitidulidae has received little attention; all previous studies were limited to descriptions of new species and lists with general notes of some species. In this work, eleven Egyptian species belonging to four subfamilies and sex genera were taxonomically studied. Keys to the subfamilies, genera and species of family Nitidulidae. The diagnostic characters, synonyms, local geographical distribution and illustrations are given to the species.

INTRODUCTION

Nitidulidae are one of the largest and most diverse families belonging to the superfamily Cucujoidea contains about 230 genera more than 4,000 species classified in the world (Cline et al., 2014) and are diverse ecologically and present in all life-history strategies employed, i.e predation, frugivory, fungivory, detritivory, necrophagy, herbivory and some species are pests (Powell, 2015). The nitidulid beetles are well-documented pests of ripening fruits, vegetables and grains (Hinton, 1945). Most species are plant feeding, the adults feeding on the flowers and shoots of their host plants, the larvae occur in flower buds or seed capsules, others are associated with decaying or fermenting material, some species occur on carrion, especially that in the last stages of decay where bones, dried tissue and sinews and hide are all that remain, many species occur in decaying plant material ranging from compost and fermenting fruits, to mouldy grains and hay, under bark of recently dead trees and in compost (Larson, 2013). Some species are found on sap-flows or fermenting wounds on trees, hence the common name sap-beetle (Martin, 1977 & Parsons, 1943). Several species are known agricultural pests of field and stored products, the corn sap beetle, *Carpophilus dimidiatus* on field corn; the complex *Carpophilus dimidiatus* (F.) and *Carpophilus mutilatus* Erichson on stored maize (Abogast and Throne 1997); the dried fruit beetle *Carpophilus hemipterus* (L.); the pineapple beetle, *Urophorus humeralis* a pest of dried fruit. Sap beetles are often considered minor pests but the presence of large numbers of sap beetles on a host plant can prove economic in terms of crop damage caused by the feeding beetles, but the
damage on crop value is primarily due to the contamination of products ready for sale by adults and larvae.

The numerous nitidulid species is worldwide serious pests on economic crops, for example, *Urophorus humeralis*; *Carpophilus hemipterus*; *Carpophilus dimidiatus*; *Carpophilus mutilatus*; *Carpophilus obsoletus* (Parsons, 1943; Dobson, 1959; Archibald & Chalmers, 1983; Hinton, 1945; Gillogly, 1962; and Kuschel, 1990). Generally, the nitidulids comprised over 35% of all beetles collected from the carrion (Payne 1965 and Shubeck *et al.*, 1981). Large numbers larvae of *Nitidula flavomaculata* Rossi, found in the genital area of the victim of a partially decayed human female corpse (Adair and Kondratieff, 1996).

Nitidulid species can be collected by yeast or molasses baited pitfall traps (Martin, 1977). The system of the family has been greatly changed and essentially improved during the last 20-30 years; however there are no comprehensive publications devoted a general view on the system of this family, although some important aspects of the system of this group are still needed to be considered (Kirejtshuk, 2008). Taxonomic monographs, which cover a detailed review of bibliography, are (Grouvelle, 1913; Jelínk and Audisio, 2007 and Habeck, 2002).

**MATERIALS AND METHODS**

The present taxonomic work started by examining the Egyptian reference insect collections for material to obtain a general knowledge of the diversity and distribution of nitidulid beetles in Egypt. These collections are Alfieri collection, Faculty of Agriculture, Al-Azhar University, Ministry of Agriculture collection, Plant Protection Research Institute, Ain Shams University collection, Department of Entomology, Faculty of Science and Cairo University collection, Department of Entomology, Faculty of Science.

Examination and illustrations of the external features of specimens were achieved using M6C-9 (made in USSR) stereo binocular microscope. All drawings were made by a square eyepiece. Ocular micrometer was used in making measurements. The source of local distribution for each species is based on the material examined and published data.

Mounting specimens preparation with the drawing of some species was made in laboratory of insect research, Plant Protection Department, College of Agriculture, AlAzhar University.

