CLASSIFICATION OF FAMILY CHRYSOMELIDAE (COLEOPTERA) PART I. SUBFAMILIES CHLAMISINAE, CLYTRINAE AND CRIOCERINAE

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ABSTRACT

Twenty two species belonging to nine genera in three chrysomelid subfamilies, Chlamisinae (one species), Clytrinae (20 species) and Criocerinae (one species) are updated classified and identified during this work by constructing detailed identification keys and illustrated diagnostic features of the species concerned , in addition to diagnosis of higher taxa.

INTRODUCTION

Family Chrysomelidae is a very large group of phytophagus coleoptera, commonly called leaf-beetles, worldwide in distribution. These beetles feed on a wide range of plant groups, including Gramineae, Compositae, Rosaceae, Gymnospermae and Angiospermae.

The picture of family Chrysomelidae showed ten subfamilies, Cryptocephalinae, Chrysomelinae, Alticinae, Chlamisinae, Clytrinae, Criocerinae, Cassidinae, Eumolpinae, Galerucinae and Hispinae. The first two subfamilies have been revised by El-Torkey (1997) and the third subfamily (Alticinae) by Hosni *et al.* (2006, in two parts). The present work is planned to deal with three subfamilies of the remaining part, i.e., subfamilies Chlamisinae, Clytrinae and Criocerinae. Credit of identification of clytrins due to Dr. Medvedev (Institute of Animal Morphology and Ecology, Russia) and Dr. White (1981 and 1993) for criocerin species.

The most important investigations dealing with classification and economic importance of the three subfamilies within the scope of the present work were treated by Gressitt & Kimoto(1961), Kimoto (1964a, 1964b &1983), Medvedev (1975), Alfieri (1976), Kimoto & Gressitt (1979 & 1981), Booth *et al.* (1990).

Regarding clamisins (Bryant, 1943, 1954 &1957; Papp, 1949, 1950 & 1951; Gressitt, 1955 &1965; Erber, 1988). As to clytrins (Medvedev, 1961, 1962a, 1962b, 1970, 1971, 1975, 1979, 1992, 1993 & 1996). As for criocerin species (Chyjo, 1951; Morros, 1958 & 1959; Heinze & Pinsdrof, 1962-1964; White, 1981 &1993; Schmitt, 1985, 1989; Askevold, 1990).

MATERIAL AND METHODS

The specimens of most chrysomelid species under investigation were collected, during the present work, either directly by hand from the host plants and sweeping vegetation or indirectly using light traps fixed in different parts of the country. Also, the preserved material in the Egyptian Insect Collections provided an important source for some species represented in this work. From every species, dry mounts of beetles were made for keeping and to help in recording the general appearance and the taxonomic characters. Some specimens were used to make microscopic preparations by the usual technical method. The measurements of the body are: (T.L.: Total length, E.L.: Elytral length, E.W.: Elytral width, P.L.: Pronotal length and P.W.: Pronotal width).

RESULTS AND DISCUSSION

CLASSIFICATION

Family Chrysomelidae

The features characteristic to the family chrysomelidae may be represented as fallows: Body of chrysomelid beetles varies in shape from cylindrical to hemispherical, 0.5- 35 mm. in length. The dorsal surface usually glabous or covered with hairs, scales or spines. Head (Pl. I fig.1) is pro-, hypo- or opisthognathus, eyes protrude, antennae (Pl. I. fig. 3 A,B&C) are usually 11- and rarely 10- or 9-segmented. Pronotum often transverse, the disc is uniformly convex. Elytra free, usually broader basely than pronotum, with confused or longitudinal rows of punctuations. Prosternum shorter than pronotum and in many groups not closely jointed to mesosternum. The ventral part of the abdomen (Pl. I. 2 A&B) consists of five visible sternites, 1st. and 5th. are the longest. Tergites usually six or seven. Structure of male genitalia is an excellent diagnostic features for differentiating the species.

Key to the chrysomelid subfamilies

1- Head sharply constricted behind eyes, with a distinct neck. Mandibles without teeth. Protorax much narrower than base of elytra, not margined on sides. Elytra with regular rows of punctures. Upperside bare. ---------- **Criocerinae**

- Head not constricted behind eyes. Mandibles with teeth. Prothorax usually margined. ---------- **2**

2(1) - Upperside with a very rough and uneven sculpture forming tubercles, ridges and reticulation. Underside with grooves for reception of antennae and legs. ------- ---------- **Chlamisinae**

- Upperside without rough sculpture (tubercles or ridges). Underside without such grooves. ---------- **Clytrinae**

Subfamily Chlamisinae

(Warty leaf beetles)

Chlamydees Lacordaire, Mon.Phyt., II, 1848, p. 636.

Chllamydae Baly, Trans. Ent. Soc. London, (3) IV, 1865, p. 58.

Chlamydes Chapuis, Gen. Col., X, 1874, p. 193.

Chlamydini Wickham, Canad. Ent., XXVIII, 1896, p. 152.

Chlamydinae Jacoby, Fauna Ind. Col., II, 1908, p. 271.

Chlamisinae Gressitt, Ent. Soc. Amer., Ann. (39) 1, 1946, p. 84.

Diagnosis

Body small, compressed or elongate, with a very rough and uneven sculpture forming tubercles, ridges and reticulation. Head shagreen, hypognathous, usually deeply concealed from above and sunk into prothorax. Mandibles small, asymmetrical with terminal denticles. Eyes small, oval and deeply notched at middle in the inner margin. Pronotum transverse, with more or less longitudinal ridges or tubercles, basal margin strong sinuated medially. Thoracic sternites with grooves for reception of legs. Elytra broad basally, with numerous tubercles and ridges (ridges sometimes absent). Pygidium exposed with ridges. Prosternal process narrow, prosternal intercoxal cavities closed. Legs small in both sexes; claws appendiculate. Last abdominal sternite with deep groove at middle.

In Egypt, this subfamily is represented by one species only, *Chlamisus aegyptiacus* (Desbrochers) (Alfieri, 1976).

Genus *Chlamisus* Refinesque, 1815

Chlamys Knoch, Neuv. Beytr. Z. Insectenk, 1, 1801, p. 122.

Chlamisus Refinesque, Analyse. Nat. Tab., 16, 1815.

Exema Lacordaire, Mon. Phyt., XII, 1848, p. 643, 844.

Myochlamys Ihering, Mus. Paulista. Rev., XI, 1905, p. 642.

Arthrochlamys Ihering, Mus. Nac. Buenes Aires, Ann. 14, 1907, p. 251.

Boloschensis Jacobson, Rev. Russe d'Ent., 18, 1924, p. 239.

Type species : *Chlamys gibbosa* Fabricius (after Kimoto, 1964b).

Diagnosis

Body broad or elongate and bare; with or without black or orange markings on head, pronotum, elytra and legs. Each antennal segment with a long bristle in the anterior part. Pronotum with centeral part of the disc unevenly convex, with or without ridges and tubercles. Elytra with inner margin distinctly dentated; epipleura present, more or less vertical or horizontal.

Chlamisus aegyptiacus (Desbrochers, 1898)

Chlamys aegyptiacus Desbrochers, Frelon, VII, 1898, p. 47, Anm. 2.

Boloschensis aegyptiacus Desbrochers (Alfieri, 1976)

Chlamisus aegyptiacus (Desbrochers) – Daccordi, Fauna Arabia, I, 1979, p. 304.

Type locality: Egypt, Cairo (after Alfieri, 1976).

Diagnosis

Measurements:	T.L.: 3.2 – 3.6 mm.
P. L.: 0.9 – 1.3 mm.	P. W.: 1.6 – 1.7 mm.
E. L.: 2.1 – 2.5 mm.	E. W.: 1.8 – 2.0 mm.

Body black; clypeus, labrum, sides of pronotum and abdomen, pygidium, apical spots on femora and tibiae all reddish brown and antennal segments from 1st - 7th testaceous. Head small, slightly depressed between eyes. Pronotum transverse, strongly deflected laterally from anterior view; slightly edged anteriorly and laterally; anterior margin straight; anterior angles right and posterior angles rounded; disc obviously elevated at two thirds basally, bearing two strong longitudinal elevated ridges forming canaliculus medially, in addition two small longitudinal elevated ridges in front of them and a thick tubercle on each side. Elytra narrow along its distal third; epipleural lobe more or less vertical; each elytron with eleven tubercles. Each elytron with an elongated ridge extending along its length medially and sometimes divided. The third tarsal segment deeply bilobed; last segment

subequal 2nd and 3rd together in length. Abdomen deeply and densely punctate in both sexes. Pygidium sculptured, with a longitudinal line conspicuously elevated in middle and with six spots, two anteriorly and two on each side.

Material examined: 35 specimens

Marg (Qalioubiya), during June (1908) ---------- **{1 specimens, Coll. Agr.}.**

Marg and Ezbet el-Nakhl (Qaliybia), March and July (1912); Kafr el-Sheikh, March (1913); Helmiah (Cairo) July (1914) ---------- **{5, Coll. Alfieri}.**

Pyramids, Dahshour, and Mazghuna (Giza), Feb. - Dec. (1909); Shubra, Rod el-Farag, Maadi, Wadi Hof. (Cairo), Feb. - Oct. (1914) ---------- **{29, Coll. Society}.**

World distribution: Saudi Arabia.

