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Review of the genus *Macromonycha* (Coleoptera: Chrysomelidae: Cassidinae)

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Abstract. The genus *Macromonycha* Spaeth, 1911, currently including three species, is reviewed based on the study of type material. In addition, *M. kantnerorum* sp. nov. is described from Jordan and Turkey. The lectotype of *Cassida suberosa* Weise, 1889, is designated. Detailed distributional data are given for *M. apicalis*, which is recorded for the first time from Iran and Syria. All known species of the genus are keyed and figured.

Key words. Coleoptera, Chrysomelidae, Cassidinae, taxonomy, new species, lectotype designation, Palaearctic region, Iran, Jordan, Syria, Turkey.

Introduction

Spaeth (1911) proposed the genus *Macromonycha* Spaeth, 1911, for a single species *Cassida apicalis* Gebler, 1845, and synonymized *Cassida olivieri* Boheman, 1854, with it. Weise in Reitter (1889) described *Cassida suberosa* Weise, 1889, from 'Chodsha-kala' (Turkmenistan), and 'Araxesthal' (Armenia) and mentioned that the species resembles only *Cassida atrata* Fabricius, 1787, ignoring Gebler's description of *C. apicalis*. Later on, *C. suberosa* was synonymized with *M. apicalis* (Spaeth 1914b). Another species described by Weise – *Chiridula anatolica* Weise, 1900 – was considered as valid and transferred to *Macromonycha* (Spaeth 1914a). Maulik (1923) described *Kari brunnea* Maulik, 1923, but he evidently overlooked the genus *Macromonycha*, and his new genus and species were soon synonymized with *M. anatolica* by Spaeth & Reitter (1926). Consequently, Spaeth & Reitter (1926) downgraded *M. anatolica* to a subspecies of *M. apicalis*. However, Spaeth & Reitter (1926) never examined the type of *K. brunnea*. It was studied recently by Borowiec (2001) and synonymized with *M. apicalis*. Borowiec (1999, 2001) also re-examined the type of *M. anatolica*, restored it to the species rank, and provided a detailed redescription.

Both described species live in arid habitats in the Near East and central Asia. They belong to very rare species that are collected only scarcely, and data on their distribution are very poor. I have recently examined specimens collected in Jordan and 'Anatolia' [= present Turkey], which belong to an additional undescribed species. Its description is given below together with a key and review of all known species.

Material and methods

The following codens of collections are used:

DBET Department of Biodiversity and Evolutionary Taxonomy, University of Wrocław, Poland (Lech Borowiec);
FKLC František Kantner collection, Lipí, Czech Republic;
HNHM Hungarian Natural History Museum, Budapest, Hungary (Ottó Merkl);
JBBC Jan Bezděk collection, Brno, Czech Republic;
LSLC Lukáš Sekerka collection, České Budějovice, Czech Republic;
MMBC Moravian Museum, Brno, Czech Republic (Igor Malenovský);
MMUK Manchester Museum, Manchester, United Kingdom (Dmitri Logunov);
NMPC National Museum, Praha, Czech Republic (Jiří Hájek);
ZMHB Zoologisches Museum, Humboldt Universität, Berlin, Germany (Johannes Frisch).

Exact label data are cited for all type specimens; a double slash (//) divides data on different labels and a single slash (/) divides data in different rows. Type localities are cited in the original spelling. Other comments and remarks are placed in square brackets: [bb] – black border, [cb] – cardboard label, [hw] – data are handwritten, [p] – data are printed, [r] – red label, [rb] – red border, [s] – soft label, and [w] – white label.

Photographs were taken using a Nikon SMZ-1500 stereomicroscope and Combine software. Measurements were taken using UTHSCSA Image Tool 3.00. Body length was measured from the anterior margin of the pronotum to the apex of elytra, pronotal length from the anterior margin to the base of the pronotum, and pronotal width as the distance between the basal corners. Length ratio of antennomeres was measured as a percent of length of each segment to the length of the first segment.