The taxonomic keys used in identification, terminology used in species descriptions and nomenclature and the systematic adopted are according to (Leschen and Marris, 2005; Larson, 2013; Bousquet, 1991; Audisio, *et al.*, 2009 and Parsons, 1943). **List of abbreviations:**

**TL** (Total length of specimens): the distance between anterior margin of clypeus and posterior apex of pygidium.

**PL** (Pronotal length): the distance between anterior and posterior margins of pronotum.

**PW** (Pronotal width) the distance between the lagers points of lateral margins of pronotum.

**EL** (Elytral length) the distance between posterior apex of scutellum and elytral distal apex.

**EW** (Elytral width) the distance between the lagers points of lateral margins of elytra.

**ALFC**: Alfieri collection, Faculty of Agriculture, Al-Azhar University

**MAC**: Ministry of Agriculture collection, Plant Protection Research Institute

**ASUC**: Ain Shams University collection, Department of Entomology, Faculty of Science

**CUC**: Cairo University collection, Department of Entomology, Faculty of Science.
### RESULTS AND DISCUSSION

**Family: Nitidulidae Latreille, 1802**

The family Nitidulidae or sap beetles identified by the body convex, suboval, or elongate, slightly depressed; length 1.5 to 12 mm. Black to pale color with markings red or yellowish. Antennae with 11 segments, the last 3 antennomeres forming a club. Labrum transverse, bilobed, may be covered by clypeus; mandibles broad, with a brush of setae on inner margin. Tarsal formula 5-5-5 except subfamily Cybocephalinae are 4-4-4. Tarsomeres dilated, the fourth segment minute, the fifth long; claws simple or toothed. Elytra truncate apically and exposing the part or all of pygidium, some with two or three terga exposed. Body variously setose, from sparse or densely simple or broadened setae to scale-like, decumbent or erect hairs of various colors. Surface smooth, punctate, or rugose.

**Key to the Subfamilies, Genera and Species of Nitidulidae**

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1-</td>
<td>Tarsal formula 4-4-4</td>
</tr>
<tr>
<td>2 (1).</td>
<td>Labrum and clypeus fused, the line of union marking a distinct suture; lateral margin of front or more or less straight between the eye and the anterior margin of clypeus and covering base of antenna in dorsal aspect. Pronotum margined basally, slightly overlapping base of elytra; body mostly pubescent; color testaceous to piceous, with or without darker spots; labrum concealed by and connate with clypeus.</td>
</tr>
<tr>
<td>3 (2)</td>
<td>Outer margin of middle and hind tibiae with a single row of small spines; maxillae with one lobe; antennae distinctly clubbed; side margins of elytra usually clearly visible from above; epiplurae broad and extending to tip elytra</td>
</tr>
<tr>
<td>4 (3)</td>
<td>Head dorsally with circum-ocular furrows not developed; scutellum punctured in posterior half of exposed portion.</td>
</tr>
<tr>
<td>5 (4)</td>
<td>Elytral humeral striae usually distinct; 4th and 5th antennomeres subequal as long as wide.</td>
</tr>
<tr>
<td>6 (3)</td>
<td>Elytra short and truncate apically, not covering pygidium; abdomen with two or three dorsal segments exposed; abdominal segments 9 and 10 visible in dorsal view; males having an external button-like 10th tergite.</td>
</tr>
<tr>
<td>7 (5)</td>
<td>Elytra exposing two abdominal tergites; pronotal bead not thickened in apical ½</td>
</tr>
<tr>
<td>8</td>
<td>Elytra exposing three abdominal tergites; pronotal bead, viewed laterally, 2x as thick in</td>
</tr>
</tbody>
</table>
apical ½ as basal ½. Body convex................................. Urophorus humeralis
8 (7) - Mesonotum disc separated from sides by carinae obliquely extending from apex of
pronotum to mesocoxae................................................................. 9
- Mesonotum disc without carinae as above. ...................................... 10
9 (8) Elytra distinctly patterned with pale humeral and apical patches ............
................................................................. Carpophilus hemipterus
- Elytra lacking distinctive pattern as above, humeral areas sometimes faintly lighter
................................................................. Carpophilus obsoletus
10 (8) Hypomeron densely punctate, punctures deeply impressed, edges distinct; antennal
segment 3 about 1.3x length of segment 2 ......................................... Carpophilus dimidiatus
- Hypomeron weakly punctate; antennal segment 3 less than 1x length of segment 2; male
metatibia gradually expanded........................................................ Carpophilus mutilates
11 (6) Claws dentate on base. Elytra serially punctate, setose, or striate. Elytra truncate or
separately rounded to expose most of pygidium............................... Anister raffrayi
- Claws simple. Elytra without striae, irregularly punctate. Elytra entire, most of pygidium
covered................................................................. Nitidula eremita

Subfamily: Carpophilinae Erichson, 1842

According to Alfieri (1976), in Egypt, Carpophilinae is represented by five species
belonging to two genera, i.e., Carpophilus hemipterus (Linnaeus), C. obsoletus Erichson, C.
dimidiatus Fabricius, C. mutilates Erichson and Urophorus humeralis Fabricius. In the
present work, the five species are studied.