Subfamily Clytrinae

(Shorted-horned leaf beetles)

Clytrides Blanchard, Ann. Soc. Nat., (3) V, 1846, p. 370.

Clytrini Weise, Naturg. Ins. Deutschl., VI, 1882, p. 82.

Clytrinae Jacoby and Clavareau, Gen. Ins. Fasc., 49,1906,p. 1.

Diagnosis

The clytrin species are often yellow or orange with black markings. Cylindrical, elongate shape with a broad hypognathous head usually concealed from above and sunk deeply into the prothorax. Dorsal surface usually glabrous, sometimes pubescent. Frons broad, fairly flat, rarely swollen. Mandibles thick, flexed in form of an arc or rectangular, often asymmetrical, and with terminal denticles. Antennae usually shorter than half body length, last six to seven segments notably broaden on inner side or serriform and the first segment elongated. Pronotum transverse, same width at base as elytra, or only slightly narrower in female. Disk bulges uniformly or with depressions. Scutellum fairly large, triangular. Elytra elongated, swollen; sides parallel or slightly broaden posteriorly, rounded apically, and overlap abdomen; sometimes pygidium not covered. Epipleura distinctly isolated and broad at base. Prosternum usually very short; process between coxae very narrow, sometimes imperceptible, rarely slightly broadened, Prosternal intercoxal cavities closed, open or half-open. Legs moderate in length; forelegs of male long, with flexed tibiae. Claws more often simple, sometimes with denticle, or cloven. Abdominal sternites II to IV are narrowered

medially. Anal sternite in female with cavity. Aedeagus with highly elongated and flat proximal segment and tegmen.

In Egypt, this subfamily is represented by 20 species in 7 genera. Only thirteen species were available, and seven species of this group were not available, but their diagnostic characters were introduced in the present study after Warchalowski (1991) for *Macrolenes dentipes* (Ol.), Medvedev (1996) for *Aetheomorpha seminigra pumilio* (Lcord.) and *Clytra rufitarsis* Lacord. and Pic (1905, 1912, 1919 and 1922) for *Copocephala aeneopicta* ab. *biscrensis* Pic, *Antipa mokattamensis* (Pic), *Coptocephala perezi maculicollis* Pic and *Smaragdina atricollis* (Pic).

Key to the genera of subfamily Clytrinae

1- Head and pronotum or all body surface covered with hairs ---------- 2

- Body bare. ---------- 3

2- Dorsal surface of the body covered with hairs. ---------- ***Macrolenes*** **Chevrolat**

- Head and pronotum only covered with hairs. ---------- ***Lachnaia*** **Chevrolat**

3- Elytral punctures arranged in more or less regular rows; pygidium exposed. ---------- ***Aetheomorpha*** **Lacordaire**

- Elytra confusedly punctate; pygidium usually covered with elytra. ---------- 4

4- Epipleura pubescent; tarsi short and broad, with basal segment less than twice as long as broad. ---------- ***Clytra*** **Laicharting**

- Epipleura bare; tarsi more narrow or elongate, with basal segment more than twice as long as broad. ---------- 5

5- Anterior coxal cavities open; prothorx and elytra superficially punctate; basal margin of elytra sharp and elevated. ---------- ***Antipa*** **De Geer**

- Anterior coxal cavities closed; prothorx and elytra deeply punctate; basal margin of elytra obtuse and not elevated. ---------- 6

6- Pronotum and elytra densely punctate; with distinct sexual dimorphism; head, mandibles and legs enlarged in male. ---------- ***Coptocephala*** **Chevrolat**

- Pronotum and elytra sparsely punctate; without distinct sexual dimorphism; head, mandibles and legs not enlarged in male. ---------- ***Smaragdina*** **Chevrolat**

Genus *Antipa* DeGeer, 1778

Antipus DeGeer, Mémoires pour servir à l'histoire des insectes, VII Stockholm, 1778, p. 659.

Antipa Lacordaire, Mon. Phyt., II, 1848, p. 88.

Type species: *Antipa nifa* DeGeer. 1778 (after Warchalowski, 1991).

Diagnosis

Body elongate, broad at shoulders, sometimes narrows posteriorly and glabrous. Head large, inclined, with fairly dense erect hairs. Eyes large and elliptical, or very small and spherical. Mandibles large or moderate in size. Antennae short; apices reach pronotal base. Pronotum nearly or highly transverse; anterior angles rounded and blunt, or absent, and posterior angles sometimes elevated; two basal notches and projection opposite scutellum terminally truncated. Elytra elevated basely, and cover pygidium. Epipleura in anterior part almost suspended. Fore- and middle coxae conical and close to each other. Forelegs longer than others, femora laterally flattened. Fore tibiae flexed and tarsi very long in male.

Key to the species of genus *Antipa* DeGeer

1-Posterior angles of pronotum elevated. ---------- ***Antipa subabbreviata*** **(Pic)**

- Posterior angles of pronotum flat. ---------- **2**

2- Pronotum with black band or spots. ---------- **3**

- Pronotum without black band or spots. ---------- **4**

3- Pronotum with a broad transverse band basally; each elytron with two spots subbasally and a large transverse band subapically. ------- ***A. olivieri*** **(Lacordaire)**

- Pronotum with five spots basally; each elytron with four spots, two subbasally and two subapically ---------- ***A. tredecimpunctata*** **(Desbrochers)**

4- Pronotum with a transverse furrow basally ---------- **5**

- Pronotum without furrow ---------- **6**

5- Pronotum and elytra deeply and densely punctate; pronotum with furrow extending anteriorly; body colour testaceous with four or five spots on each elytron ---------- ***A. minor*** **(Fairmaire)**

- Pronotum and elytra finely and densely punctate; pronotum with furrow not extending anteriorly; body colour testaceous with five spots on each elytron ---- ---------- ***A. chobauti*** **(Pic)**

6-Pronotum and elytra deeply and densely punctate; body colour black; pronotum and elytra testaceous, with four black spots on each elytron ---------- ---------- *A. mokattamensis* **(Pic)**

- Pronotum and elytra finely and sparsely punctate; body colour testaceous, with four black spots on each elytron ---------- *A. arabica* **(Olivier)**

***Antipa arabica* (Olivier, 1808)**

(Pl. I, figs. 4 - 10)

Clytra arabica Olivier, Ent., VI, 1808, p. 860, t. 2, f. 21.

Antipa arabica ab. *lacordaire* Pic, Bull. Soc. Ent. Egypt, VIII, 1924, p. 394 – 395.

Type locality: Arabian and Egypt (after Junk, 1913).

Diagnosis

Measurements:	T.L.: 7 – 10 mm.
P.L.: 1.8 – 3.2 mm.	P.W.: 3.3 – 5.8 mm.
E.L.: 4.4 – 6.0 mm.	E.w.: 3.5 – 5.7 mm.

Body testaceous in general; tip of mandibles, antennal segments from 4th to 11th, four spots on each elytron, meso- and metasternites in male, abdominal sternites of male and two lateral transversal bands in each sternite in female, all are black. Head finely punctate in general and deeply punctate between eyes. Mandibles large and protruding. Labrum slightly emarginated medially, with curved lateral sides. Clypeus with anterior margin slightly curved; antennae with 1st segment obviously swollen and elongate, 2nd segment spherical and longer than 3rd, 4th segment slightly triangular. Pronotum somewhat flat, finely emarginate, with sparse superficial punctures; scutellum slightly punctate. Elytra with irregular sparse punctation basally and superficial punctures apically; each elytron with four small spots (2,2); humeral callus developed. Legs pubescent in general; tibiae and basal tarsal segments of fore legs thick. Aedeagus (Pl I fig. 9) and spermatheca (Pl. I fig. 10).

Material examined: 43 specimens

Rashid (Beheira), during May (1917); Kharga Oasis (El-Wadi el-Gedid). June (1926); Kafr Hakim and Pyramids (Giza), May - july (1930); Maadi and Masarra (Cairo), May and June (1930) and Wadi el-Gazal (Mersa Matrouh), May (1930) ----- ---------- **{24 specimens, Coll. Agr.}.**

Sinai, July (1913) ---------- **{1, Coll. Alfieri}.**

Hammam (Alex.), April (1903); Masarra and Maadi (Cairo), May - July (1909); Kerdasa (Giza), Marg (Qalyubiya), June ---------- **{11, Coll. Society}.**

Abu Rawash (Giza), March (1939) ---------- **{1, Coll. Cairo}.** Manashi (Giza), June (1999), on *Rubus sanctus* Schreb.; Helwan (Cairo), May (2000), on *Tamarix nilotica* (Ethrenh.); Kerdasa (Giza), June (2000), on *Salix subserrata* Will.; Kerdasa (Giza), June (2001), on *Salix tetrasperma* Roxb. and El-Sheikh Zowid (Arish), May (2001), on *Tamarix nilotica* (Ethrenh.) ---------- **{6, Coll. A. El-Torkey}.**

World distribution: Palestine, Saudi Arabia and North Yemen.

