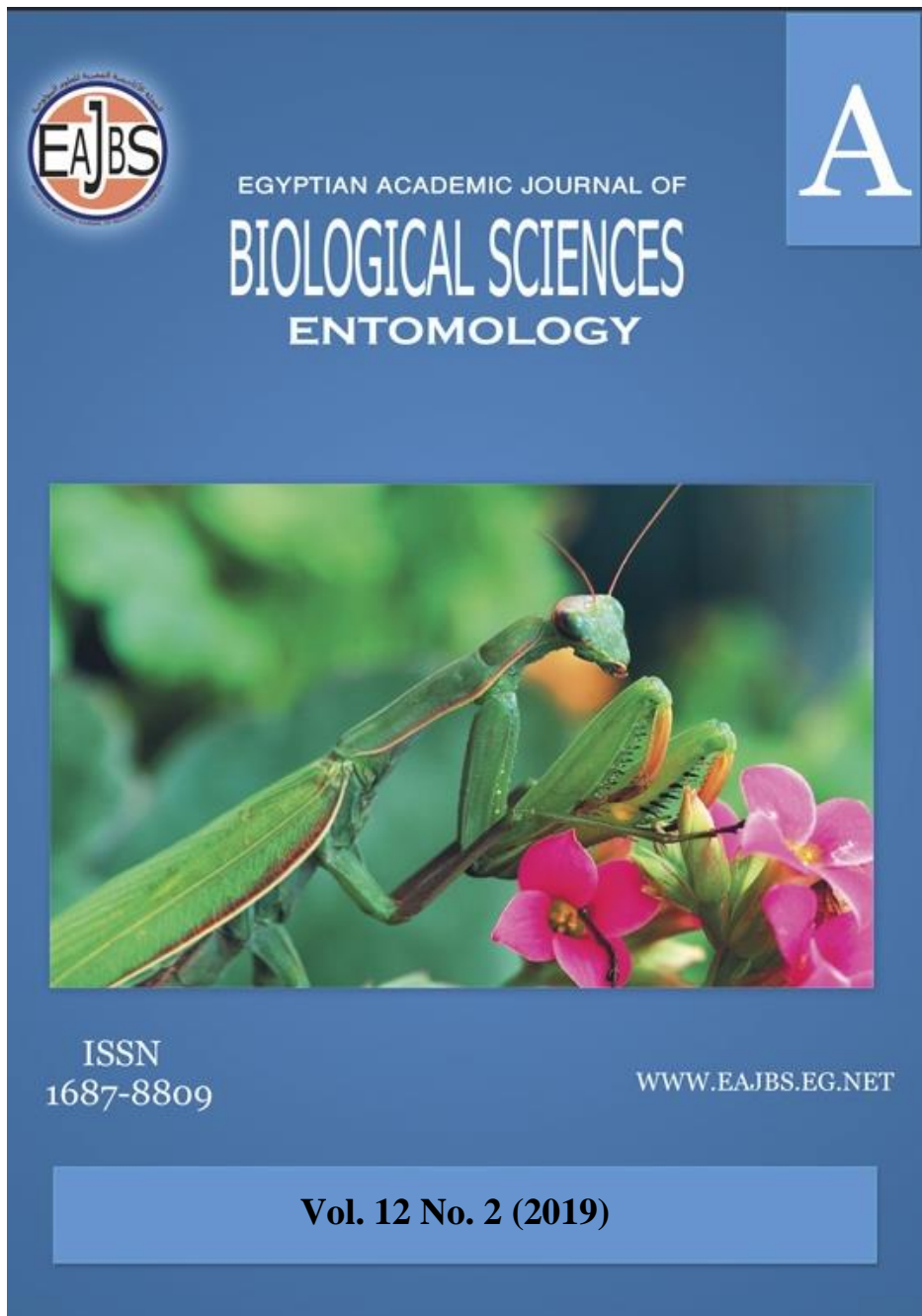


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**Taxonomical Revision on Certain Species of Subfamily Coccidulinae
(Coleoptera: Coccinellidae) in Egypt**

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ARTICLE INFO

Article History

Received:17/2/2019

Accepted: 27/3/2019

Keywords:

Coccinellidae,
Coccidulinae, Palaearctic,
Survey and Taxonomy

ABSTRACT

This is the first paper of series reviewing the Egyptian Coccidulinae. Three genera *Cryptolaemus* Mulsant, *Rhyzobius* Stephens and *Tetrabrachys* Kapur belonging to two tribes Coccidulini and Tetrabrachini are revised depending on materials collected during study years, and specimens preserved in four insect collections; Collection of Alfieri, Department of Plant Protection, Faculty of Agriculture, Al-Azhar University (ALFC); Collection of Ain Shams University, Faculty of Science, Department of Entomology (ASUC); Collection of Cairo University, Faculty of Science, Department of Entomology (CUC) and Collection of the Plant Protection Research Institute, Ministry of Agriculture (MAC). Genus *Cryptolaemus* transferred from Scymninae to Coccidulinae, and the species *Tetrabrachys cribratellus* is proposed as a valid species. Keys are provided to separate the tribes, genera and species. Description is based on adults, and detailed information about distribution and some ecological notes are mentioned.

INTRODUCTION

The subfamily Coccidulinae (Coccinellidae: Coleoptera), comprise the predators of injurious pests such as mealy bugs and scale insects and other homopterans insects. This subfamily includes approximately 6 species in three genera *Cryptolaemus*, *Rhyzobius*, and *Tetrabrachys* within two tribes Coccidulini and Tetrabrachini in Egypt. This subfamily was investigated by many authors, Stephens (1832), Kirsch (1871), Kapur (1948). Alfieri (1976), in his Monograph "Coleoptera of Egypt" listed from the tribe Coccidulini 4 species and from the tribe Tetrabrachini 2 species. The taxonomic status of the subfamily Coccidulinae was discussed by Mader (1955), Sasaji (1968), Vandenberg (2002), Nedvěd & Kovář (1996), Fürsch (2007). The objectives of the present work is to investigate the coccidulid fauna through the examination of the main Egyptian insect collections for specimens of Coccidulinae and field collections of species from localities, which almost covered major geographical zones of Egypt. Full description with drawings for all species, construction of keys to genera and species attributed, and recording the local and world distribution for each species are given.

MATERIALS AND METHODS

The present taxonomic study was based on the examination of the preserved specimens in the Egyptian Reference Insect Collections. These collections are: Collection of Alfieri, Department of Plant Protection, Faculty of Agriculture, Al-Azhar University (ALFC); Collection of Ain Shams University, Faculty of Science, Department of Entomology (ASUC); Collection of Cairo University, Faculty of Science, Department of Entomology (CUC) and Collection of the Plant Protection Research Institute, Ministry of Agriculture (MAC).

The fresh materials were collected by using the sweeping net and hand picking during three years (2013-2015). The specimens, which were collected, identified and compared, with the specimens in the Reference Insect Collections.

Measurements are made in accordance to Łacznski & Tomaszewska (2009), and Giorgi & Vandenberg (2012) for three specimens of each species using an ocular micrometer attached to a dissecting microscope as follows: total length, from apical margin of clypeus to apex of elytra (TL); pronotal length, from the middle of anterior margin to margin of basal foramen (PL); pronotal width at widest part (PW); elytral length along suture, including scutellum (EL) and elytral width across both elytra at widest part (EW).

The genitalia were illustrated from slide preparations by using a camera lucida attached to SZ61 stereomicroscope. Diagnostic characters and keys are provided based on the external morphological characters of adults and male genitalia and spermatheca of female genitalia of some species.

RESULTS AND DISCUSSION

Subfamily Coccidulinae, Mulsant

Coccidulinae Mulsant, 1846

Diagnosis: Dorsal surface weakly to moderately convex, pubescent. Head capsule normal; apex truncate; clypeus expanded or not; compound eye coarsely faceted; an apical segment of maxillary palpus usually strongly divergent apically and securiform. Antenna 10 or 11-segmented. Meso- and metasternum narrowly articulated. Epipleuron is usually broad and entire without distinct foveae. Female genital plates are very elongate. 10 species belonging two tribes (Coccidulini and Tetrabrachini) six of them are represented this subfamily in the insect collections.

