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Two new taxa of *Anthaxia* ESCHSCHOLTZ, 1829 from Iran (Coleoptera: Buprestidae)

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Abstract: Two new taxa of *Anthaxia* ESCHSCHOLTZ, 1829 from Iran – *Anthaxia* (*Anthaxia*) *bicolor lugowoji* **ssp. nov.** and *Anthaxia* (*Anthaxia*) *mareki* **sp. nov.** of the *Anthaxia dimidiata* species-group are described and illustrated. The new taxa are compared to the species most similar to them, and data about their distributions, bionomy and taxonomic positions are given.

Key words: Coleoptera, Buprestidae, *Anthaxia*, new species, distribution, bionomy, taxonomy, Iran.

INTRODUCTION

Since the early 1980s the buprestid fauna of Iran has been studied very intensively. As a result a range of mostly endemic species from the genus *Anthaxia* ESCHSCHOLTZ, 1829 have been described new to science (BÍLÝ 1983, 1991, 1995, 2006, SVOBODA 2003, BAIOCCHI & MAGNANI 2006, 2010, BAIOCCHI 2008, 2011, 2013, 2015). At present there are 65 *Anthaxia* species in Iran classified into 5 subgenera (KUBÁŇ 2016, OBOŘIL & BAŇAŘ 2017, BÍLÝ 2019). In this paper we describe two new taxa from the Elburs and Zagros mountain ranges, which can be considered as endemic to Iran. Both new species belong to the *A. dimidiata* (THUNBERG, 1789) species-group.

MATERIAL AND METHODS

Dry-mounted specimens were examined by using a Delta Optical IPOS-810 stereomicroscope. Measurements were made with an ocular micrometer. The body lengths of the specimens were measured from the anterior pronotal margin to the posterior elytral apex. The elytra length were measured from the base of scutellum to the posterior elytral apex and the width of elytra were measured at the height of the humeri. Habitus images were taken with a Nikon D7500 digital camera equipped with an AF-S VR Micro-Nikkor 105mm f/2.8G IF-ED lens. Photographs of the anatomical details were taken using a Nikon D7500 camera equipped with Nikon M Plan 10x and AmScope 4x Plan Achromatic Objective lenses. The image stacks were processed using Helicon Focus v. 7.7.5 Pro (HeliconSoft Ltd.) (the first author is the license holder) and the plates were assembled in GIMP 2.10.8.

The abbreviations used in the text are as follows:

AL – Andrzej Lasoń leg. (coll. AL)

DF – David Frank leg. (coll. DF)

JŁ – Jerzy Ługowoj leg. (coll. JŁ)

LB – Lech Borowiec leg. (coll. RK)

LK – Lech Kruszelnicki leg. (coll. RK)

MB – Marek Bunalski leg. (coll. RK)

MK – Marek Kafka leg. (coll. MK)

NMPC – National Museum Prague, Czech Republic

NP – National Park

PK – Petr Kabátek leg. (coll. DF)

RD – Roland Dobosz leg. (coll. RK)

RK – Roman Królik leg. (coll. RK)

USMB – Upper Silesian Museum, Bytom, Poland

VK – Vit Kubáň leg. (coll. VK)

TAXONOMY

Anthaxia (Anthaxia) bicolor lugowoji ssp. nov.

<https://zoobank.org/NomenclaturalActs/EC9AE176-E701-4293-AE72-469FD1D39B82>

(Figs. 3–4, 10, 13, 16, 19, 23–24)

Distribution. Iran (Fig. 26).

Description. Medium-sized, flattened, slightly lustrous species: head, pronotum and ventral side of body gold-green (male) or bluish-green (female), large, dark, oval spot in upper part of frons clearly visible when viewed obliquely from above (Fig. 10), pronotum with two large, tapering black spots, elytra purple-red with distinctly separate green postscutellar triangle extending to nearly one third to a quarter of elytral length, ventral side of body with very fine white pubescence.