Antipa chobauti (Pic, 1896)
(Pl. I, figs. 11 - 14)

Gynandrophthalma chobauti Pic, Misc. Ent., VI, 1896, p. 142.

Titubaea chobauti Pic, Ann. Soc. Ent. France, LXVII, 1898, p. 223.

Titubaea chobauti Weise, Arch. f. Naturg., LXIV, 1898, p. 182.

Type locality: Algeria, Biskra (after Junk, 1913).

Diagnosis

Measurements:	T.L.: 3.9 – 4.4 mm.
P.L.: 1.0 – 1.2 mm.	P.W.: 2.2 – 2.5 mm.
E.L.: 2.8 – 3.1 mm.	E.W.: 2.4 – 2.7 mm.

Head, tip of mandibles, antennal segments from 5th to 11th, scutellum, five spots on each elytron and ventral surface of the body black; rest of mandibles dark brown; pronotum and four basal antennal segments testaceous and elytra yellow. Head finely punctate in the anterior part of frons and shagreen posteriorly. Mandibles moderate. Labrum with straight lateral sides; clypeus strongly curved anteriorly and sinuated laterally. Thorax with pronotal disc convex and with a transverse furrow basally above the sinuation. Elytra with irregular superficial dense punctures; each elytron with five big spots (2, 2, 1). Aedeagus (Pl. I fig. 14).

Material examined: 13 specimens

Borg el-Arab (Alex.), during March (1935) ---------- **{1 secimen, Coll. Agr.}.** King Mariout and Hammam (Alex.), March - May (1922); Mersa Matrouh, March (1922) ---------- **{10, Coll. Alfieri}.**

Abu Mina (Mersa Matrouh), April (1954) ---------- **{1, Coll. Ain Shams}.**

El-Sateh (Arish), May (2001), on *Tamarix nilotica* (Ethrenh) – **{1, Coll. A. El-Torkey}.**

World distribution: Algeria.

Antipa minor (Fairmaire, 1894)

(Pl. I, figs. 15 - 17)

Titubaea minor Fairmaire, Ann. Soc. Ent. Belg., XXXVIII, 1894, p. 312.

Titubaea minor ab. *atriceps* Pic, L'Echange Revue Linn., 39, 1924, p. 22.

Titubaea minor ab. *decimpunctata* Pic, L'Echange Revue Linn., 53, 1937, p. 13.

Type locality: Algeria (after Junk, 1913).

Diagnosis

Measurements:	T.L.: 4.2 – 4.4 mm.
P.L.: 1.3 – 1.4 mm.	P.W.: 1.8 – 1.9 mm.
E.L.: 2.7 – 2.9 mm.	E.W: 2.0 – 2.2 mm.

Body testaceous in general; head, tip of mandibles, 5th to 11th antennal segments, scutellum, a shadow on disc of pronotum anteromedially, meso- and metasternites, abdomen and four or five spots on each elytron, all black. Head densely pubescent slightly wrinkled. Mandibles moderate. Labrum and clypeus with curved margin. Pronotum deeply and densely punctate on the disc, slightly deep laterally; with a transverse furrow along the basal margin, extending slightly anteriorly. Elytra with irregular, deep and dense punctures; intervals slightly elevated; each elytron with four or five very small spots, their locations (1, 2, 1) or (2, 2, 1).

Material examined: 10 specimens

Hammam (Alex.), during June (1936) ---------- **{8 specimens, Coll. Agr.}.**

Hammam (Alex.), June (1976) ---------- **{1, Coll. Alfieri}.**

Khur Galal (Aswan), Sept. (2000), on *Tamarix aphylla* (L.) — **{1, Coll. A. El-Torkey}.**

World distribution: Algeria.

Antipa olivieri (Lacordaire, 1848)

(Pl. I, figs. 18 - 20)

Titubaea olivieri Lacordaire, Mon. Phyt., II, 1848, p. 159.

Type locality: Egypt (after Junk, 1913).

Diagnosis

Measurements:	T.L.: 9.6 – 10.0 mm.
P.L.: 2.2 – 2.3 mm.	P. W.: 4.5 – 4.6 mm.
E.L.: 6.8 – 7.0 mm.	E.W.: 4.7 – 4.9 mm.

Body testaceous; mandibles reddish brown; head, tip of mandibles , antennal segment from 5th – 11th, a transversal band on pronotum, scutellum, three

spots on each elytron, meso- and metasternites, abdominal sternites and legs all black. Head shagreen; mandibles large; labrum slightly curved; clypeus deeply curved; Pronotum slightly convex, superficially punctate: with a large transverse band, occupied two-thirds of pronotal length basally. Meso- and meta-sternites densely pubescent. Elytra with irregular, deep and sparse punctures basally and superficial punctation apically; each elytron with two spots, one basally and the other subbasally and with a large transverse band subapically.

Material examined: 10 specimens

King Mariout (Alex.), during May (1925) ---------- **{8 specimens, Coll. Alfieri}.**
El-Borg (Mersa Matrouh), June (1929) ---------- **{1, Coll. Cairo}.**

King Mariout (Alex.), May (2002), on *Halocnemon strobilaceum* (Pallas) ----------
---------- **{1, Coll. A. El-Torkey}.**

***Antipa subabbreviata* (Pic, 1912)**

(Pl. II, figs. 1 - 4)

Titubaea subabbreviata Pic, L'Echange Revue Linn., 28, 1912, p. 73.
Titubaea subabbreviata ab. *bisbinotata* Pic, L'Ech. Rev. Linn., 28, 1912, p. 90.
Titubaea subabbreviata ab. *notaticeps* Pic, L'Ech. Rev. Linn., 28, 1912, p. 73.
Titubaea subabbreviata ab. *robustior* Pic, L'Ech. Rev. Linn., 28, 1912, p. 73.
Type locality: Egypt (after Junk, 1913).

Diagnosis

Measurements:	T.L.: 8 – 10 mm.
P.L.: 2 – 3.3 mm.	P.W.: 3.9 – 4.1 mm.
E.L.: 4.8 – 6 mm.	E.W.: 4.2 – 5.7 mm.

Body testaceous in general; tip of mandibles, antennal segments from 7th to 11th (testaceous in some specimens), scutellum (testaceous in some specimens), meso- and meta-sternites in male, four spots on each elytron and the first four abdominal sternites in male, all black. Head punctate; mandibles large. Labrum with straight lateral margin. Pronotum with posterior angles elevated. Each elytron with four spots (2, 2), small and separated in some specimens or large and each two spots attached together in other specimens. Aedeagus (Pl. II fig. 4).

Material examined: 34 specimens

Abu Rawash and Kerdasa (Giza), during May - July (1934); Abu Zabal (Nile Delta), June (1934) and Sinai, May (1935) ---------- **{12 specimens, Coll. Agr.}.**

Wadi Isla, W. Mohla and Bir el-Tarfa (Sinai), April (1940) ------ **{10, Coll. Alfieri}.**

Karm alam (Sinai), April (1940) ---------- **{8, Coll. Cairo}.**

Kontella (Sinai), May (1999), on *Mentha micophylla* Koch; El-Sheikh Zowid (Arish), May (2001), on *Tamarix nilotica* (Ethrenh.); W. Firan (Sinai), May (2001), on *Acacia nilotica* (L.) and Abu Rawash (Giza), June (2001), on *Tamarix nilotica* (Ethrenh.)---------- **{4, Coll. A. El-Torkey}.**

Antipa tredecimpunctata (Desbrochers, 1870)
(Pl. II, figs. 5 - 8)

Titubaea tredecimpunctata Desbrochers, L'Abeille, VII, 1870, p. 128.
Type locality: Algeria (after Junk, 1913).

Diagnosis

Measurements:	T.L.: 6.3 – 6.5 mm.
P.L.: 1.3 – 1.5 mm.	P.W.: 2.9 – 3.1 mm.
E.L.: 4.5 – 4.7 mm.	E.W.: 3.1 – 3.3 mm.

Body black; tip of mandibles reddish brown; 2nd - 4th antennal segments, pronotum and elytra testaceous. Head punctate; mandibles large. Clypeus with anterior margin strongly curved, sinuated laterally. Pronotum sparsely punctate; with five spots, one basally at middle and two spots completely attached together at each side. Elytra with irregular superficial punctures; each elytron with four spots (2,2). Forelegs with basal tarsal segments conspicuously thin and long in male. Aedeagus (Pl. II fig. 8).

Material examined: 64 specimens

Suez, during March (1928); W. Hof (Cairo), May (1930); W. Rehaiby, W. Morrah, W. Abu Zoleiga, W. Rishrash, and W. Um Anid (Sinai), March - May (1937) -------- ---------- **{27 specimens, Coll. Agr.}.**

W. Abu Gufan and Sant Catherin (Sinai), March (1918); Suez, Feb.(1922); El-Borg (Mersa Matrouh), March (1922) and King Mariout (Alex.), March (1928) ---------- ---------- **{16, Coll. Alfieri}.**

W. Hof (Cairo), Feb. (1927); Suez, March and April (1954) ----- **{15, Coll. Society}.**

W. Rishrash (Sinai), March (1935) ---------- **{3, Coll. Cairo}.**

Seuz Road (Suez), March (1954) ---------- **{2, Coll. Ain Shams}.**

El-Sheikh Zowid (Arish), May (2001), on *Tamarix nilotica* (Ethrenh.) ---------- ---------- **{1, Coll. A. El-Torkey}.**

World distribution: Algeria.