Only references concerning changes in species status are catalogued. For a complete list of references see Borowiec (1999) and Borowiec & Świętojańska (2008).

Taxonomy

Macromonycha Spaeth, 1911

Macromonycha Spaeth, 1911: 271. Type species: *Cassida apicalis* Gebler, 1845, by monotypy.
Macromonycha: Spaeth & Reitter (1926): 19; Borowiec (1999): 310.
Kari Maulik, 1923: 602. Type species: *Kari brunnea* Maulik, 1923, by monotypy (syn. Spaeth & Reitter (1926): 19).

Diagnosis. The genus is characterized by the following combination of characters: the last tarsal segment strongly projecting and extending behind the sole of the third segment; pronotum with two tubercles on the disc, basal angles broadly rounded and with deep antennal grooves on venter; the disc of elytra with tubercles, costae and folds; and upper side with sparse but well visible stiff setae.
Distribution. From Turkey and the Near East to central Asia.

Key to species

1 Tubercles on pronotal disc high. Dorsum always uniformly yellow to pale brown. Venter yellow except black head. 2
– Tubercles on pronotal disc low. Dorsum uniformly pale or mostly brownish to black.

Venter uniformly pale yellow or completely black, never combining black head and yellow rest of venter. Central and Southern Asia to Afghanistan. .... ***M. apicalis*** (Gebler, 1845)

2 Body elongate, parallel-sided. Tubercles on pronotal disc very high, elytral disc with highly elevated costae forming a distinct, H-shaped elevation. Jordan and Turkey. .... ***M. kantnerorum* sp. nov.**

– Body oval, distinctly widened around midlength. Pronotal tubercles moderately high, elytral disc mostly with isolated tubercles and without a distinct, H-shaped elevation. Turkey: Adana. ..... ***M. anatolica*** (Weise, 1900)

Macromonycha anatolica (Weise, 1900)

(Figs. 1-2)

Chiridula anatolica Weise, 1900: 139. Type locality. 'Kilikischer Taurus, Nordseite: Ali Hotscha Thal' [= Turkey: Adana: Ali-Hotscha valley, near Pozanti].

Macromonycha apicalis anatolica: Spaeth & Reitter (1926): 19.

Macromonycha anatolica: Borowiec (1999): 310 (species status restored); Borowiec (2001): 81 (redescription, figures).

Type material. Holotype: ♂, 'Kilikisch.Taurus / Nordseite / v.Bodemeyer [w, p, bb, cb] // Asia Minor / Ali-Hotscha-Thal / v.Bodemeyer [w, p, bb, cb] // HOLOTYPE / des. L. Borowiec [r, p, cb] // Chiridula / anatolica / m. [w, hw, s] // Chiridula / anatolica Weise, 1900 / HOLOTYPE / des. L. Borowiec [w, p, bb, cb] // Macromonycha / anatolica Weise / det. L. Borowiec [w, p, bb, cb]' (ZMHB).

Distribution. Southern Turkey.

Comments. *Macromonycha anatolica* is known only from the holotype. It is quite well characterized by its oval body shape distinctly widened around midlength, moderately elevated elytral structures, and uniformly rusty-yellow dorsum in combination with yellow venter and black head. For a detailed redescription see Borowiec (2001).

Macromonycha apicalis (Gebler, 1845)

(Figs. 5-9)

Cassida apicalis Gebler, 1845: 105. Type locality: 'deserto Kirgisico-Songorico' [= desert area in central Asia covering a part of present eastern Kyrgyzstan, western Mongolia, and the Xinjiang province of China; the territory was known as Dzungaria (= Songoria or Sungaria)].

Macromonycha apicalis: Spaeth (1911): 271; Borowiec (1999): 311.

Cassida olivieri Boheman, 1854: 332. Type locality: 'Oriens' [= generally Orient]. Synonymized by Spaeth (1911): 271 with *M. apicalis*.