Key to tribes of Coccidulinae

1. Antennae 10 or 11-segmented (fig. 1 a and b); tarsi cryptotetramerous or trimerous (fig. 1d and e).....Coccidulini
- Antennae 10-segmented (fig. 1 c); tarsi clearly 4-segmented (fig. 1 f)
.....Tetrabrachini

Tribe Coccidulini, Mulsant

Coccidulini Mulsant, 1846

Coccidulini Costa, 1849: 9; Rhizobiaries Mulsant, 1850: 938; Cocciduliens Mulsant, 1850: 100; Rhizobiides Crotch, 1874: 288; Rhizobiini Weise, 1885: 6; Rhizobiinae Della Beffa, 1912: 167.

Diagnosis: Length 2.0 to 7.50 mm; form elongate, slender, or oval. Gena not extending onto eyes; eye finely or coarsely faceted. Antenna inserted laterally beside eye, antennal insertion exposed, 10 or 11-segmented, very elongate, with 3-segmented club, loose. Prosternum with intercoxal process narrow, bicarinate. Leg slender, not angulate or dentate. Tarsus cryptotetramerous. Abdomen with 6 visible sterna. Two genera *Rhyzobius*

and *Cryptolaemus* represented this tribe in Egypt.

Key to genera of Coccidulini

1. Antenna, 10 -segmented (fig. 1 b); prosternum with two parallel carinae, extending less than halfway to anterior margin of prosternum (fig. 1 g); tarsus trimerous (fig. 1 e);..... *Cryptolaemus* Mulsant
 -Antenna, 11 -segmented (fig. 1 a); prosternum with two carinae widely separated from base, joined apically (fig. 1 h); tarsus cryptotetramerous (fig. 1 d).....
 *Rhyzobius* Stephens

Genus *Cryptolaemus* Mulsant, 1853

Cryptolaemus Mulsant, 1853: 268: Type species: *Cryptolaemus montrouzieri* Mulsant, 1853.

Diagnosis: Body length more than 3.00 mm; form oval, convex. Antenna with 7 segmented, and club 3-segmented, loose. Maxillary palpus with apical segment securiform (fig. 2a). Prosternum broadly rounded anteriorly and produced to cover mouthparts and antenna; carinae weak, parallel, extending less than halfway to anterior margin of prosternum (fig. 2b). Tibial spurs absent; tarsus trimerous (fig. 2c); tarsal claw with broad basal tooth equal to half the length of the claw. Abdomen with postcoxal line complete (fig. 2d). Male genitalia with basal lobe symmetrical. Female genitalia with strong spermathecal capsule; sperm duct short; infundibulum reduced to a small sclerite at the head of bursa; genital plates long, triangular.

Cryptolaemus montrouzieri (Mulsant, 1853) (fig. 5)

Description: Length 3- 4.5 mm. T. L. 4.5 mm.; P. L 1 mm.; P.W. 2 mm.; E.L. 3.25 mm.; E. W. 3 mm.; B. H. 1.5 mm.; H. W. 1.25 mm. Body broad oval; moderately convex, dorsum densely hairy, head, prothorax, tip of elytron and abdomen reddish yellow; mesosternum and metasternum, leg and elytron (except tip) black or blackish. Punctuation of head and pronotum dense, elytral punctuation similar except on humeral callus, which is shining, almost devoid of punctures.

Head: subquadrate, reddish yellow, retracted into prothorax; coarsely punctured coarser than pronotum and elytral punctured, densely pubescence, ventral antennal grooves short, straight along the inner margin of the eyes only; **eye** dorsally 0.5-0.7 times as long as head capsule, coarsely faceted with ocular canthus extending slightly into eyes, interocular distance between the eyes 0.5mm.; interfacetal setae indistinctly; **antennal insertion** exposed in front of the eyes, frons around antennal insertion distinctly emarginated; **antennae** 10-segmented, 0.7-0.9 as long as head capsule, setose, scape symmetrical, pedicel distinctly narrower and shorter than the scape, antennal club loose, 3-segmented, penultimate distinctly shorter than the terminal antennomere and equal in length with the first antennal club, terminal antennomere subquadrate, apically rounded, separated from penultimate segment; **clypeus** short, transverse, anterior clypeal margin straight; **labrum** entirely exposed, transverse, lateral margins rounded, anterior margin truncate, setose; **mandible** bifid apically, dorsal tooth longer than the ventral one, molar part with basal tooth, prosthema distinct; maxillary cardo quadrate to weakly transverse; palpomere two about twice as long as wide, palpomere three short, **terminal palpomere** elongate, apically truncate; **labial palp** 3-segmented, ventral on prementum, apical palpomere as long and about as broad as penultimate, **mentum** cordiform narrowed basally.

Thorax: pronotum reddish yellow, convex, finely punctured at the pronotal disc pronotal sides coarsely punctured, densely hairy, anterior margin angles of pronotum not thickened, blunt, indistinct; lateral edge smooth, submarginal carina absent, hind border with fine groove in front of scutellum reaches to half of elytron base, prothoracic hypomeron without delimited foveae, but with oblique carina, prosternal process about 0.4-0.6 times

of procoxal diameter, surface with parallel carina at most extending slightly forward beyond prosternal process, procoxal cavity distinctly transverse. **Prosternum** in front of coxae long and prominent anteriorly; anterior margin continuing as an arcuate line. Mesoventrite at middle at least 0.5 times as long as mesocoxal diameter, mesal surface with deep fossa receiving prosternal process, anterior margin arcuate with raised border incomplete medially, **meso-metaventral process** broad, junction forming a straight line with suture visible, metendosternite stalk as long as broad, tendon, separated by much less than width stalk and situated close to the middle; **meso, metaventrite** and **legs** dark brown or black with brown tarsi, and tarsal claws; metaventral postcoxal lines complete, recurved reaches to inner margin of lateral line; metaventrite with discrimen incomplete. **Elytra** at base much broader than the pronotum, lateral margins hardly visible from above, elytra black, finely punctured, with a reddish apical patch without a metallic sheen, densely hairy; **humeral callus** strongly distinct; **elytral epipleuron** incomplete apically, flat or feebly inclined, epipleural foveae absent, sublateral carina along elytral margin absent. **Legs** with apices of hind femora reaching to outer margin of elytral epipleuron; protibiae cylindrical, tarsi 3-segmented, tarsal claws in female with large subquadrate basal tooth, tarsal claws in male with apical cleft.

Abdomen: six visible abdominal sternites in both sexes, the first sternum as long as or slightly longer than the second sternum; posterior margin nearly straight; **postcoxal line** on the first abdominal sternum recurved and complete reaches to inner margin of lateral line, oblique dividing line absent.

Specimens examined: Cairo 20.XII.1924 (3) feeding on *Phenococcus hirsutus* (ALFC)

Local distribution: Cairo.

World distribution: Egypt, Italy, France, Greece, Spain, Albania, Fujian, Guandong, Iran, Hainan, Hongkong, Japan, Sichuan, Taiwan, **AFR, AUR, NAR** and **NTR**.

Genus *Rhyzobius* Stephens, 1829

Rhyzobius Stephens, 1829: 239 and 1832: 396: Type species; *Nitidula litura* Fabricius, 1787.

Lindorus Casey, 1899:162: Type species; *Scymnus lophanthae* Blaisdell, 1892; *Nundina* Redtenbacher, 1843: 8, 12 and 20; 1849: 580.

Diagnosis: Body elongate or oval; dorsal pubescence composed of dense, decumbent hairs with sparse, erect hairs intermixed. Antenna long, slender, 11 -segmented, club serrate. Head partly concealed beneath pronotum; eye coarsely faceted; an apical segment of maxillary palpus securiform (fig. 3a). Prosternum with carinae widely separated from the base, joined apically (fig. 3b). Epipleuron narrow, not descending externally. Tarsus 4-segments (fig. 3c); mid and hind tibiae with two apical spurs, tarsal claw not toothed, slightly angulate at the base, or appendiculate at least on the hind leg. Postcoxal line on first abdominal sternum complete (fig. 3d). Male genitalia with parameres and phallobase symmetrical; penis guide symmetrical. Parameres articulated with phallobase. Penis stout, consisting of single sclerite; basal capsule distinct and T-shaped. Coxities triangular, about as long as broad; styli strongly reduced and hardly visible; infundibulum absent; sperm duct simple, uniform in diameter. Spermatheca worm-like, without clear ramus or nodulus.