Antipa mokattamensis (Pic, 1912)

Titubaea mokattamensis Pic, L'Echange Revue Linn., 28, 1912, p. 73.

Type locality: Egypt (after Pic, 1912).

Diagnosis (after Pic, 1912).

Measurement. Length: 7 – 8 mm.

Body in general, head behind eyes, base of scutellum, 5^{th} – 11^{th} antennal segments and 4 spots on each elytron black; dorsal surface of the body, frons, 1^{st} – 4^{th} basal antennal segments and legs testaceous. A slight elongated insect body, sometimes subparallel and very little attenuated posteriorly. Head with transversal impression and irregular punctation between eyes. Pronotum short, more or less punctate, hardly arched on sides posteriorly more than elytra. Elytra with irregular deep densely punctation.

Material locality: Mokattam (Cairo).

Remark: This species was recorded during June, from Helwan and Mokattam (Cairo, Egypt) (Alfieri, 1976).

Genus *Clytra* Laicharting, 1781

Clytra Laicharting, Verz. Tyrol. Insect., 1781, p. 165.

Clythra Fabricius, Suppl. Ent. Syst., 1798, p. 110.

Type species: *Chrysomela quadripunctata* L., 1758 (after Warchalowski, 1991).

Diagnosis

Body cylindrical or oval, roundly obtuse terminally, glabrous dorsally. Head drawn into pronotum, rather rugose, with erect hairs. Mandibles protrude and moderate in size. Eyes large, ovate, with emarginated inner margin. Antennae short, segments commencing from 4^{th} transverse-triangular. Pronotum transverse, narrower than elytral base, narrows anteriorly, with two notches at base, and with broadly rounded posterior angles. Scutellum fairly large, triangular sometimes elevated . Forecoxa project moderately, separated by narrow prosternal process, slightly enlarged posteriorly. Legs short and thick.

Key to the species of genus *Clytra* Laicharting

1-Elytra with a humeral spot, postscuteller spot and a transverse band on each elytron behind the middle; ---------- ***Clytra rufitarsis* Lacordaire**

- Elytra with only a humeral spot and a transverse band on each elytron behind the middle ---------- ***C. nigrocincta* Lacordaire**

Clytra nigrocincta Lacordaire, 1848

(Pl. II, figs. 9 - 13)

Clytra nigrocincta Lacordaire, Mon.Phyt., II, 1848, p. 200.
Type locality: Kleinasien.

Diagnosis

Measurements:	T.L.: 7.5 – 10.2 mm.
P.L.: 2 – 2.5 mm.	P.W.: 4.5 – 5 mm.
E.L.: 5.3 – 7.9 mm.	E.W.: 5 – 5.5 mm.

Head, pronotum, scutellum and ventral surface of the body black: tip of mandibles and the three basal antennal segments reddish brown; elytra testaceous with two black spots on each elytron. Head pubescent with white hairs; frons deeply and densely punctate anteriorly and finely punctate posteriorly. Mandibles large; labrum deeply emarginate at middle; clypeus with anterior margin slightly convex; antennae with 2nd segment spherical and longer than 3rd. Pronotum with deep and dense punctation basally, sparsely apically; anterior angles slightly rounded. Meso- and metasternites covered with white hairs. Elytra irregularly and finely punctate; each elytron with a small spot basally on humerus and a large transverse band subapically; humeral callus slightly protruding. Legs densely pubescent in general . Aedeagus (Pl. II fig. 13).

Material examined: 13 specimens

Sant Catherin (Sinai), during May (2000), on *Rubus Idaeus* L. --- **{13,Coll. A. El-Torkey}.**

World distribution: Syria, Turkey, Caucasus and Kleinasien.

Clytra rufitarsis Lacordaire, 1848

(Pl. II, figs. 14 & 15)

Clytra rufitarsis Lacordaire, Mon. phyt., II, 1848, p. 226.
Type locality: Arabian (after Junk, 1913).

Diagnosis and drowing (after Medvedev, 1996).

Measurement: Length: 6.5 – 8.5 mm.

Elytra usually with humeral and postscutellar spots and a transverse band behind the middle. Aedeagus broader, almost straight in lateral view.

World distribution: Saudi Arabia, Yemen, Sudan and Ethiopia.

Remark: This species was recorded during Feb. and March. from Wadi Aideib (Red Sea, Egypt) (Alfieri, 1976).

Genus *Coptocephala* Chevrolat, 1837

Coptocephala Chevrolat in Dejan, Paris, XIV, 1837, p. 442.

Type species: *Clytra melanocephala* Olivier, 1808 (after Warchalowski, 1991).

Diagnosis

Body cylindrical, dorsally glabrous. Head almost squarish or rounded, sometimes with highly swollen vertex. Eyes small and oval, with minute emargination. Mandibles protruding, with arched inner margin, usually symmetrical, but sometimes left mandible significantly shorter than right. Clypeus slightly prominent from frons. Pronotum highly transverse, with narrow margin on sides; anterior angles straight and posterior angles rounded, sometimes turned upward. Elytra elongated, with developed humeral callus. Prosternum very short, and prosternal process linear. Forelegs of male significantly longer than rest; tibiae slightly flexed; tarsi long and narrow, lobes of 3rd segment terminally pointed. Last abdominal sternite of female with large median notch.

Key to the species of genus *Coptocephala* Chevrolat

1-Mandible with two teeth subbasally; each elytron with two obvious large spots, one basally and the other subapically; antennae serriform commencing from 4th segment ---------- ***Coptocephala crassipes coptocephaloides*** **(Lacordaire)**

- Mandible with one tooth subbasally; each elytron with four small ovate spots, two subbasally and two subapically; antennae serriform commencing from 5th segment ---------- ***C. dilatipes*** **Pic**

Coptocephala crassipes coptocephaloides (Lacordaire, 1848)

(Pl. II, figs. 16 - 20)

Gynandrophthalma coptocephaloides Lacordaire, Monograph. Phytoph., II, 1848, p. 310.

Type locality: Syria, Mesopotamien (after Junk, 1913).

Diagnosis

Measurements:	T.L.: 3.5 – 5.0 mm.
P.L.: 0.9 – 1.6 mm.	P.W.: 1.5 – 2.5 mm.
E.L.: 2.2 – 3.0 mm.	E.W.: 1.6 – 2.6 mm.

Head, 5th – 11th antennal segments, scutellum, two obvious large spots on each elytron and ventral surface of the body dark brown; basal antennal segments (1st - 4th), labrum and tip of mandibles brown; pronotum and elytra testaceous. Head pubescent and finely punctate. Mandibles small. Labrum deeply emarginated medially and curved laterally; clypeus wide, with straight anterior margin. Pronotum broad, deeply and sparsely punctate. Scutellum triangular and slightly punctate . Thoracic sternites densely pubescent. Elytra irregularly, deeply and densely punctate basally, superficially apically; basal margin slightly elevated; each elytron with two very large spots, one basally and the other subapically; humeral callus slightly protruding. Legs densely pubescent in both sexes. Aedeagus (Pl. II fig. 20).

Material examined: 125 specimens

Rashid (Beheira), during April and May (1918); Wadi Hof, Wadi Degla and Masarra (Cairo), March - May and Nov. (1925); Wadi Bir Qena (Qena) April (1925); Eion Mousa, Wadi Abu Gufan and Wadi Abu Handal (Sinai), March and April (1937) ---- ---------- **{79 specimens, Coll. Agr.}.**

Suez, March - May (1924); Tura and Masarra (Cairo), March - May (1924); Wadi Isla, Karm Alam, Sant Catherin, Wadi Um Metla and Wadi el- Gedirat (Sinai), May (1980) ---------- **{26, Coll. Alfieri}.**

Suez, April (1921); Sinai, May (1927) ---------- **{9, Coll. Society}.**

Helwan (Cairo), April (1930); Wadi el- Lega (Sinai), April (1940) ----- **{4, Coll. Cairo}.**

Ain el-Gedeirat (Sinai), May (1999), on *Acacia nilotica* (L.); Wadi el-Gedeirat (Sinai), May (1999), on *Hyoscyamus niger* L.; Wadi Galala (Sinai), March (2001), on *Mentha microphylla* Koch and Wadi el-Lega (Sinai), July (2001), on *Mentha microphylla* Koch ---------- **{7, Coll. A. El-Torkey}.**

World distribution: Palestine, Jordan and Syria.

Coptocephala dilatipes Pic, 1923
(Pl. III, figs. 1 - 4)

Coptocephala dilatipes Pic, Bull. Soc. Ent. Egypt, 1923, p. 129.

Type locality: Egypt, Mariout (after Pic, 1923).

Diagnosis

Measurements:	T.L.: 5 – 7 mm.
P.L.: 1.5 – 2.3 mm.	P.W.: 2 – 2.6 mm.
E.L.: 3 – 3.9 mm.	E.W.: 2.3 – 2.8 mm.