Head (Fig. 10) slightly narrower than anterior pronotal margin; eyes not projecting beyond outline of head; vertex flat, rather narrow (0.3 times as wide as width of head); frons wider (0.5 times as wide as width of head), shallow depression in centre; inner ocular margins almost parallel, moderately converging on vertex; sculpture of vertex shallow, consisting of irregular cells, with shiny bottom and tiny setigerous punctures; sculpture of frons consisting of deep polygonal cells, rather larger in mid area, with slightly microsculptured bottom and flat, central grain; clypeus shallow, angular incurved anteriorly.

Antennae (Figs. 13) slender, 1.1 times longer than mid pronotal length; black with metallic greenish lustre (in male: 5th antennomere with testaceous dot on inner margin, antennomeres 6–11 testaceous at base); scape finely club-shaped; pedicel suboval, 1.3 times longer than wide; antennomere 3 subcylindrical (subconical in male), 1.1 times longer than pedicel; antennomeres 4–10 subtriangular, 4–6 approximately as long as wide, 7–10 wider (1.3 times as wide as long), slender at base, with sinuate inner margin; last antennomere elliptically elongate.

Pronotum transverse, 1.9 times wider than long, more convex in anterior half, with large, deep laterobasal depressions; anterior pronotal margin slightly lobate medially, posterior margin

distinctly narrower than basal part of elytra, lateral pronotal margins rounded, maximum pronotal width at front 1/3 of its length; sculpture of laterobasal pronotal depressions consisting of much extended cells, middle discal area rather glossy, with sculpture consisting of large, irregularly elongated cells with setigerous punctures; whole pronotum without basal microsculpture.

Scutellum subtriangular, somewhat wider than long, black with slight bluish sheen.

Elytra 1.8 times longer than wide, basal 3/5 subparallel, then tapering to narrowly subrounded apex, basal transverse depressions wide, slightly deeper at humeral angles, not reaching scutellum; humeral swellings normally developed; two transverse, shallow, praesutural depressions just before green postscutellar triangle, two longitudinal depressions on central and posterior portions of each elytron and one shallow, longitudinal depression along sutural parts of both elytra; lateral elytral groove complete, shallow, narrow, distinctly wider along apical 2/5; epipleura broad, complete, narrowest at half length, reaching apex; surface coarsely sculptured in green postscutellar triangle; smoother in medial part, along slightly raised elytral suture, with tiny setigerous punctures; on sides rugose with some larger punctures; apex of elytra with distinct, large and deep punctures, finely serrate on apical margin; each elytron rounded separately.

Ventral side (Fig. 4). Anterior margin of prosternum straight; prosternal process rather wide, with lateral sides only slightly incurved and posterior apex moderately long; protrochanters unarmed; mesotrochanters in male with acute posterior spine; metatrochanters in male with blunt posterior spine; meso- and metatrochanters in female simple, unarmed; sculpture of sternum variable, consisting of cells of varying shape and diameter; sides of abdomen tapering along a very gentle curve, exposing quite broad epipleura, which disappear at the level of the last sternite; sculpture of ventral abdominal surface with scale-like reticulation, with distinct microreticulation only on anterior and posterior margins of all segments; coxae and ventral faces of legs finely microreticulated; ventral pubescence sparse, short and transparent.

Anal ventrite subtriangular, in male 1.8 times wider than long, in female broader, 2.3 times wider than long; preapical area flat, depressed, with fairly rounded, smooth, strongly raised apical edge; lateral margins weakly serrate.

Legs. Foretibiae slightly curved at base; mesotibiae in male (Fig. 16) straight, internal edge obliquely truncated, serrate on distal 1/5, last spike larger than others; metatibiae in male (Fig. 19) gently curving outwards, flattened distally, inner margin obliquely truncated, serrate on apical 1/5, last spike larger than the others; in female meso- and metatibia simple, without inner serration.

Aedeagus (Figs. 23–24) bottle-shaped, 4.9 times longer than wide, widest in basal 1/2; basal part and apical margins yellowish, remainder dark; phallobasis subparallel, parameres gradually tapering at base, then subparallel, apical lobes weakly enlarged, with a tuft of bristles on the outer edge, slightly convergent; median lobe subparallel, 9 times longer than wide, apical part tapering gently to acute top, anterior portion of dorsal surface distinctly rugose, posterior portion smoother, preapical portion of lateral margins very finely serrate, basal apodemes 1/4 of total length.