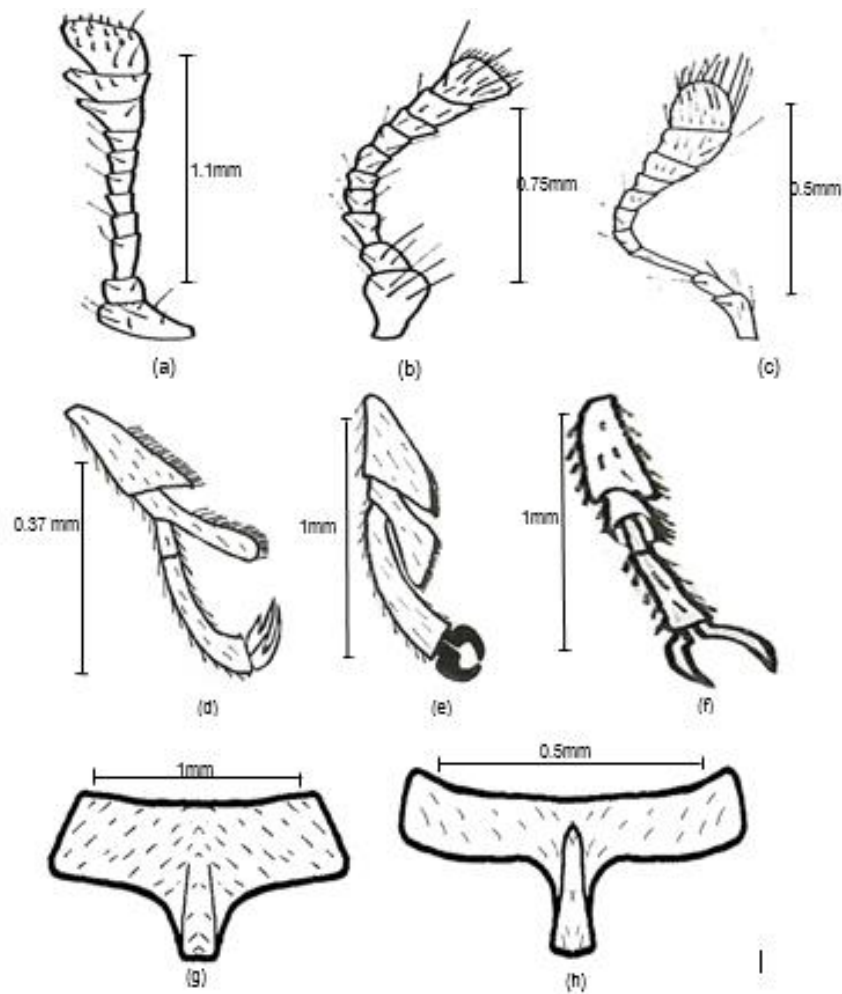


Fig. 1, (a and b) antennae of Coccidulini; (c) antenna of Tetrabrachini; (d and e) tarsi of Coccidulini; (f) tarsus of Tetrabrachini; (g) prosternum of *Cryptolaemus* sp.; (h) prosternum of *Rhyzobius* ssp., from Coccidulini.

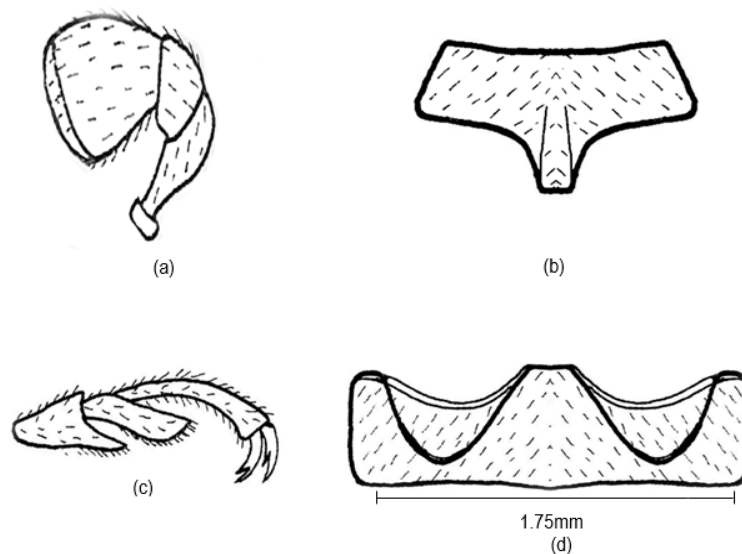


Fig. 2, *Cryptolaemus*, (a) maxillary palp; (b) prosternum; (c) tarsus; (d) postcoxal line.

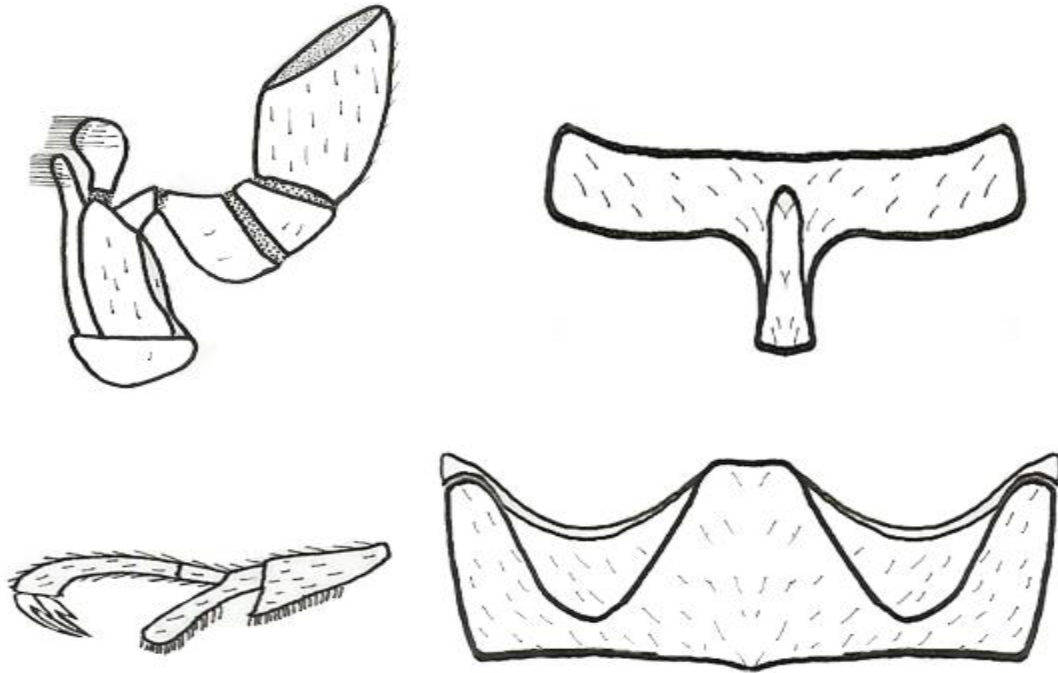


Fig. 3. *Rhyzobius*, (a) maxilla; (b) prosternum; (c) tarsus; (d) first abdominal sternum with postcoxal line.

Key to species and subspecies of *Rhyzobius*

1. Body yellow-testaceous; antennae pale testaceous; head deeply punctured; pronotal punctures as elytral punctured.....*litura* Fabricius
- Body brownish yellow or reddish yellow; antennae brownish yellow; head finely punctured; pronotal and elytral punctures not as above.....2
- 2- Pronotal punctured finer than elytral punctured; meso and metasternum with the first and second abdominal sternites dark brown or black*litura discimacula* Mulsant
- pronotal punctured fine, elytra with fine and double punctured; mesosternum brown except for the mesepimeron black, metasternum with the first abdominal sternum dark brown or black*chrysomeloides* Herbst

Rhyzobius litura (Fabricius, 1787) (fig. 6)

Nitidula litura Fabricius, 1787: 52; *Nitidula litura*, Fabricius, 1792: 260; *Rhyzobius discimacula* Mulsant, 1846: 266.

Description: Length 2.5-3 mm. T.L. 2.5mm.; P.L.0.53mm.; P.W. 1.11mm.; E.L. 1.7mm.; E.W. 1.48mm.; B.H. 0.8mm.; H.W. 0.55mm. Body relatively short oval; moderately convex; slightly glabrous, uniformly decumbent hairs, with some long erect hairs scattered throughout; yellow-testaceous; small to medium sized; head partially covered by pronotum; eye coarsely faceted.

Head: subquadrate, deeply punctured; brownish yellow; **eye** black, oblong coarsely faceted, weakly emarginated epistoma transverse, closely fused with the clypeus. anterior clypeal suture straight; **antennae** 11-segmented, basal segment large, robust, second subcylindrical, shorter and more robust than the third, which is longer than the fourth both of which are slender; the three following short subnodose, the remainder forming an elongate slender club- irregular shaped-club, externally serrate three segments, loosely connected; labrum short, transverse, lateral margins rounded, anterior margin truncate, setose; **mandible** acute, and entire at apex, sickle-shaped, apex bidentate; **maxilla**,

composed of triangular cardo, oblong stipes, galea at the outer margin of the stipes and small lacinia at the inner margin of stipes; maxillary palp 4-segmented, the first segment short, palpomere 2 subquadrate, the third segment short, apical segment of maxillary palp weakly expanded apically with pointed terminate; **labium** with subtrapezoidal mentum broadly joined with the submentum, and subquadrate prementum, labial palp three segmented, apical segment conical tapering from terminate.