Head, 5^{th} – 11^{th} antennal segments, scutellum, four spots on each elytron and ventral surface of the body, all black; 1^{st} - 4^{th} antennal segments, pronotum and elytra yellow. Head finely punctate on anterior part of frons and slightly wrinkled posteriorly. Each mandible with two teeth. Pronotum broad, posterior angles slightly elevated. Each elytron with four spots (2,2); humeral callus protruding.

Material examined: 10 specimens
King Mariout (Alex.), during April (1927) ---------- **{10, Coll. Alfieri}.**

Coptocephala aeneopicta Fairmaire, 1863

Coptocephala aeneopicta Fairmaire, Ann. Soc. Ent. France, (4)III, 1863, p. 646.
Coptocephala aeneopicta ab. *bistripunctata* Pic, L'Echange Rev. Linn., 21, 1905, p. 156.
Type locality: Algeria.

Diagnosis (after Pic, 1905).

On each side of elytra one spot forming longitudinal band with irregular shape.

World distribution: Algeria.

Remark: This species was recorded during March, from King Mariout (Alex., Egypt) (Alfieri, 1976).

Coptocephala perezi maculicollis Pic, 1919

Coptocephala perezi maculicollis Pic, L'Echange Rev. Linn., 35, 1919, p. 14.
Type locality: Tunis, Algeria (after Pic, 1919).

Diagnosis (after Pic, 1919).

Thorax reddish, disc with four transverse green maculations.

World distribution: Tunis and Algeria.

Remark: This species was recorded during March, from Abu Mina (Mersa Matrouh, Egypt) (Alfieri, 1976).

Genus *Lachnaia* Chevrolat, 1837

Lachnaia Chevrolat in Dejan, Paris, XIV, 1837, p. 442.
Barathaea Lacordaire, Mon. Phyt., II, 1848, p. 164.
Lachnaea Lacordaire, Mon. Phyt., II, 1848, p. 168.
Type species: *Chrysomela variolosa* Linnaeus, 1767(after Warchalowski, 1991).

Diagnosis

Body large and cylindrical; colour black, blue or greenish, always metallic except elytra; densely pubescent in head and pronotum. Head large and inclined into pronotum. Eyes large, prominent and distinctly notched. Mandibles strong prominent, straight basally and slightly arched. Clypeus medially with triangular or semicircular pit in anterior margin. Frons covered with numerous longitudinal ridges. Vertex quadrate and bulge. Antennae long, 1st segment thick, rounded anteriorly; 2nd and 3rd segments short, conical and subequal in length; the rest large, triangular and serrate. Pronotum transverse, with straight large margins laterally; posterior angles broad obtuse and not elevated. Elytra parallel and little broad anteriorly. Legs generally long, forelegs of male longer than others.

***Lachnaia cerealis* (Olivier, 1808)**

(Pl. III, figs. 5 - 10)

Clytra cerealis Olivier, Ent., VI, 1808, p. 844.

Type locality: Algeria.

Diagnosis

Measurements:	T.L.: 9.5 – 10.2 mm.
P.L.: 2.0 – 2.3 mm.	P.W.: 4.0 – 4.2 mm.
E.L.: 7.2 – 7.5 mm.	E.W.: 4.3 – 4.5 mm.

Body dark brown with green luster; elytra testaceous, with three dark brown spots for each elytron; tip of mandibles reddish brown. Head densely pubescent, deep sparsely punctate in clypeus and shagreen in frons and vertex. Mandibles large, each mandible with two teeth apically. Labrum curved and elevated subbasally; clypeus with obvious elongate extension, extending anteriorly along the both sides of labrum in male and deeply curved in female. Pronotum with sharp anterior angles, and curved posterior angles; basal margin sinuated medially. Scutellum with superficial sparse punctures. Elytra with irregular superficial punctures, basal margin slightly elevated, each elytron with three spots (1,2); humeral callus slightly developed. Legs densely pubescent in general. Posterior margin of last abdominal sternite slightly depressed at middle in male, depressed and sinuated at middle in female. Aedeagus (Pl. III fig. 10).

Material examined: 90 specimens

Ameria, Dekheila, King Mariout and Borg el-Arab (Alex.), during Feb. - April (1935); Mersa Matrouh, March (1938) ---------- **{72 specimens, Coll. Agr.}.**

Ein el-Gedeirat (Sinai), March (1920); King Mariout (Alex.), March (1923) and W. el- Ramlah (Mersa Matrouh), March (1927) ---------- **{9, Coll. Alfieri}.**
King Mariout (Alex.), May (1927) ---------- **{4, Coll. Society}.**
W. Rawl (Mersa Matrouh), Feb. and March (1939) ---------- **{3, Coll. Cairo}.**
King Mariout (Alex.), Feb. (1938) ---------- **{1, Coll. Ain Shams}.**
El-Satch (Arish), May (2001), on *Tamarix apophylla* (L.) ----- **{1, Coll. A. El-Torkey}.**

World distribution: Palestine, Syria, Libyia, Tunis and Algeria.

Genus *Smaragdina* Chevrolat, 1837

Smaragdina Chevrolat in Dejan, Paris, XIV, 1837, p.444.
Cyaniris Chevrolat in Dejan, Paris, XIV, 1837, p.444.
Gynandrophtalma Lacordaire, Mon. Phyt., 1848, p. 256.
Calyptorhina Lacordaire, Mon. Phyt., 1848, p. 81.
Exomis Weise, Soc. Ent. Ross., Horae 23, 1889b, p. 577.
Type species: *Clytra unipunctata* Olivier, 1808 (after Warchalowski, 1991).

Diagnosis

Body small, elongated-oval. Mandibles often very short, flexed along inner margin and deeply hollowed from inside. Eyes usually slightly emarginated. Antennae short, 1st segment highly thickened, 4th flat and almost triangular, other seven segments highly elongated triangular and with inner side serrate. Pronotum with straight anterior margin, anterior angles straight and posterior angles broad rounded; disk flat against scutellum. Elytra elongated, densely punctate, with distinctly epipleura in anterior half. Prosternum very short. Legs mostly short; tibiae slender; 3rd tarsal segment deeply bilobed; claws simple, highly flexed.

Key to the species of genus *Smaragdina* Chevrolat

1-Body metallic green; mandibles with only an elongated tooth apically; antennae serriform commencing from 5th segment ---------- ***Smaragdina viridana marioutensis* (Wittmer)**

- Body colour not as such; right mandible with three teeth and left with two teeth; antennae serriform commencing from 4th segment ---------- **2**

2-Head and pronotum black; elytra testaceous, venteral surface brown; each elytron with three black spots, two subbasally and one large subquadrate subapically --- ---------- ***S. quadrinotata* (Fabricius)**

- Head, pronotum and venteral surface metallic green; elytra testaceous; each elytron with only a rounded bluish green spot subapically ----- *S. **unipunctata*** **(Olivier)**

Smaragdina quadrinotata **(Fabricius, 1787)**

(Pl. III, figs. 11 - 14)

Clytra quadrinotata Fabricius, Mant. Ins., I, 1787, p. 79.

Cyaniris opaca Rosenhauer, Their Andal., 1856, p. 308.

Cyaniris lethierryi Chevrolat, Ann. Soc. Ent. Fr., (3)VII, 1859, Bull. p. CXXVII.

Cyaniris andalusiaca Heyden, Reise Spain, 1870, p. 165.

Cyaniris bisbipunctata Desbrochers, Bull. Acad. Hippon, 1870, p. 81.

Cyaniris quadrinotata ab. *carnerii* Pic, L'Echange Rev. Linn., (36), 1920, p. 21.

Type locality: Algeria.

Diagnosis

Measurements:	T.L.: 5 – 5.5 mm.
P.L.: 1.2 – 1.5 mm.	P.W.: 2.2 – 2.4 mm.
E.L.: 3.5 – 3.9 mm.	E.W.: 2.5 – 2.7 mm.

Head, 4th – 11th Antennal segments, pronotum, scutellum and three spots on each elytron black; mandibles, labrum, 1st – 3rd antennal segments and ventral surface of the body brown and elytra testaceous. Head shagreen in the anterior part of frons, slightly punctate on clypeus and vertex. Mandibles small. Labrum slightly emarginated anteriorly; clypeus somewhat curved. Pronotum with deep dense punctation on the lateral sides, indistinct on the disc. Elytra irregularly, sparsely punctate; each elytron with two spots basally and a transversal band subapically. Legs and abdomen pubescent.

Material examined: 16 specimens

King Mariout (Alex.), Feb. and March (1935) ---------- **{7 specimens, Coll. Agr.}.**

Abu Mina (Mersa Matrouh), March (1922); King Mariout (Alex.), April (1927) ----- ---------- **{7, Coll. Alfieri}.**

King Mariout (Alex.), March (1920) ---------- **{1, Coll. Ain Shams}.**

King Mariout (Alex.), Feb. (1999), on *Halocnemon strobilaceum* (Pallas) ---------- ---------- **{1, Coll. A. El-Torkey}.**

World distribution: Algeria, Andalusia.