Variation of size. Medium-sized species (4.8–6.6 mm); size of males ranges from 5.2 mm × 2.2 mm to 6.6 mm × 2.8 mm (holotype: 6.4 mm × 2.7 mm), females vary from 4.8 mm × 2.1 mm to 6.6 mm × 2.8 mm.

Type material. Holotype, ♂: Iran, Māzandarān Prov., 28 km E of Marzanabad (36°26'N 51°32'E), 1110 m amsl, 19–20.V.2017, on flowering *Rosa* sp., RK (coll. USMB); paratypes

(42 exx.): Khorasan Prov., Golestān NP, 140 km W of Bojnurd, 1500 m amsl, 1-3.VI.2001, 1♂3♀, leg. R. Reitmaier (coll. MK, VK); Māzandarān Prov., 28 km E of Marzanabad (36°26'N 51°32'E), 1110 m amsl, 19–20.V.2017, on flowering *Rosa* sp., 8♂ 3♀, AL; 4♂ 2♀, JL; 11♂ 7♀, RK (coll. AL, JL, MK, NMPC, RK, USMB); 28 km E of Marzanabad (36°26'N 51°32'E), 1110 m amsl, 16.V.2018, bank of river, 2♂, LK (coll. AL, LK); 22 km E of Marzanabad (36°25'N 51°33'E), 10.V.2019, 1♂, LK (coll. RK).

Differential diagnosis. *Anthaxia (Anthaxia) bicolor lugowoji*, **ssp. nov.** belongs to the *Anthaxia (A.) dimidiata* (THUNBERG, 1789) species-group as defined by BÍLÝ (1984). It is very similar and closely related to *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, from which it mainly differs in the structure of elytra. The table below (Table 1) summarizes the differences between *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835 and *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**

It differs from *Anthaxia (A.) bicolor uzbekistana* BÍLÝ, 2002 above all in the shape of the aedeagus, the parameres of which taper gradually at the base, in contrast to the distinctly tapering parameres just behind the phallobasis in *A. (A.) bicolor uzbekistana* (BÍLÝ 2002). In addition, the elytra of *A. (Anthaxia) bicolor lugowoji*, **ssp. nov.** betray traces of rows of punctures, as in *Anthaxia (Anthaxia) bicolor bicolor*, but which are absent in *A. (A.) bicolor uzbekistana* (BÍLÝ 2002). A further diagnostic character is the shape of the metatibiae in the male, which are more strongly serrate on the apical inner margin than in *A. (A.) bicolor uzbekistana*, where the male metatibiae are very finely serrate on the inner margin (BÍLÝ 2002).

Table 1. Characters differentiating *A. bicolor lugowoji* **ssp. nov.** from *A. bicolor bicolor*:

<i>Anthaxia (Anthaxia) bicolor bicolor</i> FALDERMANN, 1835	<i>Anthaxia (Anthaxia) bicolor lugowoji</i> ssp. nov.
Body (Fig. 1) wider, less than 2.28 times as long as wide (2.09-2.28, average 2.21)*.	Body (Fig. 3) narrower, more than 2.29 times longer than wide (2.29-2.45, average 2.33).
Frons (Fig. 9) with a scarcely discernible dark spot or none at all.	Frons (Fig. 10) in its upper part, with a large, dark, oval spot (clearly visible when viewed obliquely from above).
Maximum pronotal width at or just before half length; base of pronotum slightly narrower than base of elytra; surface mostly covered with a delicate basal microsculpture.	Maximum pronotal width in anterior 1/3 of its length; base of pronotum distinctly narrower than base of elytra; whole pronotum almost without basal microsculpture.
Elytra wider: 1.60-1.75 times as long as wide (average 1.69)*. Elytra not very shiny, with distinct, fairly evenly distributed, leathery structure, with shallow depressions on their surface and with slightly marked rows of points, also at the apex.	Elytra narrower: 1.77-1.90 times as long as wide (average 1.80). Elytra shinier, with distinct leathery structure in posterior part; on the remaining surface, in particular in central part, near suture, this structure is clearly smoother, depressions on elytra are deeper and points forming irregular rows are strongly marked, especially in apical part.