Thorax: Pronotum subtrapezoidal, evenly convex, often over shadowed in the middle, slightly pubescent, punctured uniformly as elytral punctured and finer than head punctured, anterior margin nearly straight, posterior margin longer than anterior one, with distinct ridge reaches to lateral margins, lateral margins finely upturned, sides narrowed forward almost in a straight line, prosternum moderately long in front of coxae, convex medially, **prosternal process** arcuate with two carinae widely divergent at base, convergent apically not reach the anterior margin of prosternum; **mesosternum** subquadrate, anterior margin straight medially; metasternum subtrapezoidal, metacoxal plate very short. **Elytra** punctured, with semierect backward pubescence, elytral epipleuron narrow, not descending externally, without fovea; scutellum small subquadrangular. **Legs** pale testaceous, simple, femora slender, tibiae slightly compressed, with two apical spurs on the middle and hind legs, tarsi four segments, tarsal claws with tooth slightly angulated at base.

Abdomen: Six abdominal sternites in both sexes; **postcoxal line** on the first abdominal sternum complete, recurved, reaches to inner margin of lateral line.

Female genitalia: **coxites** triangular, styli strongly reduced and hardly visible, **infundibulum** absent, **sperm duct** simple; **spermatheca** worm-like, slightly chitinized, with distinct nodulus (n), ramus (r) adjacent nodulus and slightly visible, cornu (c) with nearly six distinct rings at basal half, apical portion broader than middle portion.

Specimens examined: Tourah IV.1908 (4); Marg V.1907 (1)(ALFC)
Heliopolis 1.IX.1953 (3); Kom Oshem 6.V.1955 (1) and other specimen without date and locality.....(ASUC)
Giza 6.XII.1953 and Kafr Hakim 17.X.1925 (11) (CUC)
Zagazig 16.VI.1913; Ain Shams 17.V.1913; Wadi El-Nakhil (Helwan) 5.IV.1914; Shebin El-Qanater (Cotton balls) 22.III.1916; Gimeiza (Tanta) 17.VIII.1918; Giza (Pigeon peas) 3.X.1930; Minya El-Qamh 14.XII.1931; Baltim 27.IX.1931; Bahig (Mariout) (Pomegranate) 5.VII.1938; Montaza (Alex.) 1.XI.1939 (11).....(MAC)
Hosainaia 20.VI.2013 (♀)..... **Author Coll.**

Local distribution: Cairo, Giza, Qaluobiya, Fayoum, Dakahiya, Gharbiya, Kafr El-Sheikh, Matrouh and Alexandria.

World distribution: North Africa including Egypt and Europe.

Rhyzobius litura discimacula (Mulsant, 1846) (fig. 6)

This subspecies is distinguished by the following characters: **body** reddish yellow, **antenna** brownish yellow, pronotum punctured finer than elytral punctured, **elytral punctured** coarser; elytra with two longitudinal bands extended from humeral callus at the middle width reaches to two thirds of the elytral length and recurved to elytral suture forming an anchor-shaped, or the elytra with dark fascia, recurved after the middle, sometimes still largely black disk, these fascia interrupted by the suture line, with subbasal two rows double punctured along the suture, until the fascia is interrupted or which arrive to the inner margin of fascia; **meso** and **metasternum** with the first and second abdominal sternites dark brown or black.

Specimens examined: Matarieh 7.VI.1912 (1) (ALFC)

Local distribution: Cairo.

Rhyzobius chrysomeloides (Herbst, 1792) (fig. 7)

Description: Length 3-3.3 mm. T.L. 2.5mm; P.L.0.53mm.; P.W. 1.11mm; E.L. 1.7mm.; E.W. 1.48mm.; B.H.0.8mm.; H.W. 0.55mm. Body, elongate oval; moderately convex; brownish yellow; finely punctured with erect densely grayish yellow hairs; pronotum with a black spot in front of the scutellum; elytra with small black spot before the middle and longitudinal band bent backwards.

Head: subquadrate, exposed dorsally, posterior margin, partially covered by pronotum; ventral antennal insertion distinctly circular bent towards outer margin of the eyes; anterior clypeal suture straight; eyes dorsally, oblong, about 0.5 times as long as head capsule, coarsely faceted, **ocular canthus** slightly extended into the eye; interfaced absent; antennal insertion exposed in front of The eyes; frons around antennal insertion not emarginated; **antenna** long, 11-segmented, about as long as or slightly shorter than head capsule, scape large and robust, second antennomere distinctly narrower than the scape and shorter, more robust than the third, which longer than the fourth, both of which are slender, antennomeres 6th, 7th and eight subnodes, the club, 3-segmented, loose with serrate lateral margin, penultimate antennomere about as long as terminal segment, terminal antennomere subquadrate, prominent apically, all segments pilose bears long and short hairs, but the club bears denser hairs, especially the terminal antennomere; **labrum** entirely exposed, transverse, lateral margins rounded from anterolateral angles, anterior margin truncate, bears numerous long setae; **mandible** sickle-shaped, bifid apically, molar part with basal tooth, prosthema distinct; maxilla with subquadrate cardo; maxillary palpus 4-segmented, palpomere two subquadrate, palpomere three short, terminal maxillary palp, parallel sided weakly expanded apically; labium with mentum cordiform, labial palpus three segments, apical segment conical-shaped, pointed apically.

Thorax: **pronotum** brown, evenly convex, finely punctured with densely hairs, posterior margin longer than anterior one, anterolateral angles nearly rounded, lateral margins with fine edges, middle part of posterior margin with distinct ridge not reach the lateral margins; **prosternum** T-shaped prosternal process arcuate with two distinct carinae, procoxal cavity closed behind; mesosternum brown except the mesepimeron, black; **metasternum** dark brown or black, metendosternite with fine ridge. **Scutellum** small, subquadrate. **Elytra** finely and double punctured, densely pubescence, with small black spots before the middle, **elytral epipleuron** narrow without fovea, incomplete apically, elytral suture distinctly elevated. **Legs** simple, brown, tibiae with two apical spurs, tarsal claws with triangular basal tooth.

Abdomen: six visible abdominal sternites in both sexes; the first abdominal sternum dark brown; **postcoxal line** on the first abdominal sternum complete reaches to inner margin of lateral line; the sixth abdominal sternum very short.

Female genitalia: **coxites** triangular, broader than in the *Rh. litura*, styli strongly reduced and hardly visible, **infundibulum** absent, sperm duct simple; **spermatheca**, worm like, slightly chitinized, with distinct nodulus (n), ramus (r) adjacent nodulus and slightly visible, cornu (c) with four to five distinct rings at basal half, apical portion as broad as the middle portion.

Specimens examined: Cairo 3.VI.1913 (1); Abu Qir ?.X.? (1); Kafr Hakim 25.V.1911 (1); Marg 12.V.1911 (1); Tourah 5.VII.1912 (3); Maadi 25.IV.1913 (1); Ramleh 18.V.1912 (1); Marsa Matrouh 20.II.1929 (1); Giza 10.VI.1928 (1); Helmieh 12.5.1913 (1)

..... (ALFC)
Hosainaia 20.VI.2013, (♀),..... **Author Coll.**

Local distribution: Cairo, Giza, Qaluobiya, Matrouh and Alexandria.

World distribution: North Africa including Egypt and Europe.

Tribe Tetrabrachini, Kapur

Tetrabrachini Kapur, 1948: 319-339.

Lithophilinae Ganglbauer, 1899: 946.

Diagnosis: Body elongate oval; moderately convex, subdepressed, pubescence; eyes large, coarsely faceted; antennae, 10-segmented, club-shaped; mandibles bifid apically; terminal maxillary palpomere strongly securiform; pronotum more or less cordiform to subrectangular; anterior coxal cavities open posteriorly; elytra oval, closely allied together at the suture, elytral epipleura broadest behind the shoulders, gradually narrowing posteriorly to terminate; legs short, tarsi clearly four-segmented, subtubular, the second tarsomere not lobed, claws slender with small triangular tooth at its middle; abdomen with five abdominal sternites. Abdominal postcoxal line incomplete; male genitalia with a transversal siphonal capsule; female genitalia with spermatheca semicircular in shape, and strongly chitinized.