Cassida suberosa Weise, 1889 in Reitter (1889): 132. Type locality: 'Chodscha-kala' [now Chodzhakala in Turkmenistan, western part of the Kopet Dag mountains, ca. 30 km south of Kizyl Arvat (or Gyzylarbat, 38.58′ N / 56.16′ E)] and 'Araxesthal' [= the Aras river valley in Armenia, Caucasus Mts.]. Synonymized by Spaeth (1914b): 88 with *M. apicalis*.

Cassida suberosa var. *discoidalis* Reitter, 1891: 35. Type locality: 'Turkestan' [= former Russian Central Asia]. Synonymized by Spaeth (1914b): 88 with *M. apicalis*.

Kari brunnea Maulik, 1923: 602. Type locality: 'Palestine: 10 miles east of Jerusalem'. Spaeth & Reitter (1926): 19 (as syn. of *M. anatolica*); Borowiec (2001): 81 (as syn. of *M. apicalis*).

Type material examined. *Cassida suberosa* Weise, 1889. Lectotype (here designated): ♀, 'Turcmenien. / Reitter. [w, p, cb, bb] // ex.Coll. / J.Weise [w, p, cb] // Chiridula / apicalis Gebl. / v. / suberosa m [w, hw, s] // Chiridula / suberosa / * [w, hw, s, underside of preceding label]' (ZMHB). Paralectotypes: ♀, 'Turcmenien. / Reitter. [w, p, cb,

bb] // Cassida / suberosa / n. sp. [w, hw, s] // **Holotypus** 1888 / Cassida / suberosa / Weise [w, hw, cb, rb, bold data red and p] // **Typus** / Cassida / suberosa / Weise / **Coll. Reitter** [w, hw, cb, rb, bold data red and p] // Verh.Naturf. Ver. / Brünn. 27, / 1888, / p.132. [w, hw, cb, underside of preceding label] // M. apicalis ab. / suberosa Wse / **Coll. Reitter** [w, hw, cb, bold data p]' (HNHM); unsexed specimen, 'Caucasus. / Araxesthal. / Leder.Reitter. [w, p, cb, bb] // **Paratypus** 1888 / Cassida / suberosa / Weise [w, hw, cb, rb, bold data red and p] // **Typus** / Cassida / suberosa / Weise / **Coll. Reitter** [w, hw, cb, rb, bold data red and p] // Verh.Naturf.Ver. / Brünn XXVII, / 1888, 132. [w, hw, cb, underside of preceding label] // M. apicalis ab. / suberosa Wse / **Coll. Reitter** [w, hw, cb, bold data p]' (HNHM). The specimens are provided with the following label: 'LECTOTYPUS [or PARALECTOTYPUS] / Cassida / suberosa / Weise, 1889 / L. Sekerka des. 2008 [r, p, bb, cb]'.

Cassida suberosa var. *discoidalis* Reitter, 1891. Holotype: ♂, 'Turkestan / Akinin [w, hw, cb] // **Holotypus** 1891. / Cassida / suberosa / var. discoidalis / Reitter [w, hw, cb, rb, bold data red and p] // suberosa / Wse. var. / discoidalis / m. 1890 [w, hw, cb] // **Typus** / Cassida suberosa / var. discoidalis [w, hw, cb, rb, bold data red and p] // D.E.Z.1891,p. 35. [w, hw, cb, underside of preceding label] // M. apicalis / Gebl. / **Coll. Reitter** [w, hw, cb, bold data p]' (HNHM). The specimen is provided with the following label: 'HOLOTYPUS / Cassida suberosa / var. discoidalis / Reitter, 1891 / L. Sekerka des. 2008 [r, p, bb, cb]'.