Genus Carpophilus Stephens, 1830

Genus Carpophilus Stephens, 1830: Mandibulata. Volume III. London: Baldwin and
Cradock, p. 50.

Type species: Dermestes hemipterus Linnaeus, 1758

Generic diagnosis:

Shape ovate to oblong, moderately convex to weakly flattened. Colour variable,
ranging from pale brown to black, some species with distinctive patterning on elytra.
Surfaces moderately dull to shining. Usually clearly but shallowly punctured with fine,
decumbent pubescence. Pronotal bead not thickened in apical half. Head broad but distinctly
narrower than the pronotum. Clypeus indistinct. Labrum separated from clypeus by a
clypeolabral suture. Frontoclypeal suture absent. Eyes usually large. Antennae a little longer
than the head, first segment enlarged and often widened on the outside, second and third
cylindrical, about of equal length, club compact, flattened, rounded or oval in outline.
Antennal grooves moderately deep and convergent. Antennae with a distinct, flattened, 3-
segmented club. Elytra short and truncate; pygidium transverse; two abdominal tergites
normally exposed in dorsal view; males having an external button-like 10th tergite; second
and third abdominal ventrites shorter than first and fourth; last ventrite of male deeply
emarginated to allow the reception of the supplementary sclerite. Tarsal formula 5-5-5.

Carpophilus dimidiatus Fabricius, 1792 (Fig. 1)

Carpophilus dimidiatus Fabricius, 1792: Entomologia systematica emendata et aucta.
Secundum classes, ordinates, genera, species adjectis synonymis, locis, descriptionibus,

C. auropilosus Wollaston, 1854: Insecta Maderensia; being an account of the insects of the


Diagnosis: TL: 2.1 mm; PL: 0.6 mm; PW: 1.0 mm; EL: 1.0 mm; EW: 0.55 mm.
Body subparallel. Colour: head deep rufopiceous, pronotum rufopiceous paler than the head,
eytra deep brown. Body covered with vestiture of decumbent golden setae; average length of
eytral setae as long as eye. Head: Antennomere 3 about 1.3 x length of segment 2. Pronotum
with sides evenly arcuate, anterior angles obtusely rounded; posterior angles broadly rounded, not produced into a distinct tooth; disc strongly convex; punctures strongly impressed on the disc, separated by 1-3 diameters; granulate microsculpture clearly present between punctures. Pronotal carina narrowly not sinuate in anterior 1/3. Prosternum and hypomeron densely and strongly punctured. Prosternal process with apex rounded and not greatly expanded laterally behind procoxae. Elytra: Punctures relatively strongly impressed, separated by 1 diameter; granulate microsculpture present. Mesoventrite punctate; discal carinae absent. Metaventrite with axillary space present to a level of ¼ the length of the metepisternum, posterior edge extending to ½ the length of the metepisternum. Male metatibia not strongly dilated at base.

Material examined: (4) Giza (on Cottonseeds) 1.I.1929…………………………………….(MAC)
(1) Zaitoun 20.II.1929…………………………………………………………(ALFC)
(2) Gabel Asfar 7.VI.1954………………………………………………………….(ASUC)

Carpophilus hemipterus (Linnaeus, 1758) (Fig. 2)

C. brevipennis Germain, 1856: Descripcion de coléopteros de diversas especies que no se hallan en la obra del senor Gay. Anales de la Universidadd de Chile 1855: 397.

Diagnosis: TL: 2.1-3.0 mm; PL: 0.6-0.9 mm; PW: 1.0-1.3 mm; EL: 1.0-1.3 mm; EW: 0.55-0.9 mm.