Genus *Tetrabrachys* Kapur, 1948

Tetrabrachys Kapur, 99(1948): 320: Type species: *Tritoma conatus* Creutzer, 1796: 18.

Lithophilus Frölich, 27(1799): 11-13.

Diagnosis: Body more or less elongate-oval, moderately convex to subdepressed, usually of somber colour, pubescent; eyes large, coarsely faceted; clypeus slightly extended laterally, not covered the antennal insertions; antenna 10-segmented, club-shaped; mandibles bifid apically with pointed basal tooth; terminal maxillary palpomere strongly securiform (fig. 4a); pronotum cordiform to subrectangular; anterior coxal cavities open posteriorly; prosternum with two fine carinae adjacent inner margin of fore coxae (fig. 4b).; scutellum triangular very small; mesosternum well developed, subtriangular and concave in the middle; elytra usually oval, closely allied together at the suture, elytral epipleura broadest behind the shoulders, gradually narrowing posteriorly to terminate; legs short, tarsi clearly four-segmented, subtubular, the second tarsomere not lobed, claws slender with small triangular tooth at its middle; abdomen with five abdominal sternites. Abdominal postcoxal line incomplete (fig. 4c).

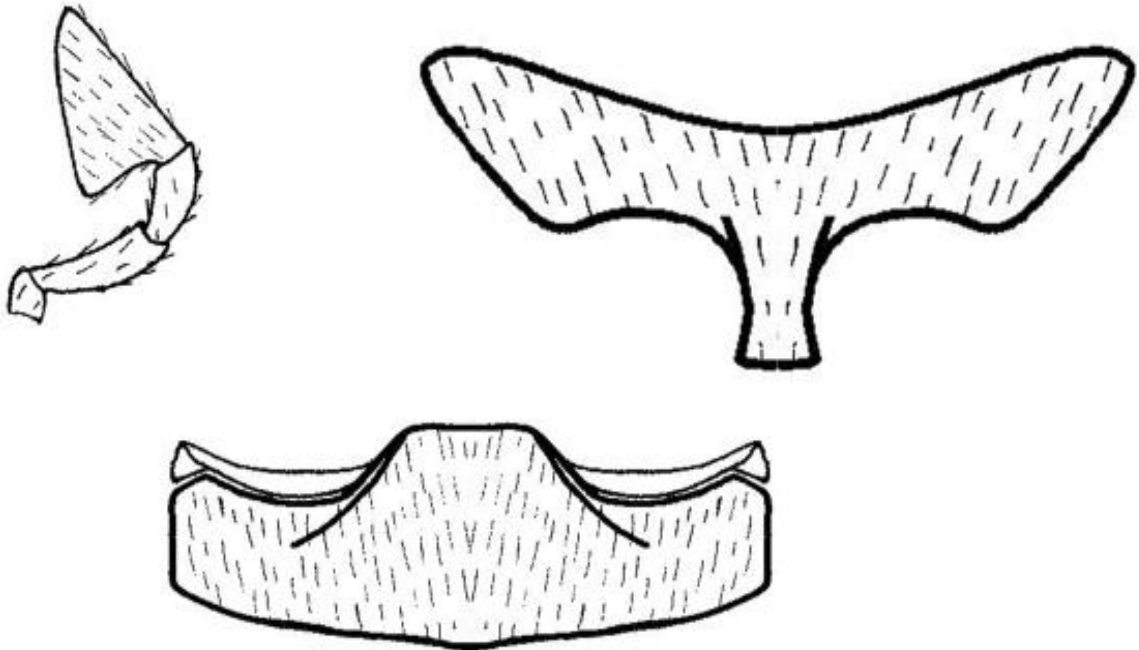


Fig. 4. *Tetrabrachys*, (a) maxillary palp; (b) prosternum; (c) postcoxal line

Tetrabrachys cordicollis (Guérin-Méneville, 1844)(fig. 8)

Lithophilus cordicollis Guérin, Méneville, 1844: 318.

Description: Length 3.7- 4.5 mm. T. L. 4 mm.; P. L 0.8 mm.; P.W. 1.5 mm.; E.L. 2.6 mm.; E. W. 2.1 mm.; B. H. 1.3 mm.; H. W. 0.85 mm. **Body** elongate-oval; head and pronotum reddish yellow to brown; **elytra** dark brown to reddish brown, with narrow pale external margins (including apex) weakly convex to depressed and covered with densely recumbent pubescence; ventral side reddish yellow.

Head: subrounded, very slightly convex dorsally and partially retracted below the pronotum, densely and strongly punctured with densely recumbent long hairs forwards and toward the sides; **eyes** large, laterally somewhat bulging reniform coarsely faceted and pubescent with short delicate hairs; **ocular canthus** extended laterally at the base into the eyes; antennal insertion exposed; **antenna** 10-segmented with three segmented compact club-shaped, the scape elongate, pedicle cylindrical, the third antennomere elongated, antennomeres four, five and six as long as wide, antennal club 4-segmented terminal antennomere conical-shaped, expanded laterally; **labrum** transverse, short with lateral margin nearly rounded, anterior margin truncate; **mandible** sickle-shaped and robust with apical subapical and pointed basal tooth; **apical segment of maxillary palp** strongly securiform, pointed apically; **labium** with trapezoidal mentum narrowly joined with the submentum, prementum subquadrate, **labial palp** 3-segmented, short, apical segment pointed.

Thorax: pronotum transverse, subrectangular, ferruginous or reddish yellow to brown, moderately convex, strongly punctured, with densely long hairs swirled at the lateral margins, wide sides elevated, lateral margin with fine marginal bead, posterior margin distinctly narrower than elytral base and shorter than anterior margin; **prosternum** T-shaped, broad in front of forecoxae, arched at the middle, **prosternal process** slightly narrow, without carinae except two distinct ridge adjacent inner margin of forecoxae, anterior coxal cavities widely opened posteriorly; **mesosternum** short trapezoidal, emarginated anteriorly. mesocoxae broader than coxal diameter; metacoxal line complete. **Scutellum** very small, black. **Elytra** dark brown to reddish brown, lateral margin explanate with fine raised boarder at base less commonly at tips, widely rounded at apex, densely fine and larger (double) mixed, irregularly punctured; **elytral suture** indistinctly impressed; humeral callus angularly produced; the widest part before apex; **elytral epipleuron** with an inner carina not reach the elytral apex without foveae. **Legs** with elongate tibiae without tibial spurs, tarsi clearly four-segmented, subtubular, the first and last segments longer than the middle two, all tetramerous more or less cylindrical and spinose ventrally, **tarsal claws** slender long and simple.

Abdomen: Five abdominal sternites in both sexes, the first nearly twice as long as any of subsequent four, which are subequal; **postcoxal line** on the first abdominal sternum incomplete, distinctly raised reaches to nearly the middle of the same sternite.

Specimens examined: Amrieh 7.X.1911 (6); Mariout (Hammam) 23. IX.1924 (3); Wadi Hoff 11.V.1922 (1); Amrieh 4.IX.1913 (5); Marsa Matrouh 22.II.1929 (1); King Mariout 8.VIII.1934 (1); Amrieh Mariout 4.IX.1913 (1); Amrieh Mariout 7.X.1911 (2) (ALFC)
Dekhela 13.VI.1950 (3); Wadi El-tih 26.II.1958 (1); Abu Mina 8.IV.1954 (1); Dekhela 5.IV.1956 (3); Marsa Matrouh 20.VII.1955 (1) (ASUC)
Alexandria 6.III.1913 (1); Abu Qir 16.V.1915 (1); Amrieh 1.VI. 1924 (1); El-Burg 15.XII.1925 (1); King Mariout 23.III.1934 (1) (MAC)

Local distribution: Alexandria, Matrouh and Cairo.

World distribution: Egypt, Algeria, Libya, Morocco and Tunisia.

Tetrabrachys cribratellus (Fairmaire, 1876) (fig. 9)

Lithophilus cribratellus Fairmaire, 1876: 50.

Description: 4.5 mm. in Length. T. L. 4.3 mm.; P. L 1 mm.; P.W. 1.9 mm.; E.L. 3.1 mm.; E. W. 2.5 mm.; B. H. 1.5 mm.; H. W. 0.85 mm. **Body** elongate-oval; moderately convex; strongly and

coarsely punctured with recumbent long and short hairs; head and pronotum reddish yellow to brown; **elytra** black; pronotal disc evenly convex.