Additional material examined. AFGHANISTAN: Herat: Bala Murghab, 450 m a.s.l., 25.v.-10.iv.1964, 1 spec., O. Jakeš lgt. (MMBC; typical form). **AZERBAIJAN:** 'Elisabetpol' [= Ganja], 2 spec., v.1902, 5 spec. (DEBT; typical form); 5 spec., Babadjanides lgt. (MMUK; two *suberosa*, rest typical form); 1 spec., Maljushenco lgt. (HNHM; typical form), 3 spec. (MMUK; typical form). **IRAN:** Baluchestan: Taftan, Tamandai, 2100 m a.s.l., 20.iv.1973, 2 spec., Exp. Nat. Mus. Praha (NMPC; one *suberosa* and one typical form). Khorasan: Sarakhs, 29.iv.1994, 1 spec., R. Linavuori lgt. (DEBT; *suberosa* form). West Azerbaijan: Maku env., 1.v.1999, 1 spec., K. Orszulik lgt. (JBBC; typical form). **SYRIA:** Tadmor [= Palmyra], 60 km SW, 4.iv.1998, 2 spec., J. Mertlík lgt. (1 JBBC, 1 LSLC; both typical form). **KAZAKHSTAN:** West Kazakhstan: 'Uralsk' [= Oral], 1 spec., Reitter lgt. (HNHM; *suberosa* form). **TURKMENISTAN:** Ahal: Aidere, 10 km N, Kopet-Dagh Mts., 38°14′ N, 56°46′ E, 600-1000 m a.s.l., 1 spec., G. Fabián, B. Herczig, A. Podlussány & Z. Varga lgt. (HNHM; *suberosa* form); Annau, Kara-Kum desert, iv.1981, 3 spec., A. Pfeffer lgt. (2 NMPC, 1 LSLC; *suberosa* form); Bairam-Ali, 2 spec. (MMUK; *suberosa* form); Bikrova, Kopet-Dagh Mts., 37°59′ N, 58°08′ E, 300 m a.s.l., 6.iv.1993, 1 spec., M. Herblay, G. László & A. Podlussány lgt. (HNHM; typical form); Chull, 5 km S, Kopet-Dagh Mts., 37°56′ N, 58°01′ E, 700-800 m a.s.l., 28.iii.1993, 1 spec., M. Herblay, G. László & A. Podlussány lgt. (LSLC; typical form); 'Transcaspien', 1 spec., Atrer lgt. (MMUK; typical form). **UZBEKISTAN:** Bukhara: Buchara, 1 spec. (DEBT; *suberosa* form); Samarqand: Samarkand, 1 spec., Reitter lgt. (HNHM; typical form), 1 spec., Sklichal lgt. (MMUK; *suberosa* form).

Distribution. Azerbaijan, Kazakhstan, and Turkmenistan (Spaeth 1914a); Uzbekistan (Spaeth & Reitter 1926); Armenia, Israel, and Turkey (Bodenheimer 1937); Afghanistan (Gruev 1988); Iraq (Gruev 1995). New species to Iran and Syria.

Comments. *Macromonycha apicalis* varies in size and colour and has four known forms: specimens with uniformly yellow dorsum (f. *suberosa*, Figs. 8-9), black specimens with basal 2/3 length of elytral marginalia yellow (f. *discoidalis*, Fig. 6), mostly black specimens with pale rugosities (forma typica, Fig. 5), and specimens with uniformly brown dorsum (unnamed Iran population, Fig. 7). However, it is well characterized by low pronotal tubercles and feebly costate elytra. It has the lowest costae and tubercles in comparison with its congeners. It also has a distinctly transverse clypeus, while *M. anatolica* and *M. kantnerorum* sp. nov. have the clypeus at most as wide as long.

Kari brunnea is a synonym of *M. apicalis*, not *M. anatolica* as suggested by Spaeth & Reitter (1926). This point of view was also presented in Borowiec (1999). Unfortunately, the type has been lost recently, but according to L. Borowiec (pers. comm.) it had distinctly lower pronotal tubercles and elytral structures than *M. anatolica* and thus also lower than in *M. kantnerorum* sp. nov.