Male mesotibiae straight, serrate on inner margin at $\frac{1}{4}$ length (Fig. 15).	Male mesotibiae narrowing slightly before apex and serrate on inner margin at $\frac{1}{5}$ length (Fig. 16).
Male metatibiae straight, serrate on inner margin at $\frac{1}{4}$ length (Fig. 18).	Male metatibiae slightly incurved before apex and strongly serrate on inner margin at $\frac{1}{5}$ length (Fig. 19).
Last visible sternite shorter (more than twice as wide as long) (Fig. 2).	Last visible sternite elongate (1.8 times as wide as long) (Fig. 4).
Median lobe narrow lanceolate (Fig. 21), phallobasis tapers more sharply towards parameres (Fig. 22).	Median lobe subparallel (Fig. 23), phallobasis tapers gradually towards parameres (Fig. 24).

* based on measurements of 212 specimens (see: Additional material examined)

Etymology. We dedicate this new species to our friend, Jerzy Ługowoj (Poland), a specialist in Buprestidae and Cerambycidae (Coleoptera) and collector of some paratypes.

***Anthaxia (Anthaxia) mareki* sp. nov.**

<https://zoobank.org/NomenclaturalActs/5B66F9CD-447B-4F9F-9DF2-5CBC69C43FB0>

(Figs. 5–8, 11, 14, 17, 20, 25)

Distribution. Iran (Fig. 26).

Description. Medium-sized, flattened, lustrous species: dominant colours of dorsal side of body copper-gold (Figs. 5, 7); ventral side of body in male copper-coloured (Fig. 6) or greenish-copper in female (Fig. 8); head copper (male) (Fig. 11) or green with gold vertex, lateral part of frons and clypeus (female); pronotum gold, with two large, tapering black spots, outer edges of these spots and anterior pronotal margins greenish; elytra copper-coloured with distinctly separate gold postscutellar triangle, reaching nearly one third of elytral length, green under humeral swellings; ventral side of body with very fine white pubescence.

Head (Fig. 11) slightly narrower than anterior pronotal margin; eyes not projecting beyond outline of head; vertex flat, rather narrow (0.4 times as wide as width of head); frons wider (0.6 times as wide as width of head), shallow depression in centre with fine, adjacent, white hairs; inner ocular margins S-shaped, moderately converging on vertex; sculpture of vertex shallow, consisting of irregular cells, with shiny bottom and tiny setigerous punctures; sculpture of frons consisting of deep polygonal cells, rather larger in mid area, extended around eyes, shiny bottom with large central grain; clypeus shallow, angular, incurving anteriorly.

Antennae (Fig. 14) slender, 1.1 times longer than mid pronotal length; black with metallic copper lustre (in male: 5th antennomere with testaceous dot on inner margin in basal part, antennomeres 6–11 testaceous at base); scape finely club-shaped; pedicel suboval, 1.4 (in male) or 1.3 (in female) times longer than wide; antennomere 3 subcylindrical, 1.1 times longer than pedicel; antennomeres 4–10 triangular, approximately as long as wide, slender at base; last antennomere elliptically elongate.

Pronotum transverse, 1.8 times wider than long with large and relatively shallow laterobasal depressions; anterior pronotal margin slightly lobate medially, posterior margin distinctly narrower than basal part of elytra, lateral pronotal margins rounded, maximum pronotal width just before centre; sculpture of laterobasal pronotal depressions consisting of much extended cells, mid discal area with sculpture consisting of large, irregularly elongated cells

with setigerous punctures; lateral part of pronotum, including laterobasal depressions with a crinkly microstructure, its medial part rather glossy.

Scutellum subtriangular, somewhat wider than long, black.

Elytra 1.8 times longer than wide, basal 4/7 subparallel, then tapering to subrounded apex, basal transverse depressions wide, slightly deeper at humeral angles, not reaching scutellum; humeral swellings normally developed; transverse, shallow, oblique praesutural depression just before postscutellar triangle, two shallow longitudinal depressions in middle and posterior portions of each elytron and one shallow, longitudinal depression along sutural part of both elytra; lateral elytral groove shallow, narrow, distinctly visible along apical 3/7 of epipleura; surface coarsely sculptured; slightly raised elytral suture before postscutellar triangle; apex of elytra finely serrate on apical margin; elytra conjointly rounded at apex.