Body obovate to subparallel; feebly shining; sparsely. Colour dark brown with pale maculae on humeral and apical areas on the elytra. Vestiture of decumbent golden or black setae; average length of elytra setae shorter than the eye. Body coarsely punctate, especially pronotum sublaterally near posterolateral angles. Antennomere 3 and 2 subequal. Pronotum
with sides evenly arcuate, converging anteriorly and widest near the base; anterior angles obtusely rounded; posterior angles obtusely angulate; disc weakly convex; punctures strongly impressed on disc, separated by 1-2 diameters; glabrous between punctures with sparse microsculpture. Pronotal carina not sinuate in anterior one third. Prosternal process with apex evenly arcuate and expanded laterally behind procoxae, with a median longitudinal carina. Metaventrite with axillary space poorly developed and present to a level of 1/5 the length of the metepisternum. The first segment of the abdomen ventrally with a raised line that runs parallel to the hind coxae for the most part and reaches the episternum near the front.

**Material Examined:**

(1) Giza, 13.V.1934; (3) Giza, 14.VII.1923; (1) Giza, 11.VII.1932; (1) Cairo, 15.VII.1923; (6) Giza, 26.VII.1923; (5) Giza, 17.VII.1923; (3) Giza, 27.VII.1923; (1) Cairo, 16.IX.1923; (1) Giza, 26.VI.1923 on apricot; (1) Giza, 30.VIII.1923; (1) Cairo, 20.VII.1920 on onion; (7) Giza, 29.V.1924; (3) Giza, 28.V.1924; (1) W.Digla, 18.IX.1923; (1) W.Hoff, 10.IV.1916; (1) Alex., 18.VIII.1921; (2) Cairo, 5.VII.1924; (5) Giza, 18.VII.1923; (2) Giza, 17.VII.1924; (4) Giza, 4.VII.1923; (3) Giza, 3.VII.1923; (1) Zamalik, 20.VI.1923; (1) Zagazig, 18.VII.1923; (3) Zagazig, 8.VII.1923; (2) Zagazig, 11.VII.1923 on watermelon; (3) Zagazig, 9.VII.1923; (1) Giza, 1.VII.1923; (1) Zamalik, 26.VI.1923; (5) Giza, 12.VII.1923; (5) Giza, 16.VII.1923; (3) Giza, 7.VI.1923; (2) Giza, 3.IV.1923; (3) Giza, 2.VII.1923; (2) Zagazig, 10.VII.1923; (1) Giza, 15.VII.1923; (2) Giza, 15.V.X.1924; (1) Alex., 16.VIII.1921; (1) Giza, 19.VII.1923; (1) Giza, 1.VI.1924; (1) Giza, 31.V.1924; (1) Rode El Farag, 10.IX.1929; (1) Mansourah 25.V.1924; (1) Giza, 10.IX.1929; (1) Giza, 1.II.1925; (1) Cairo, 18.VI.1914; (1) Giza, 19.XI.1924; one sample without dates

…………………………………………………………….

(1) Ramleh 29.XI.1912; (2) Cairo 4.IX.1913; (1) Cairo 11.VIII.1913; (1) Ramleh 15.X.1913; (1) Ein Shams 6.III.1914; (4) Cairo 10.IV.1910; (1) Ogret ElSheikh 11-15.IV.1921; (1) Rodete el Serg 1.III.1936……………………………………………………………(MAC)

Carpophilus mutilatus Erichson, 1843 (Fig. 3)

C. mutilatus Erichson, 1843: Versuch einer systematischen Eintheilung der Nitidularien.
Zeitschrift für die Entomologie, 4, p. 258.

C. luridus Murray, 1864: Monograph of the family of Nitidulariae. Part I. Transactions of
the Linnean Society of London 24: p. 377.


Diagnosis: TL: 3.0 mm; PL: 1.0 mm; PW: 1.2 mm; EL: 1.3 mm; EW: 0.8 mm.
Body parallel. Colour variable, light tan to brown; body covered with pits provided with
white setae; average length of elytral setae distinctly shorter than the eye. Second and third
antennomeres equal in length. Pronotum with sides weakly curved, convergent anteriorly;
pronotal angles obtusely angled; posterior angles broadly rounded, not produced into a
distinct tooth; disc moderately convex; punctures moderately impressed on disc, separated by
1 diameter or less; granulate microsculpture clearly present between punctures;
microsculptures absent. Pronotal carina narrowly explanate, not sinuate in anterior 1/3.
Prosternum rugose, hypomeron granulate. Prosternal process with apex subrounded and not
greatly expanded laterally behind procoxae. Elytra: Punctures weakly to slightly impressed,
separated by 1-3 diameters; granulate microsculpture present. Metatibia not strongly dilated
at base.