Head: subquadrate, very slightly convex dorsally and partially retracted below the pronotum, densely double punctured with densely recumbent long forward hairs; anterior clypeal margin nearly straight, without lateral projections; **eyes** large, laterally somewhat bulging reniform coarsely faceted and pubescent with short delicate hairs; **ocular canthus** extended laterally at the base into the eyes; antennal insertion exposed; **antenna** 10-segmented with three segmented compact club-shaped, the scape elongate, pedicle cylindrical, the third antennomere elongated, antennomeres four, five and six as long as wide, antennal club 4-segmented terminal antennomere subtrapezoidal, expanded laterally; **labrum** transverse, short with lateral margin nearly rounded, anterior margin truncate; **mandible** sickle-shaped and robust with apical subapical and pointed basal tooth, apical tooth longer than the ventral one; **apical segment of maxillary palp** strongly securiform, pointed apically; **labium** with trapezoidal mentum narrowly joined with the submentum, prementum subquadrate, **labial palp** 3-segmented, short, apical segment pointed.

Thorax: Pronotum cordiform, ferruginous or reddish yellow to brown, moderately convex, as punctured as the head from the pronotal disc, coarsely punctured at the sides, with densely long hairs swirled at the lateral margins, wide sides elevated, lateral margin with fine marginal bead, posterior margin distinctly narrower than elytral base and shorter than anterior margin, the widest part at the middle; **prosternum** dark brown broad in front of forecoxae, convex at the middle, prosternal process slightly narrow, without carinae except two distinct ridge adjacent inner margin of forecoxae, anterior coxal cavities widely opened posteriorly; **mesosternum** short trapezoidal, emarginated anteriorly. mesocoxae broader than coxal diameter; metacoxal line complete. **Scutellum** very small, triangular black. **Elytra** black, lateral margin explanate with fine raised boarder at base less commonly at tips, widely rounded at apex, coarsely punctured or wrinkled with densely recumbent backward pubescent; **elytral suture** distinctly elevated; humeral callus angularly produced; the widest part before apex; **elytral epipleuron** with an inner carina not reach the elytral apex without foveae, elytral apex with a wide markings reddish yellow. **Legs** brownish yellow, with tibiae short elongate without tibial spurs, **tarsi** clearly four-segmented, subtubular, the first and last segments longer than the middle two, all tetramerous more or less cylindrical and spinose ventrally, **tarsal claws** slender, long and simple.

Abdomen: Five abdominal sternites in both sexes, the first nearly twice as long as any of subsequent four, which are subequal; **postcoxal line** on the first abdominal sternum incomplete, distinctly raised reaches to nearly the middle of the same sternite.

Specimens examined: (1) Mariout (Hammam) 23.IX.1924(ALFC)

Local distribution: Matrouh

World distribution: Egypt, Algeria, Sinai, Syria and Tunisia.

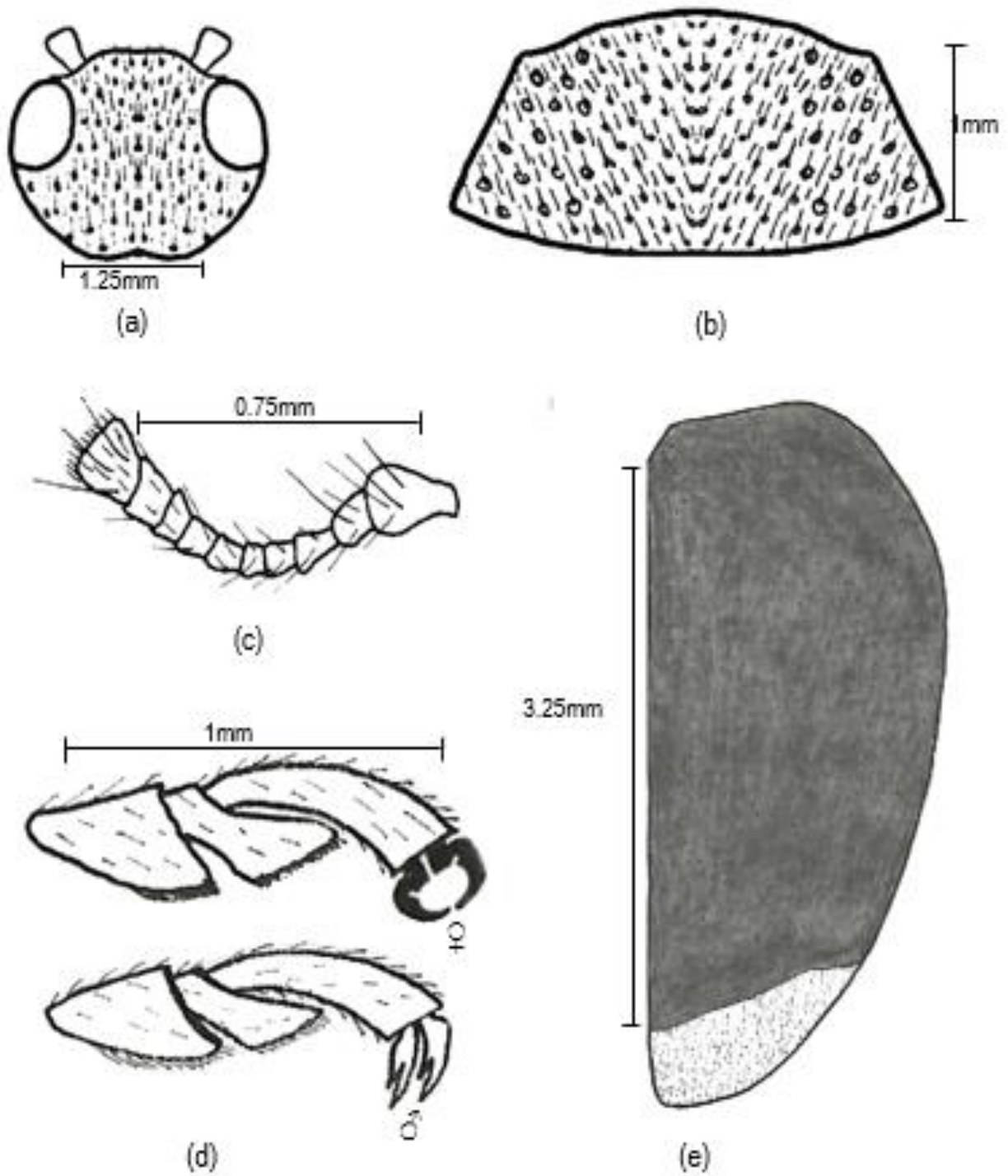


Fig. 5. *Cryptolaemus motrouzieri* (Mulsant), (a) head; (b) pronotum; (c) antenna; (d) tarsi with tarsal claw of female and male; (e) right elytron.