Macromonycha kantnerorum sp. nov.

(Figs. 3-4)

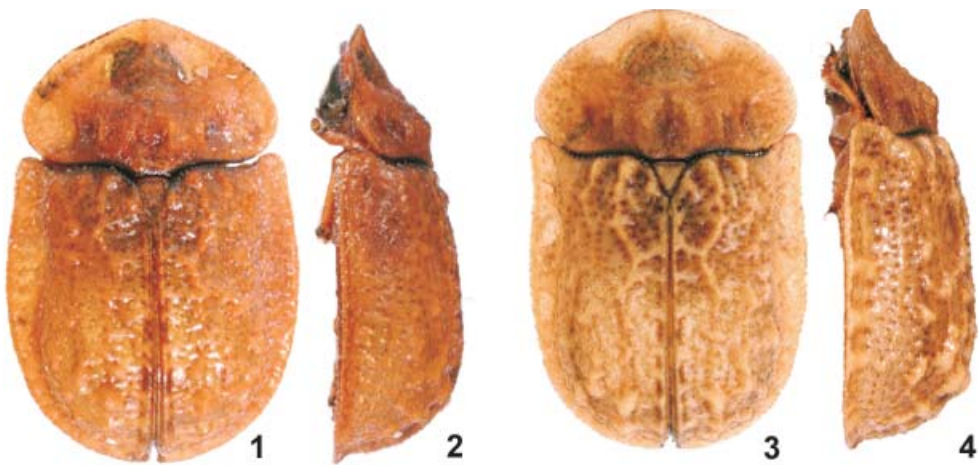
Type material. Holotype: ♀, 'Jordan occ.bor. 24.iv. / AJLUN env., alt. 840 m / 32°19,8'N; 35°43.1'E / 30 km W Jarash / leg F.& L.Kantner 2006 [w, p, cb]' (NMPC). Paratypes: ♀, same data as holotype (FKLC); 2 ♀♀, 'Jordan occ.bor. 30.iv. / alt. 590 m, rock steppe / 32°27,4'N; 35°42.4'E / 30 km WWN of Ajlün / leg F.& L.Kantner 2006 [w, p, cb]' (FKLC, LSLC); ♂, 'Anatolia' (LSLC).

Description. Measurements (n = 4). Length: 5.25-5.59 mm (mean 5.46 mm), width: 3.25-3.46 mm (mean 3.38 mm), length of pronotum: 1.76-1.94 mm (mean 1.85 mm), width of pronotum: 3.15-3.33 mm (mean 3.21 mm), body length/width ratio: 1.60-1.62 (mean 1.61), width/length of pronotum ratio: 1.65-1.83 (mean 1.74).

Body elongate, parallel-sided (Fig. 3). Pronotum, scutellum and elytra uniformly yellow, only basal margins of pronotum and elytra black. Clypeus dark brown, prosternal collar yellow, remaining ventral parts including legs yellow. Antennal insertions yellow, segments 1 and 7 partly infuscate, segments 8-11 black, remaining ones yellow.