Material examined:
(1) Bred cage, 11.XI.1917; (2) Zamalik, 20.VI.1923; (1) Sammalut, 27.VIII.1916; (2) Giza,
14.VII.1923; (1) Giza, 27.V.1924; (4) Giza, 16.VII.1923; (1) Alex, 13.VII.1924; (1) Giza,
9.VII.1923; (3) Giza, 12.VII.1923; (2) Abu Tigr, 20.II.1929; (2) Giza, 8.IV.1923; (6) Giza,
17.VII.1923; (3) Zamalik, 25.VI.1923; (1) Giza, 2.VIII.1923; (3) Giza, 11.VII.1923; (3)
Cairo, 8.VIII.1917; (2) Abu Tigr, 5.III.1917; (1) Abu Tigr, 29.III.1924; (1) Abu Tigr,
20.III.1924; (2) Giza, 5.VII.1923; (3) Giza, 15.VII.1923; (1) Zamalik, 24.VI.1923; (5)
Giza, 30.VII.1923; (1) Giza, 8.VII.1923; (2) Cairo, 25.VI.1923; (1) without locality, 8.X.1917.
(1) Abu Tigr, 8.III.1924; (1) Giza, 13.XII.1924; (8) Helwan, 17.IX.1929; (5) Baharia oasis,
16.XII.1925; (1) Giza, 12.XII.1924 on eggplant fruit; (3) Gabel Asfar, 25.VII.1928; (8)
Mansouriya, 30.XII.1925; (23) Baharia Oasis, 15.XII.1925; (1) Giza, 16.XII.1924; (5)
Helwan, 10.IX.1929; (3) Giza, 13.XI.1924; (1) Giza, 12.XII.1925; (2) Giza, 12.VII.1924; (1)
Giza, 16.XII.1925; (4) Baharia Oasis, 24.III.1925; (4) Giza, 15.XII.1924; (1) Embaba,
22.II.1925; (2) Baharia Oasis, 30.V.1925; (1) Helwan, 10.IX.1920; (2) Gabel Asfar,
5.VII.1928; (1) Maadi, 30.VIII.1933; (1) Cairo, 15.V.1910; (1) Giza, 3.IX.1913; (1) Al-
Aguouza, 29.III.1925 on potatoes; (9) port said, 12.VI.1928; (3) Helwan, 17.IX.1923; (2)
Giza, 18.II.1924; (1) El Dokki, 16.II.1925; (2) Gabel Asfar, 25.VI.1925; (8) Helwan,
1.VII.1929; (1) Giza, 13.XII.1924; (1) Giza, 11.VII.1925; (1) El Dokki, 16.II.1915; (1)
Helwan, 10.III.1929; (1) Giza, 10.XII.1924; (2) Gabel Asfar, 10.VII.1924; (2) Giza,
3.V.1925; (1) Giza, 6.XII.1925; (1) Giza, 30.VIII.1924; (2) Helwan, 16.II.1913; (1) Maadi,
7.VIII.1931; (1) Maadi, 24.III.1933...........................................................(MAC)
(3) Ayat 20.IX.1907; (7) Cairo 10.IV. 1910; (1) Shoubra 20.III.1920; (2) Cairo 9.V.1916; (1)
Cairo 1.V.1910; (1) Giza 23.III.1921; (1) Giza 20.VI.1921; (1) Abou Rawash
16.V.1906...................................................................................................(ALFC)
(12) Gabel Asfar 6.XI. 1953.......................................................................(ASUC)

Carpophilus obsoletus Erichson, 1843 (Fig. 4)

Carpophilus obsoletus Erichson, 1843: Versuch einer systematischen Eintheilung der


C. immaculatus P. H. Lucas, 1846: In: Exploration scientifique de l’Algérie pendant les

**C. sericeus** Motschulsky, 1858: Insectes des Indes orientales. 1ère Série. Études Entomologiques 7: p. 41.

**C. strigipennis** Motschulsky, 1858: Insectes des Indes orientales. 1ère Série. Études Entomologiques 7: p. 41.

**Diagnosis:**

TL: 3.05-3.8 mm; PL: 1.0-1.2 mm; PW: 1.45-1.5 mm; EL: 1.0-1.5 mm; EW: 0.8-1.0 mm.