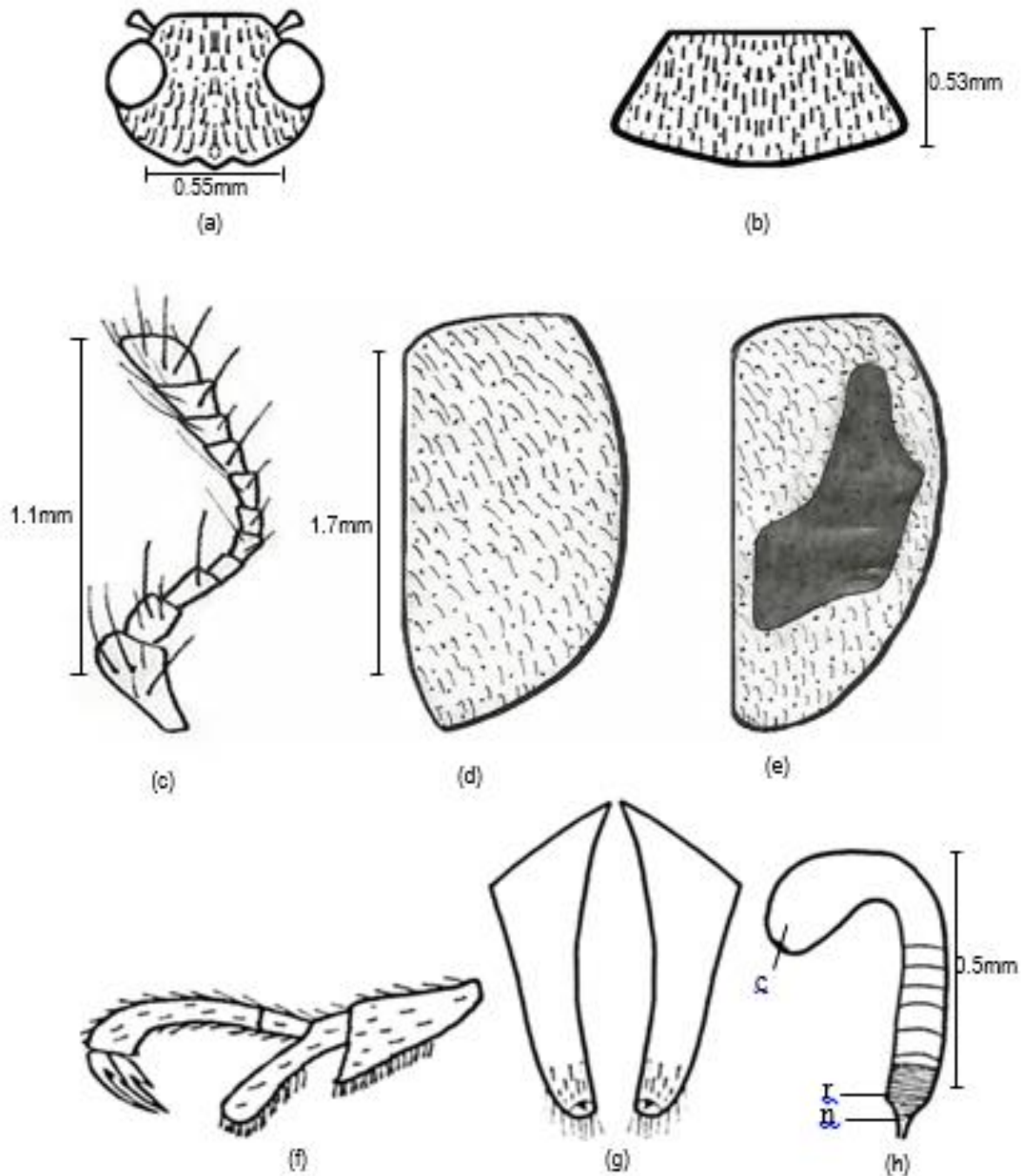


Fig.6, *Rhyzobius litura* (Fabricius) and ssp. *discimacula*, (a) head; (b) pronotum; (c) antenna; (d and e) right elytron of *Rh. litura* and ssp. *discimacula*; (f) tarsus; (g and h) coxites and spermatheca of female in *litura*; (n) nodulus; (r) ramus and (c) cornu.

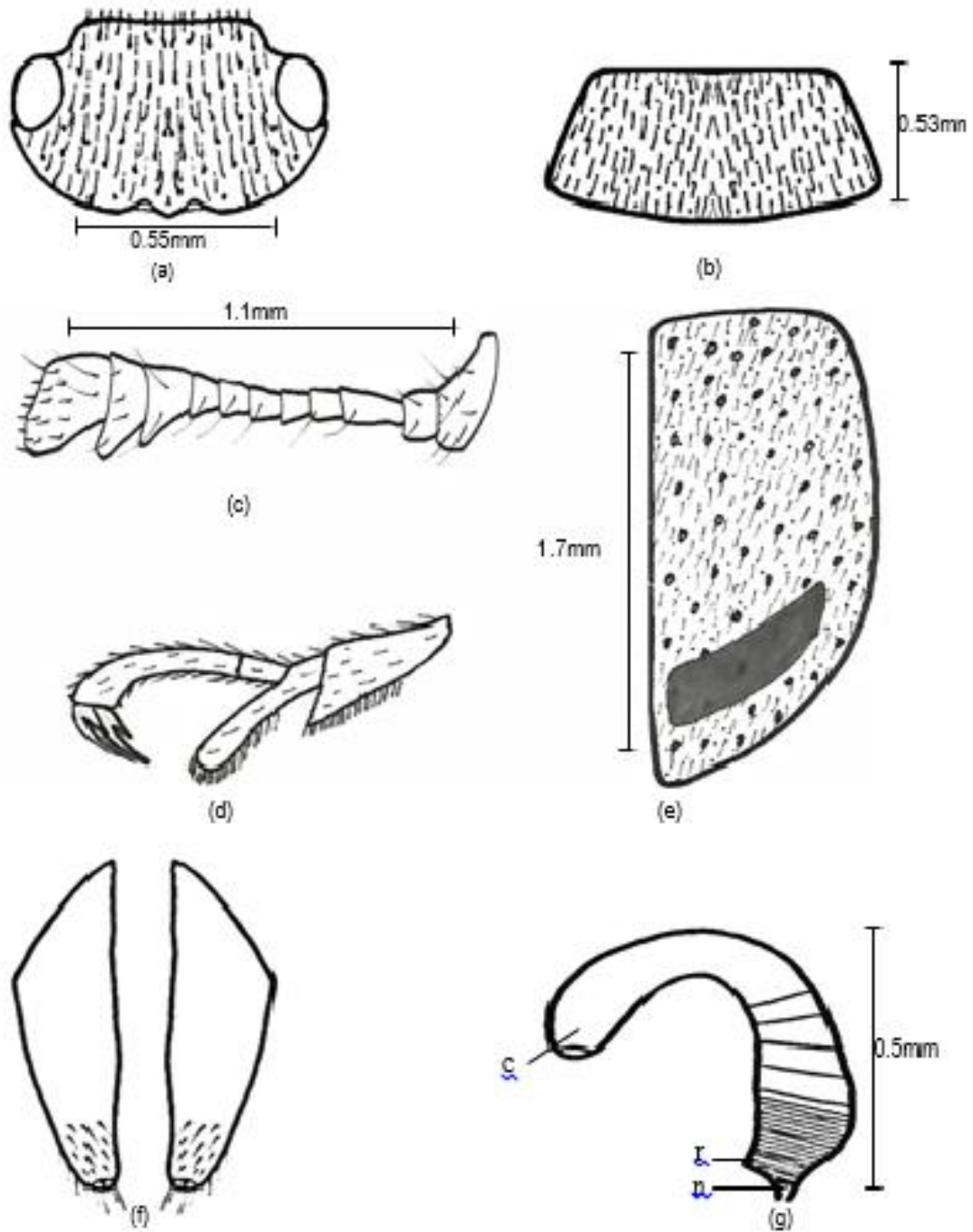


Fig. 7. *Rhyzobius chrysoloides* (Herbst), (a) head; (b) pronotum; (c) antenna; (d) tarsus; (e) right elytron; (f) coxites; (g) spermatheca of female; (n) nodulus; (r) ramus and (c) cornu.