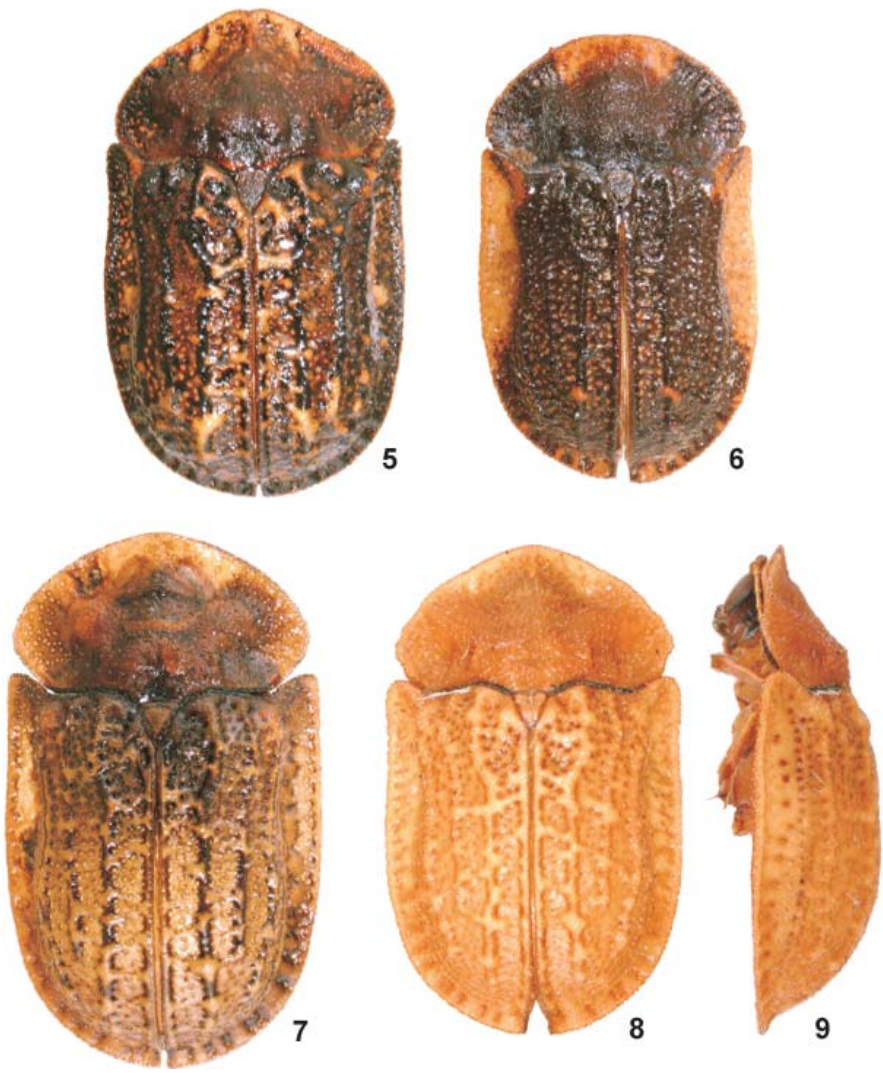
Pronotum elliptical, with maximum width in basal 1/4 length, broadly rounded hind angles and without distinct corners. Disc strongly convex, indistinctly bordered at margin, with two high tubercles in basal part and deep impressions on sides. Whole surface granulate except impressed and feebly striate area between tubercles. Explanate margin of pronotum rugose with wrinkles and folds, and with crenulate outer margin. Area above head slightly impressed, microgranulate and with medial costa reaching extreme margin of pronotum.

Scutellum triangular, micro-sculptured. Base of elytra slightly wider than base of pronotum, humeral angles moderately protruding anteriad. Basal margin of elytral disc moderately serrate. Disc in basal 2/3 depressed, posterior 1/3 feebly convex. Punctuation moderate, irregular, only three submarginal rows more or less regular. Suture moderately elevated, first interval with six tubercles. Third interval elevated and strongly costate in basal half, and in basal 1/3



Figs.1-4. Habitus of *Macromonycha* Spaeth, 1911 species. 1-2 – *M. anatolica* (Weise, 1900), holotype; 3-4 – *M. kantnerorum* sp. nov. (1, 3 – body in dorsal view; 2, 4 – body in lateral view).

length connected by transverse costa with suture and thus forming elevated H-shaped area; posterior half formed by five isolated tubercles. Sixth interval with costa developed in four rudiments: short costa in basal 1/6 length, isolated tubercle slightly behind midlength, three fused tubercles in 3/5 length and small tubercle on apical slope connected with costa on third interval. Eighth interval with four tubercles: one on humerus, one low around midlength and two in posterior half. Each of three submarginal intervals on apical slope of disc with a low