Colour dark brown to black, body covered with large and dense pits provided with pale yellow setae; average length of elytra setae shorter than eye. Second and third antennomere subequal in length. Pronotum with sides curved, converging anteriorly and widest near the base; anterior angles obtusely rounded; posterior angles obtusely angulate, not produced into a tooth; disc convex; punctures large and ovate and strongly impressed on disc, separated by less than 1 diameter; microsculpture small micropunctures sparsely present, glabrous between punctures. Elytra: Surface undulate, punctures at disc of similar size, punctures ovate and strongly impressed, separated by less than 1 diameter; granulate microsculpture present. Metatibia not strongly dilated at base.

**Material examined:**

(3) Cairo 10.IV.1910; (2) Palace Kouba 15.IV.1921; (2) Giza 20.VI.1921...(ALFC)

(9) Giza, 7.VII.1923; (3) Giza, 17.VII.1923; (2) Giza, 4.VII.1923; (2) Giza, 24.IX.1923; (1) Giza, 15.VII.1923; (2) Giza, 16.VII.1923; (2) Giza, 8.VII.1923; (1) Giza, 24.VII.1923 on Cage bred on peach fruit; (1) Giza, 27.VIII.1916 on millet; (1) Cairo, 20.VII.1920 on onion; (1) Giza, 29.V.1924; (2) Giza, 27.V.1924; (2) Maadi, 11.III.1916; (1) Giza, 31.V.1924; (1) Giza, 1.VI.1924; (1) Giza, 2.VI.1924; (2) Maadi, 5.V.1918; (11) Giza, 27.V.1924 on Tomato; (3) Giza, 29.V.1924 on squash; (8) Maadi, 31.III.1916 on bee hive; (1) Mansouriya, 12.XII.1928; (1) Giza, 16.VII.1923 on peach fruit; (5) Giza, 8.VIII.1912 bred on pommegrante; (1) Giza, 10.VIII.1912; (1) Giza, 10.VIII.1924 bred on pommegrante; (1) Giza, 25.V.1924; (1) Helwan, 4.IX.1929; (2) Giza, 28.VIII.1923 on peach fruit (6) Giza, 7.VII.1923 on cage bred on peach fruit; (1) Giza, 27.VIII.1916 peach fruit; (1) Cairo, 20.VII.1920; (2) Giza, 15.IV.1923; (2) Giza, 14.VII.1923; (1)Giza, 8.VIII.1916; on millot; (1) Giza, 29.V.1924 on olearce; (1) Giza, 1.VI.1924 on apricot fruit; (1) Giza, 2.VI.1918 on squash fruit; (2) Giza, 9.VII.1923; (1) Giza, 30.V.1924..(MAC)

**Genus Urophorus** Murray, 1864


Type species: *Ips rubripennis* Heer, 1841.

**Generic diagnosis:**

Usually shining, and nearly glabrous. Pronotal bead, viewed laterally, 2x as thick in apical half as basal half. Elytra rather short, three abdominal tergites normally exposed in dorsal view.

**Urophorus humeralis** Fabricius, 1798 (Fig. 5)


*U. richeckeri* (Fall, 1910): Miscellaneous notes and descriptions of North American

**Diagnosis:** TL: 3.8 mm; PL: 1.3 mm; PW: 1.5 mm; EL: 1.7 mm; EW: 1.0 mm. Color deep brown to black. The body covered with large pits, provided with hairs. Elytra shortened to leave the last three tergites uncovered. Body broadly oblong oval; convex; sparsely pubescent; Prothorax slightly more than one-half wider than long, arcately narrowed in front, subparallel basally, not at all sinuate before the hind angles, which are a little obtuse and feebly defined. Elytra as wide as prothorax, one-sixth wider than long. Pygidium and last abdominal sternum not depressed.

**Material examined:**
(9) Barrage 17.IX.1933………………………………………………(ALFC)
(9) Barrage (Qalyubiya) 17.IX.1933; (1) Mansouriya, 12.XII.1978; (1) Giza on Fig Fruits Ficus caria L.24.VII.1942………………………………………………(MAC)

Subfamily: Meligethinae Thomson, 1859

In Egypt, Alfiieri (1976) mentioned that, Meligethinae represented by five species belonging to two genera, i.e., *Pria dulcamaea* Scopoli, *Meligethes lugubris* Sturm, *Meligethes nigrescens* Stephens, *Meligethes planiusculus* Heer and *Meligethes serripes* Gyllenhal. In the present work, the last three species are studied, the other two species not represented in the above mentioned Egyptian insect collections.