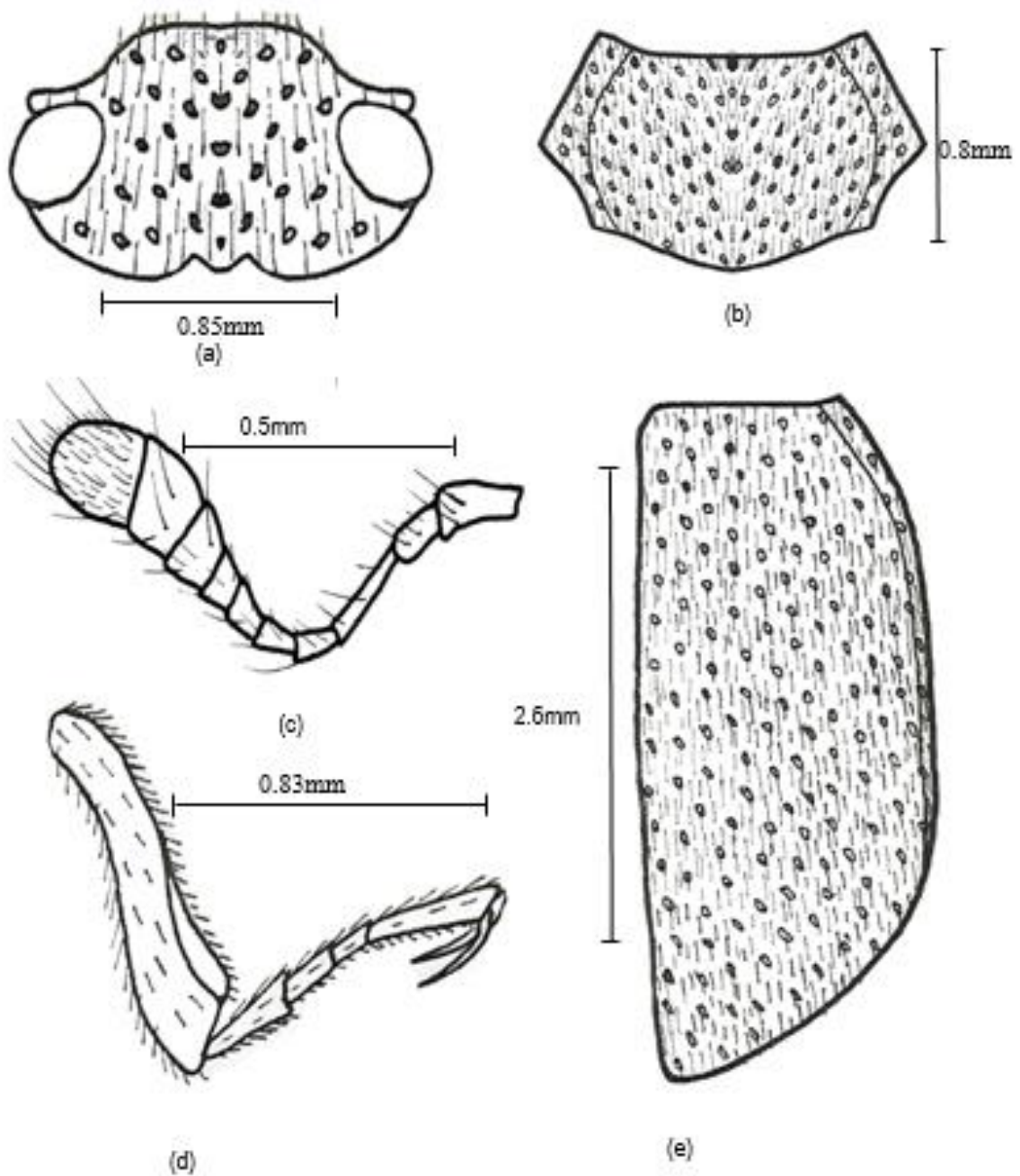


Fig. 8. *Tetrabrachys cordicollis* (Guérin-Méneville), (a) head; (b) pronotum; (c) antenna; (d) tarsus; (e) right elytron.

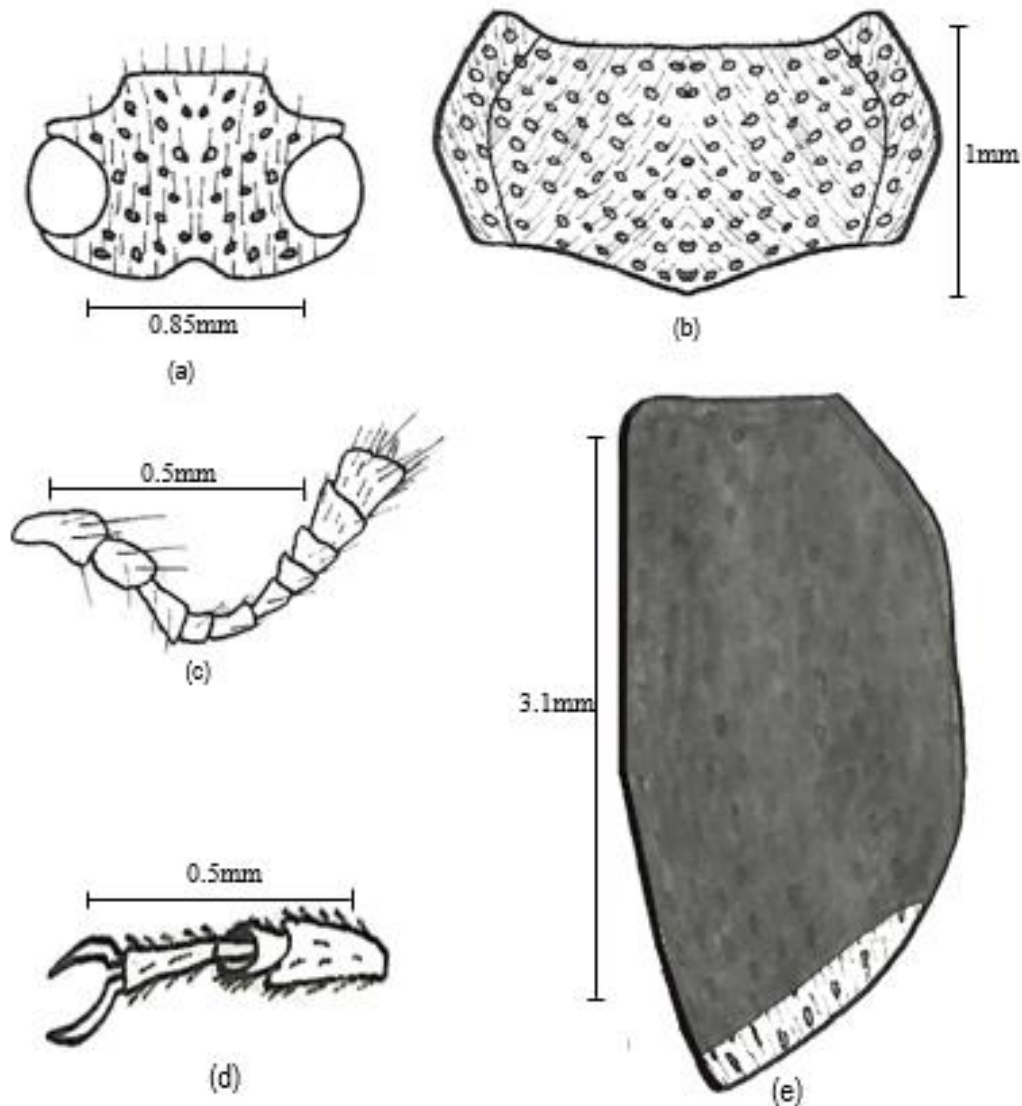


Fig. 9, *Tetrabrachys cribratellus* (Fairmaire), (a) head; (b) pronotum; (c) antenna; (d) tarsus; (e) right elytron.

Acknowledgment

Thanks and gratitude to the owners and the custodians of the Collections which belonging to the following Universities and Institute; (ALFC) Department of Plant protection, Faculty of Agriculture, Al-Azhar University; (ASUC) Faculty of Science, Department of Entomology; (CUC) Faculty of Science, Department of Entomology; (MAC) Plant Protection Research Institute, Ministry of Agriculture, for the privilege of examining the specimens. Thanks are also extended to all staff members of the Department of Plant Protection Faculty of Agriculture, Al-Azhar University, for their cooperation and help.

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ARABIC SUMMARY

مراجعته تقسيميه علي بعض الانواع من فصيلة كوكسيديوليني (غمدية الاجنحة: فصيلة كوكسينيليني) في مصر

محمد ك عبيد- عبدالحكم ع الصعيدي - شريف ف حافظ - محمد م م بديوي
قسم وقاية النبات- كلية الزراعة بالقاهرة- جامعة الازهر

هذا العمل يعتبر أول عمل في سلسلة البحوث في علم تقسيم الحشرات بالنسبة لفصيلة كوكسيديوليني في مصر حيث تم بناء الدراسات التقسيمية الحالية على فصيلة كوكسيديوليني وذلك بالإعتماد على العينات المجموعة من الحقل خلال فترة الدراسة والعينات المحفوظة في المجموعات الحشرية المرجعية- مجموعة الفييرى- كلية الزراعة- جامعة الازهر - مجموعة معهد بحوث وقاية النباتات - وزارة الزراعة - مجموعة كلية العلوم- جامعة عين شمس - مجموعة كلية العلوم- جامعة القاهرة. تضم هذه الفصيلة قبيلتين وثلاث اجناس وستة انواع تم اظهار الصفات المميزة للفصيلة والقبائل والاجناس والانواع وعمل تمييز مورفولوجي للستة انواع محل الدراسة معتمدا على الصفات المورفولوجية الخارجية للحشرات الكاملة مزودا بالرسومات التوضيحية لكل الأنواع وهذه الانواع هي: كريبتوليموس مونتروزيرى، ريزوبس ليتورا - ريزوبس ليتورا دبسميكيولا- ريزوبس كريزوميلودس - تيترابراكس كورديكولس - تيترابراكس كرابيرا تيلس تم اختيار معظم الصفات الهامة في الوصف وتصميم المفاتيح التصنيفية، تم عمل المفاتيح التصنيفية للقبائل والاجناس والانواع اضافة الى ذلك تم تسجيل المرادفات والتوزيع الجغرافى لكل نوع فى مصر والعالم. تم نقل جنس كريبتوليموس من فصيلة سكينيليني الى فصيلة كوكسيديوليني.