Figs. 5-9. Habitus of *Macromonycha apicalis* (Gebler, 1845). 5 – *M. apicalis* f. *typica* (Gebler, 1845); 6 – *M. apicalis* f. *discoidalis* (Reitter, 1891), holotype; 7 – *M. apicalis* (Gebler, 1845), population from Iran; 8-9 – *M. apicalis* f. *suberosa* (Weise, 1889), holotype (5-8 – body in dorsal view; 9 – body in lateral view).

tubercle in apical part. Marginal row with coarse punctures (ca. twice as coarse as on disc) and interrupted by five transverse folds. Explanate margin almost horizontal, moderately broad, distinctly constricted in basal 1/6 length, and with crenulate outer margin. Its surface rugose with coarse punctures and deep sulci (Fig. 3-4). Whole surface of the beetle covered with white, short, stiff and bristle-like setae.

Head broad, eyes large. Clypeus as wide as long, clypeal grooves formed by rows of deeply impressed punctures running along eyes to antennal insertions; surface flat, coarsely punctate and with long golden setae. Labrum shallowly emarginate. Venter of pronotum with short antennal grooves bordered externally by an obtuse fold. Prosternal collar normal, without lateral plates. Prosternal process narrow, smooth and shiny, distinctly expanded apically with shallow median sulcus and irregular tubercle on apex; whole surface covered with very sparse, long setae.

Antennae stout. Segments 9 and 10 as wide as long. Length ratios of antennal segments 1-11 equal to 100 : 62 : 90 : 74 : 64 : 56 : 56 : 53 : 62 : 56 : 126, i.e. third antennomere 1.46 as long as second and 1.22 as long as fourth.

Tibia with regular row of setae on inner apical margin. Tarsi with last segment strongly projecting behind marginal setae of third segment. Tarsal sole strongly reduced. Claws divergent, simple.

Female genitalia. Spermatheca with C-shaped vasculum with brown apex, ampulla distinctly separated from vasculum and formed by moderately long tube, ductus very long and consisting of moderately thick spiral.

Male. Aedeagus uniform, without diagnostic characters.

Differential diagnosis. *Macromonycha kantneroum* sp. nov. and *M. anatolica* distinctly differ from *M. apicalis* by the presence of high tubercles on the pronotal disc and distinctly elevated structure of the elytra, while all of those are very low in *M. apicalis*. *Macromonycha apicalis* also has four colour morphs: uniformly yellow (including underside), black or brown with somewhat paler elytral structures and uniformly dark underside, and black with yellow spots in the anterior 2/3 of elytral marginalia and uniformly blackish underside. *Macromonycha kantnerorum* sp. nov. and *M. anatolica* have only one known colour form with a uniformly yellow dorsum and venter and uniformly black head. This combination does not occur in *M. apicalis*. Both species also differ from *M. apicalis* in having the clypeus at most as wide as long (distinctly wider than long in *M. apicalis*). *Macromonycha anatolica* differs from the new species by an oval, stout and distinctly widened body in the middle (length / width ratio: 1.52), while *M. kantnerorum* sp. nov. has the body elongate and parallel-sided with the length / width ratio always over 1.60. *Macromonycha kantnerorum* sp. nov. also has distinctly higher developed pronotal tubercles and elytral structure (especially the H-shaped costae in the postscutellar area), while *M. anatolica* has them distinctly lower and does not possess strongly elevated H-shaped costae in the postscutellar area. Finally, *M. anatolica* has a blackish prosternal collar while in *M. kantnerorum* sp. nov. it is uniformly yellow.

Etymology. This species is dedicated to its collectors František Kantner and Liběna Kantnerová (Lipí, Czech Republic).

Bionomics. Unknown. The specimens from Jordan were collected by sweeping on a steppe.

Distribution. Jordan and Turkey.

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