Smaragdina unipunctata (Olivier, 1808)

(Pl. IV, figs. 1 - 5)

Clytra unipunctata Olivier, Ent., VI, 1808, p. 96, t. 2, f. 36.

Clytra menetriesi Faldermann, Nouv. Mem. Mosc., V, 1837, p. 378, t. 14, f. 8.

Cyaniris unipunctata ab. *aegyptiaca* Lefevre, Ann. Soc. Ent. France, (5) II, 1872, p. 337.

Cyaniris unipunctata ab. *venusta* Lefevre, Ann. Soc. Ent. France, (5) II, 1872, p. 337.

Type locality: Ungarn.

Diagnosis

Measurements: T.L.: 4.0 – 4.6 mm.

P.L.: 0.8 – 1.0 mm. P.W.: 1.6 – 1.8 mm.

E.L.: 2.8 – 3.0 mm. E.W.: 1.8 – 2.0 mm.

Head, pronotum, scutellum, femora and ventral surface of the body metallic green; apical part of mandibles and labrum reddish brown; tibiae, tarsi, elytra and 1st – 4th antennal segments testaceous; 5th –11th antennal segments dark brown and a bluish green spot on each elytron in female. Head and pronotum with deep dense punctures; mandibles moderate; clypeus curved. Thoracic sternites densely pubescent. Elytra irregularly, deeply and densely punctate; each elytron with a spot located subapically in female. Legs and Abdomen densely pubescent. Aedeagus (Pl. IV fig. 5).

Material examined: 157 specimens

Marg (Qalioubiya), during Feb. and March (1913), on *Tamarix sp.* and Fayoum, Feb. (1935) ---------- **{40 specimens, Col. Agr.}.**

Marg (Qalyubiya), March and Dec.(1923), on *Tamarix nilotica* (Ethrenh.) and *Acacia nilotica* (L.); Fayoum, Feb. (1935), on *Acacia nilotica* (L.) ------ **{28, Coll. Alfieri}.**

Cairo, Feb. (1905) and Marg (Qalyubiya), Feb. - May (1917) -------- **{66, Coll. Society}.**

Ain el-Gedeirat (Sinai), May (1999), on *Mentha microphylla* Koch; Dekheila (Alex.), August (1999), on *Tamarix nilotica* (Ethrenh.) and Sabahia (Alex.), Feb. (2002), on *Halocnemon strobilaceum* (Pallas) ---------- **{23, Coll. A. El-Torkey}.**

World distribution: Turkey, Syria, Iraq, Iran, Afghanistan, Caucasian and Balkans.

Smaragdina viridana marioutensis (Wittmer, 1936)

(Pl. IV, figs. 6 - 9)

Cyaniris viridana marioutensis Wittmer, Bull. Soc. Ent. Egypt, 20, 1936, p. 16.

Type locality: Egypt (after Wittmer, 1936).

Diagnosis

Measurements: T.L.: 4.2 – 4.5 mm.

P.L.: 1.0 – 1.2 mm. P.W.: 1.6 – 1.8 mm.
E.L.: 2.6 – 2.8 mm. E.W.: 2.0 – 2.2 mm.

Body metallic green; mandibles, labrum and 1st– 3rd antennal segments brown. Head slightly pubescent. Each mandible with one tooth apically. Clypeus somewhat straight. Pronotum sparsely punctate. Elytra with irregular punctation and without spots. Aedeagus (Pl. IV fig. 9).

Material examined: 30 specimens
King Mariout (Alex.), during Feb. and march (1935) ---- **{8 specimens, Coll. Agr.}.**
King Mariout (Alex.), Feb., March and Nov. (1925) ---------- **{14, Coll. Alfieri}.**
King Mariout (Alex.), March, April and Nov. (1927) ---------- **{7, Coll. Society}.**
El-Sateh (Arish), May (2001), on *Tamarix nilotica* (Ethrenh) ----- **{1, Coll. A. El-Torkey}.**

World distribution: Syria.

Smaragdina atricollis (Pic, 1922)

Cyaniris atricollis Pic, L'Echange Rev. Linn., 38, 1922, p. 27.
Type locality: Egypt (after Pic, 1922).

Diagnosis (after Pic, 1922).

Measurements: Length: 5 mm.

Body black, except base of antennae and labrum reddish anteriorly; elytra testaceous. Body elongate; thorax small, with fine and sparse punctures; elytra with humeral callus slightly prolonged and with medium patch.

Remark: This species described from Egypt (Pic, 1922).

Genus *Aetheomorpha* Lacordaire, 1848

Aetheomorpha Lacordaire, Mon. Phyt., II, 1848, p.311.
Type species: *Aetheomorpha pumilio* Lacordaire, 1848 (after Warchalowski, 1991).

Diagnosis

Body small, elongated, inclined into prothorax until eyes. Mandibles short, with flexed inner margin. Eyes small and oval, slightly emarginated. Pronotum transverse, with narrow margins, narrower than elytral base, anterior angles slightly rounded and posterior angles hardly rounded. Elytral punctures arranged in more or less regular rows; epipleura developed. Pygidium exposed. Forelegs longer than others; fore tibiae and basal tarsal segments longer than others in male.

Aetheomorpha seminigra pumilio (Lacordaire, 1848)

Diapromorpha (Aetheomorpha) pumilio Lacordaire, Mon. Phyt., II, 1848, p.313.

Aetheomorpha seminigra pumilio (Lacordaire), Medvedev, Fauna Saudi Arabia, 13, 1993, p. 132.

Type locality: Egypt (after Junk, 1913).

Diagnosis (after Medvedev, 1996).

Measurements: Length: 2.8 – 3.3 mm.

Body fulvous, sometimes scutellum; pronotum black or infuscate; each elytron with a black spot subapically.

World distribution: Saudi Arabia, North Yemen, Oman, Sudan, Ethiopia and Afghanistan.

Remark: This species was recorded during March and April, from Asyut and Luxor (Qena, Egypt) (Alfieri, 1976).

Genus *Macrolenes* Chevrolat, 1837

Macrolenes Chevrolat in Dejan, Paris, XIV, 1837, p.443.

Miopristis Lacordaire, Mon. Phyt., 1848, p. 25.

Type species: *Clyta dentipes* Olivier, 1808 (after Warchalowski, 1991).

Diagnosis

Body elongate (oblong in female), parallel, a little convex, covered with white pubescence dorsally. Head large (small in female), inclined into prothorax. Clypeus slightly emarginated anteriorly. Mandibles large. Eyes large and ovate, slightly emarginated. Antennae long, 1st segment thick and rounded, 2nd short, 3rd segment broader two times as long, the rest triangular and strongly transverse. Prothorax large (short in female) broader than elytra basally. Disc of pronotum convex, attenuated on sides anteriorly; with fine margin basally and arched laterally; posterior angles narrow and elevated. Scutellum triangular, rounded terminally. Elytra elongate, with irregular fine punctures. Forelegs obviously long in male; fore coxae very thick and close to each other; femora with or without two strong denticles anteriorly; tibiae strongly arched anteriorly; basal tarsal segments of forelegs long and equal to the next two together.

***Macrolenes dentipes* (Olivier, 1808)**

(Pl. IV, fig. 10)

Clytra dentipes Olivier, Ent., VI, 1808, p.857, t.1, f. 17.

Diagnosis and drawing (after Warchalowski, 1991).

Measurements: **Length:** 4 – 6 mm. (Female) and 5 – 8 mm. (male)

Double colour body. Yellow or light rust colour on vertex, mandibles, labrum (and in male Clypeus), basal part of antennae, basal part of fore- and hind legs and pronotum. On the other hand black colour on frontal part of the head and vertex, meso- and metathorax, abdomen, apical part of antennae, edge of fore- and hind legs, tarsus and spots on pronotum. In male, fore legs elongated with two sharp teeth on the basal part. Aedeagus (Pl. IV fig. 10).

World distribution: Mediterranean Sea from Morocco to Turkey and Slovakia.

Remark: This species was recorded from Sinai, Egypt (Alfieri, 1976).

Subfamily Criocerinae

(Shining leaf beetles)

Criocerites Latreille, Paris, 1807, p. 43.

Criocerides Lacordaire, Mon. Phyt., I, 1845, p. 222.

Crioceridae Thomson, Skand. Col., VIII, 1866, p. 136.

Criocerini Weise, Ins. Deutschl., VI, 1882, p. 54.

Criocerinae Jacoby, Fauna Ind. Col., II, 1908, p. 13.

Diagnosis

General Length 2.7- 8 mm.; body elongate, always glabrous above and more or less pubescent below; elytral sides subparallel, head and pronotum clearly narrower than elytra. Head prominent from above, usually about as wide as pronotum, sometimes a little wider, rarely much narrower. Eyes prominent, broadly to narrowly emarginate adjacent to antennal insertions. Frons with distinct deep furrows forming roughly an X- pattern; with more or less sparse pubescence. Antennae 11-segmented, about 2/5 to 2/3 as long as body, the first 3 or 4 segments shortest, remaining segments elongated and usually more or less broadened. Last segment of maxillary palpus elongated, subcylindrical to subconical. Prothoracic width roughly equal to length; usually constricted near middle, sometimes weakly so basely, often with a small basal depression; surface usually smooth and shiny; punctuation often most prominent anteriorly and along midline; anterior coxal cavities closed. Elytra with humeral callus prominent; punctures large, strong, prominent, clearly aligned in longitudinal rows, strongest basally and weakest apically. Legs with femora broadened medially; often hind femora clearly broader than others; hind tibia with 1 or 2

small, apical spurs; first tarsal segment a little longer than second; 3rd segment billowed; tarsal claws divergent and simple or touching basally. Abdomen with first segment easily longest, about equal in length to the three following segments; segment 5 about equal in length to segment 2. Sexual dimorphism feeble to (usually) absent.