**Genus Meligethes Stephens, 1830**


**Type species:**

**Generic diagnosis:** Body convex to slightly flattened, the abdomen conspicuously convex. Head narrower in proportion to the pronotum. Antenna with the first segment much rounded on the inner side; antennal club three segments in both sexes and tightly segmented. Elytra longer, covering abdomen or at most with pygidium and apex of the preceding segment visible. Mesosternum carinate. Middle and hind tibiae usually about the same width as the front; outer margin of middle and hind tibiae with a single row of small spines. Abdominal sternite 5 basolaterally with a sharply impressed C- to U-shaped line (hidden when retracted under sternite 4) Tarsi dilated.

*Meligethes nigrescens* Stephens, 1830 (**Fig. 6**)


*M. seminulum* LeConte, 1857: Reports upon insects collected on the Survey. Reports of exploration and surveys for a railroad routfrom the Mississippi river to the Pacific Ocean 9 (1): 37.


**Diagnosis:** TL: 2.0 mm; PL: 0.65 mm; PW: 1.0 mm; EL: 1.5 mm; EW: 0.65 mm.

Color black, legs pale pitchy yellow. Body covered with minute pits, provided with yellowish hairs. Dorsal surface between punctures smooth. Third antennomere distinctly thinner than second; fourth and fifth antennomeres subequal in length. Clypeus with anterior margin of emarginate to subtruncate, with narrowly bordered; occipital sulci present. Pronotum with obtuse to obtusely rounded posterior angles, never directed posteriorly; pronotum with dorsal punctures of discal portion as large as or larger than eye facet, usually deep and dense; scutellum regularly punctured on most of the exposed portion. Elytral humeral angle moderately distinct, not protruding laterally; elytral humeral striae scarcely distinct. Protibia finely, slightly irregularly denticulate; dorsal sculpture. Anterior tibiae with outer edge finely, slightly irregularly denticulate.

**Material examined:**
(3) Ramleh (Alexandria), III; IV and V…………………………………….. (ALFC)

**Meligethes planiusculus** Heer, 1841 (Fig. 7)


**Material examined:**
(18) Montazah (Alexandria), 1.XI.1939; (3) montazah, 1/XI/1939…………………………….. (MAC)
(13) Borge El Arab (Alexandria) 3.III.1955; (4) Abu Qir 2.V.1939…………………………….. (ASUC)

**Meligethes serripes** Gyllenhal, 1827


**M. eligethes quadridens** Forster, 1849: l. c. p. 21.

**Diagnosis:** TL: 2 mm; PL: 0.6 mm; PW: 1 mm; EL: 1.05 mm; EW: 0.6 mm.

Color slightly luster black. Body covered with dense pits, provided with pale yellowish-white hairs. Clypeus with anterior edge slightly bordered, frequently emarginated at the middle. Posterior base of pronotum without punctures; the proepisternal-prosternal sutures markedly raised. Third antennomere distinctly thinner than second; fourth and fifth antennomeres subequal, short, nearly as long as wide. Clypeus with anterior margin truncate or sinuate medially. Occipital sulci narrow, moderately to deeply impressed; Pronotum with dorsal punctures larger than eye facet, dense and deeply impressed; pronotum with obtusely distinct to rounded posterior angles, never directed posteriorly; scutellum minutely punctured on exposed portion. Elytral humeral striae usually indistinct. Protibial with serrate outer margin the 1st and 6th teeth apically equal and longer than other equal teeth.

**Material examined:**
(1) Hammam, 16/III/1930; (2) Mansouriya, 27.V.1934; (1) Abu Qir, 12/VIII/1934; (1) Fayoum, 13.V.1934 (MAC)

**Subfamily: Cryptarchinae Thomson, 1859**

In Egypt, Alfieri (1976) mentioned that, Cryptarchinae represented by one species belonging to one genus, i.e., *Cryptarcha bifasciata* Baudi di Selve In the present work, this is studied.

**Genus Cryptarcha Shuckard, 1840**

*Cryptarcha Shuckard, 1840:* The British Coleoptera delineated, consisting of figures of all the genera of British Beetles, drawn in outline by W. Spry, M.E.S. London, p.165.