In Egypt, this subfamily is represented by one species only, *Crioceris asparagi* (Linnaeus) and not available, but introduced in the present study after the diagnostic characters adopted by White (1993).

Genus: *Crioceris* Muller, 1764

Synonyms and type species (after White, 1993).

Crioceris Muller, Fauna Insectorum Fridrichsdalina, 1764, p. 13.

(Type species : *Chrysomela asparagi* L.).

Pleurophora Chevrolet, Catalogue des Coleopteres, 1837, p. 385.

Pseudolema Jacoby, Ann. Soc. Entomol. Belg., 1903, 47, p. 82 (subgenus).

(Type species: *Pseudolema suturalis* Jacoby).

Diagnosis

General length 4.7- 6.6 mm. Basal colour of dorsal surface yellow to orange; elytra with black spots or with black suture stripe and spots that may be jointed, latter pattern variable in development. Ventral surface orange and black throughout. Head moderately or strongly constricted behind eyes. Antennae a little less than 1/2 as long as body, slightly expanded apically. Vertex weakly produced or not, with a median, longitudinal groove; frontal grooves shallow and forming an X-pattern. Eyes with a short to moderately deep, acute notch. Pronotal width about equal to length; sides arcuate, with feeble to no constriction near base; surface with fine to moderate punctures nearly throughout. Elytra with ten striae readily discernible or weak apically on disc; sutural stria distinct and about 1/4 length of elytra; elytral width about 2/3 to nearly 1/2 of length. Legs with tarsal claws divergent, separated basally.

Crioceris asparagi (Linnaeus, 1758)
(Pl. IV, figs. 11 - 17)

Synonyms and type locality (after White, 1993).

Chrysomela asparagi Linnaeus, Holmiae, 1758, p.376.

Crioceris asparagi Fabricius, Korte, Lipstae, 1775, p. 121.

Lema asparagi Suffrian, Ent. Zeit. Stett., 2, 1841c, p. 67.

Crioceris asparagi var. *jacqueti* Pic, Varietes, 1897, p. 3.

Crioceris cruciata Schuster, Zool.Gart., 1905, p. 213.

Crioceris normalis Schuster, Zool.Gart., 1905, p. 213.
Crioceris trifasciata Schuster, Zool.Gart., 1905, p. 213.
Crioceris pici Heyden, Ent. Zeit. Wien., 25, 1906, p. 125.
Crioceris impupillata Heyden, Ent. Zeit. Wien., 25, 1906, p. 125.
Crioceris schusteri Heyden, Ent. Zeit. Wien., 25, 1906, p. 125.
Crioceris sexsignata Heyden, Ent. Zeit. Wien., 25, 1906, p. 125.
Type locality: Europe, North Asia and North America.

Diagnosis and drowing (after White, 1993).

Measurements: Length: 4.7 – 6.6 mm.

Pronotal disc often with two elongated black spots, that may meet posteriorly; black on elytra may extend broadly along suture and meet with black on humerus; sutural stripe usually with median and apical lateral extensions; orange at base of femora may be much reduced to nearly absent. Antenna with apical segments broad, each segment from 7 to 10 little longer than wide, segment 11 clearly longer than wide. Frons with a deep longitudinal groove; clypeal region, frons and vertex with fine and coarse punctation, moderately dense. Prothoracic sides subequal, width greatest medially; no constriction; surface throughout with very fine and coarse punctation, moderate in density. Elytra with or without a weak depression at basal 1/4; large punctures of striae strong basally and along suture, weakest apically on disc, weak to obsolete on remainder of elytra; surface with fine, irregular, usually transverse grooves. Metasternum with coarse, setiferous punctures on each side, densest anteriorly; medially often with transverse grooves; tarsal claws not touching basally; sternites 1-4 with medial series of setiferous, moderate sized punctures; sides and sternite 5 with much denser setiferous punctation.

Remark: This species was recorded from Sinai, Egypt (Alfieri, 1976).

Survey, classification of three chrysomelid subfamilies and determination of the recent taxonomic status are the objective of the present work.

In spite of the economic importance of this group of chrysomelids, it has practically received no altenation for a long time in Egypt. Recently, three large subfamilies have been revised taxonomically, as previously mentioned. Three subfamilies, of the remaining seven subfamilies, to be here investigated.

Preliminary determination along with material were sent to the National Museumes, which added new evidence to justing the present work. It shows that

names used to be applied to this group of chrysomelids in Egypt have been subjected to many nomeclatorial changes as recorded in the following:

In subfamily Chlamisinae: One species was transferred to other genus. i.e. *aegyptiacus* Desbrochers from genus *Boloschesis* Jacobson to genus *Chlamisus* Refinesque.

In subfamily Clytrinae: The species *Miopristis* (*Macrolenes*) *dentipes* Ol., in which the subgenus was promoted to genus rank and the typical genus was dropped as a synonym, i.e. it was changed to *Macrolenes dentipes* (Ol.).

Two species *Antipa* (*Tituboea*) *arabica* Ol. and *A.* (*Tituboea*) *arabica* ab. *lacordairei* Pic, the first species was corrected to appear without subgenus, and the second was dropped as synonym to the first.

Also, *Antipa* (*Tituboea*) *minor* Fairmaire, *A.* (*Tituboea*) *minor* ab. *atriceps* Pic and *A.* (*T.*) *m.* ab. *decimpunctata* Pic, the first species was corrected to appear without subgenus and the last two aberrations were dropped as synonyms to the first.

Antipa (*Tituboea*) *subabbreviata* Pic, *A.* (*Tituboea*) *subabbreviata* ab. *bisbinotata* Pic *A.* (*Tituboea*) *subabbreviata* ab. *notaticeps* Pic and *A.* (*Tituboea*) *subabbreviata* ab. *robustior* Pic, the first species was corrected to appear without subgenus and the last three aberrations were dropped as synonyms.

Four species, *Antipa* (*Tituboea*) *chobauti* Pic, *A.* (*T.*) *olivieri* Lacordaire, *A.* (*T.*) *redecimpunctata* Desbrochers and *A.* (*T.*) *mokattamensis* Pic, they were corrected to appear without subgenera.

The species, *Diapromorpha* (*Aetheomorpha*) *pumilio* Lacordaire, the subgenus was promoted to genus rank, the specific name was demoted to subspecies rank and changed into another species, i.e. it changed into *Aetheomorpha seminigra pumilio* (Lacordaire).

Four species and subspecies, *Cyaniris* (*Calyptorrhina*) *unipunctata* Ol., *C.* (*Calyptorrhina*) *viridana marioutensis* Witt., *C.* (*Calyptorrhina*) *atricollis* Pic and *C.* (*Otiocephala*) *quadrinotata carnerii* Pic, all species and subspecies were transferred to genus *Smaragdina* Chevrolat and corrected to appear without subgenera and dropped as synonyms, i.e., they changed were into *Smaragdina unipunctata* (Ol.), *S. viridana marioutensis* (Witt.), *S. atricollis* (Pic) and *S. quadrinotata carnerii* (Pic) respectively.

The species, *Cyaniris* (*Cyaniris*) *coptocephaloides* Lacord., the specific name was demoted to subspecies rank and was just under another species in another genus, i.e. it changed into *Coptocephala crassipes coptocephaloides* (Lacord.).

Also, the species *Lachnaea cerealis* Ol., the generic name was changed into *Lachnaia* Chevrolat, i.e., *Lachnaea cerealis* Ol. changed to *Lachnaia cerealis* (Ol.) and the first dropped as a synonym.

In addition three species represented in the Collection of Ministry of Agriculture, *Labidostomis decipiens* Fairm., *Clytra atraphaxidis* Pallas and *C. novempunctata* Ol. these species were considered doubtful records, as the habitat is Asia minor (Warchałowski, 1991).

This determination has been found satisfactory enough for the present purposes in order to settle down the confusing situation existing in the classification of this group of chrysomelids.