**Type species:** *Nitidula strigata* Fabricius, 1787

**Generic diagnosis:** Body mostly pubescent. Color testaceous to piceous, with or without darker spots. Head dorsally with a fine transverse line behind the level of eyes separating more densely and coarsely punctate anterior area from less densely or coarsely punctate posterior region. Labrum and clypeus fused, the line of union marking a distinct suture; lateral margin of front more or less straight between the eye and anterior margin of clypeus and covering the base of antenna in dorsal aspect. Pronotum margined basally, slightly overlapping the base of elytra.

**Cryptarcha bifasciata** Baudi di Selve, 1870 (Fig. 8)


**Diagnosis:** TL: 3.0 mm; PL: 1.0 mm; PW: 1.8 mm; EL: 1.95 mm; EW: 1.0 mm.

Color: head reddish black, the disc of pronotum black and its margin scarlet, elytra luster black, with two large reddish deep yellow spot basally, in addition to the reddish deep yellow band in the middle. Body covered with arranged large pits, provided with hairs.

**Material examined:** (1) Matariah 15.IV.1910 (ALFC).

**Subfamily: Nitidulinae Latreille, 1802**

In Egypt, Alfieri (1976) mentioned that, Nitidulinae is represented by seven species belonging to four genera, i.e., *Anister raffrayi* Grouvelle, *Nitidula eremita* Audisio, *N. canaria* Schaller, *N. flavomaculata* Rossi, *N. maculosa* Fairmaire, *Oturovana carpophiloides* Reitter and *Xenostrongyulus histrio ovalum* Fairmaire. In the present work, the first two species are studied, the other five species not represented in the above mentioned Egyptian insect collections.

**Genus Anister Grouvelle, 1901**


**Type species:** *Anister raffrayi* Grouvelle, 1901

Dorsum pubescent. Antennal segments six and seven dentate on the inner side. Elytra serially...
punctate, setose, or striate. Elytra truncate or separately rounded to expose most of pygidium. Prosternal tip depressed behind coxae. Hind tarsi bilobed or at least dilated to three times the width of the fourth segment. Claws dentate on base.

**Anister raffrayi** Grouvelle, 1901 (Fig. 9)


**Diagnosis:** TL: 2.5 mm; PL: 0.7 mm; PW: 1.2 mm; EW: 1.1 mm; EW: 0.7 mm.

**Material examined:** (1) Ghargada 1.X.1935; (3) Wadi Hoff 11.V.1922; (1) Wadi Digla 29.IV.1935 (ALFC).

**Genus: Nitidula Fabricius, 1775**


**Type species:** *Silpha bipustulata* Linnaeus, 1761

Body elongate, head broad, clypeus indistinct. Antennae a little longer than the head, the first segment enlarged, second convex, third long and slender, club large, nearly round in outline. Antennal grooves short and slightly convergent. Labrum feebly bilobed. Mandibles with blunt apices and no secondary teeth. Lacinia broad, rounded at tip, heavily bearded. Maxillary palpi with first segment small, second much larger and clavate, third smaller than the second, fourth cylindrical and about as long as the second. Ligula with large paraglossae; palpi with first segment small, second and third long and about of equal length. Mentum strongly transverse, feebly emarginated in front. Prothorax nearly as broad as the elytra. Elytra long, exposing only the tip of the pygidium; epipleurae broad, nearly attaining the apices. Prosternal process greatly expanded behind the coxae, but not attaining the metasternum. Mesocoxae a little further apart than the procoxae; the metacoxae about twice as far apart as the mesocoxae. Ventral segments of equal length, first a little longer than the rest. Tarsi feebly dilated; claws simple. The Male eighth dorsal segment just visible from behind.

**Nitidula eremita** Audisio, 1990 (Fig. 10)


**Diagnosis:** TL: 6.0 mm; PL: 1.1 mm; PW: 2.2 mm; EL: 3.4 mm; EW: 1.3 mm.

Fig. 1: Carpophilus dimidiatus, Fig. 2: C. hemipterus, Fig. 3: C. mutilatus, Fig. 4: C. obsoletus, Fig. 5: Urophorus humeralis, Fig. 6: Meligethes nigrescens, Fig. 7: M. planiusculus, Fig. 8: Cryptarcha bifasciata, Fig. 9: Anister raffrayi, Fig. 10: Nitidula eremita.
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