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Plate I

Fig.1

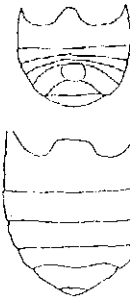

Fig.2

Fig.3

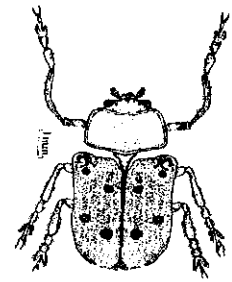

Fig.4

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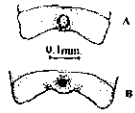


Fig.8

Fig.9

Fig.10

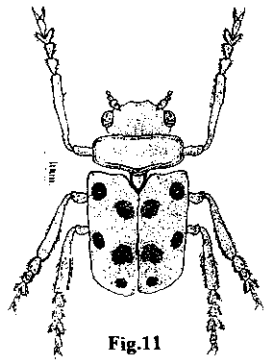


Fig.11

Fig.13

Fig.14

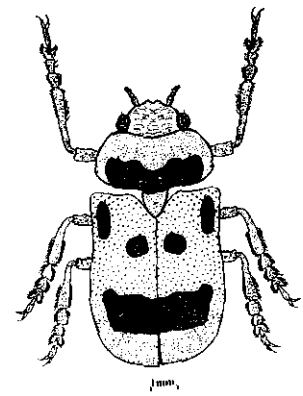


Fig.18

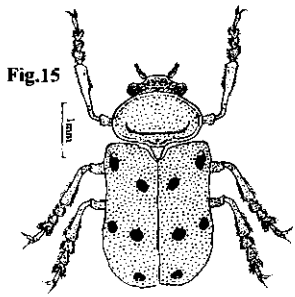


Fig.15

Fig.16

Fig.17

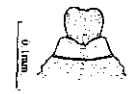


Fig.19

Fig.20

Fig. 1- Head of chrysomelid subfamilies. Fig. 2.A- Abdominal sternites of clytrin spp. Gig. 2.B- Abdominal sternites of all others. Fig. 3. A&B- Antenna of clytrin spp. Fig. 3. C- Antenna of other chrysomelid subfamilies. Fig. 4- Adult stage of *Antipa arabica*. Fig. 5- Labrum and clypeus. Fig. 6- Mandibles. Fig. 7- Antennae. Fig. 8- Abdominal sternites of A- male and B.female. Fig. 9. A&B- Dorsal and lateral view of aedeagus. Fig. 10- Spermatheca. Fig. 11- Adult stage of *Antipa chobauti*. Fig. 12- Labrum and clypeus. Fig. 13- Mandibles. Fig. 14. A&B- Dorsal and lateral view of aedeagus. Fig. 15- Adult stage of *Antipa minor*. Fig. 16- Labrum and clypeus. Fig. 17- Mandibles. Fig. 18- Adult stage of *Antipa olivieri*. Fig. 19- Labrum and clypeus. Fig. 20- Mandibles.

Plate II

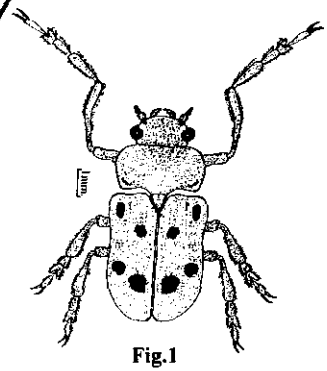


Fig.1

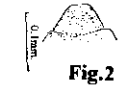
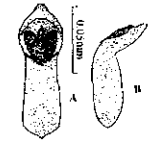


Fig.2

Fig.3



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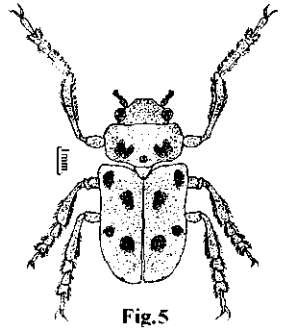


Fig.5

Fig.6

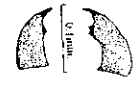
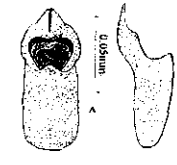


Fig.7



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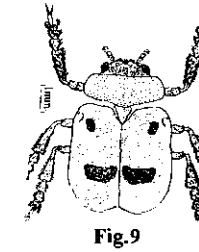

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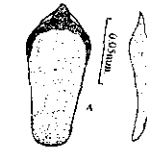

Fig.13

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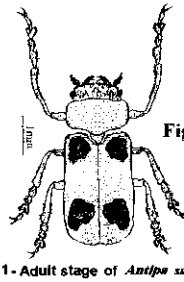
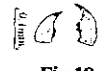


Fig.16

Fig.17



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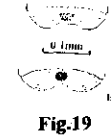


Fig.19

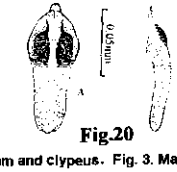
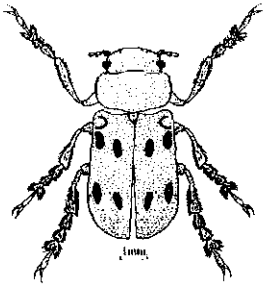


Fig.20

Fig. 1- Adult stage of *Antipa subabbreviata*. Fig. 2 - Labrum and clypeus. Fig. 3. Mandibles. Fig. 4. A&B- Dorsal and lateral view of aedeagus. Fig. 5- Adult stage of *Antipa tredecimpunctata*. Fig. 6- Labrum and clypeus. Fig. 7. Mandibles. Fig. 8. A&B- Dorsal and lateral view of aedeagus. Fig. 9 - Adult stage of *Clytra nigrocincta*. Fig. 10 - Labrum and clypeus. Fig. 11 - Mandibles. Fig. 12. Last Abdominal sternites, A- male, B - female. Fig. 13 - A&B- Dorsal and lateral view of aedeagus. Fig. 14. A&B- Dorsal and lateral view of aedeagus of *Clytra rufitarsis*, After Medvedev (1996). Fig. 15- Elytron showing spots of *Clytra rufitarsis*, After Medvedev (1996). Fig. 16- Adult stage of *Coptocephala crassipes coptocephaloides*. Fig. 17- Labrum and clypeus. Fig. 18- Mandibles. Fig. 19 - Last abdominal sternite, A- male, B - female. Fig. 20. A&B- Dorsal and lateral view of aedeagus.

PlateIII



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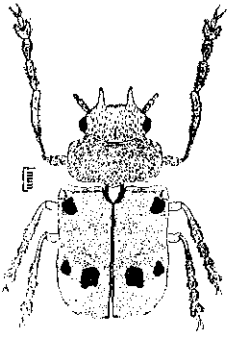

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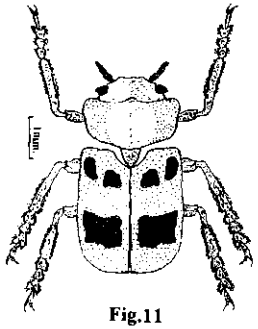

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Fig. 1 - Adult stage of *Coptocephala dilatipes*. Fig. 2 - Labrum and clypeus. Fig. 3 - Mandibles. Fig. 4 - Antenna.
Fig. 5 - Adult stage of *Lacknaia cerealis*. Fig. 6 - Labrum and clypeus in male. Fig. 7 - Labrum and clypeus in female.
Fig. 8 - Mandibles. Fig. 9 - Last abdominal sternite, A-male, B-female. Fig. 10 - A&B- Dorsal and lateral view of aedeagus.
Fig. 11 - Adult stage of *Smaragdina quadrinotata*. Fig. 12 - Labrum and clypeus. Fig. 13 - Mandibles. Fig. 14 - Antenna.

PlateIV

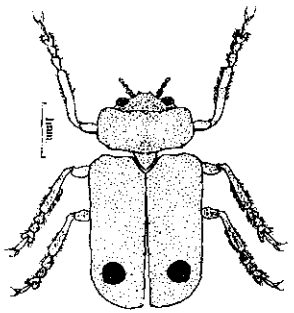

Fig.1

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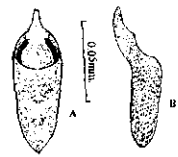

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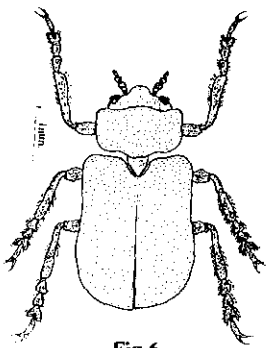

Fig.6

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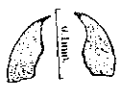
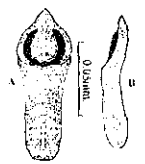


Fig.8



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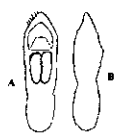

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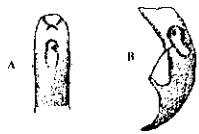

Fig.17

Fig. 1 - Adult stage of *Smaragdina unipunctata*. Fig. 2 - Labrum and clypeus. Fig. 3 - Mandibles. Fig. 4 - Elytron in male. Fig. 5- A&B- Dorsal and lateral view of aedeagus. Fig. 6- Adult stage of *Smaragdina viridana marioutensis*. Fig. 7- Labrum and clypeus. Fig. 8 - Mandibles. Fig. 9 - A&B- Dorsal and lateral view of aedeagus. Fig. 10 - A&B- Dorsal and lateral view of aedeagus of *Macrolenes dentipes*, After Warchalowski (1991). Fig. 11- Adult stage of *Crioceris asparagi*, After White (1993). Fig. 12 .13 .14 - Dorsal view of pronotum showing different forms, After White (1993). Fig. 15 .16- Elytron showing spots showing different forms, After White (1993). Fig. 17- A&B- Dorsal and lateral view of aedeagus, After White (1993).

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