Ventral side lustrous (Figs. 6, 8). Anterior margin of prosternum straight; prosternal process rather wide, with lateral sides only slightly incurving and posterior apex moderately long; protrochanters unarmed; meso- and metatrochanters in male with acute posterior spine; meso- and metatrochanters in female simple, unarmed; sculpture of sternum variable, consisting of cells of varying shape and diameter; sculpture of ventral abdominal surface with scale-like reticulation, with scarcely discernible microreticulation; coxae and ventral faces of legs finely microreticulated; ventral pubescence sparse, short and transparent.

Anal ventrite subtriangular, in male 1.9 times wider than long, in female broader, 2.2 times wider than long; preapical area flat, depressed, with fairly rounded, smooth, strongly raised apical edge; lateral margins weakly serrate.

Legs. Foretibiae slightly curved at base; mesotibiae in male (Fig. 17) straight, subparallel, with a few sharp spikes on inner side of distal 1/3, last spike larger than others; metatibiae in male (Fig. 20) straight, subparallel, flattened distally, inner margin weak, obliquely truncated, serrate on apical 1/3, last spike larger than others; in female meso- and metatibia simple, without inner serration.

Aedeagus dagger-shaped (Fig. 25), 5.3 times longer than wide; basal part of phallobasis, outer edge of apical lobes of parameres and median lobe yellowish, remainder dark; phallobasis gradually widening, then suddenly narrowing angularly, parameres gradually tapering at base, then subparallel, apical lobes weakly enlarged, with long setae on lateral sides; median lobe tapering gently to acute top, distinctly rugose on dorsal surface.

Variation of size. Medium-sized species (5.5–6.8 mm); size of male: 5.7 mm × 2.4 mm (holotype); females vary from 5.5 mm × 2.3 mm to 6.8 mm × 2.9 mm.

Type material. Holotype, ♂: Iran, Fars Prov., Yasuj Sarab-e Taveh, (30.545°N 51.61°E +/- 600m), elev. 2030 m amsl, 4.V.2016, MK (coll. NMPC); paratypes (3 exx.): Iran, Fars Prov., Yasuj Sarab-e Taveh, (30.545°N 51.61°E +/- 600m), elev. 2030 m amsl, 4.V.2016, 1♀, MK; Dasht Arjan, (29.641°N 51.913°E +/- 1km), elev. 2040 m amsl, 6.V.2016, 1♀, MK (coll. RK); Zagros Mts., 7 km SSE of Dasht Arjan, (29°54'21"N 55°04'E), 2100 m amsl, 5-6.V.2016, 1♂, VK.

Differential diagnosis. *Anthaxia (Anthaxia) mareki* sp. nov. belongs to the *Anthaxia (A.) dimidiata* (THUNBERG, 1789) species-group, to the sub-group with a large distinct scutellar triangle, as in *A. bicolor*, *A. candiota* and *A. dimidiata*. But it differs from these in the ground colour of the pronotum and scutellar triangle, which is copper-gold, in contrast to the green or blue that is typical of the other species in this subgroup. In body shape, it most closely resembles *A. bicolor*, but differs in the colouring and above all in the shape of the aedeagus, in which the phallobasis tapers angularly before the parameres.

Etymology. We dedicate this new species to our friend Marek Kafka (Czech Republic), specialist in Buprestidae (Coleoptera) and collector of type specimens.

Additional material examined.

Anthaxia bicolor bicolor. **Armenia:** Ararat Prov., Khosrov Forest State Reserve (40°3'N 44°54'E), 5–6.VI.2013, 2♂, LK; Ararat Prov., Khosrov Res., 30.V.2005, 1♀, 1500 m amsl, leg. Kartashov V. (AL); Syunik Prov., Arevik NP, Meghri env., 11.VI.2014, 1♂, leg. Š. Hofmeister (coll. DF); Syunik Prov., Aygedzor (38°59'N 46°12'E), 9–10.VI.2013, 5♂ 1♀, LK; Syunik Prov., Vardanidzor, (38°59'N 46°13'E), 1080 m amsl, 14.VI.2017, 1♂, leg. T. Růžička (coll. DF); **Azerbaijan:** İsmayilli rayonu, Caucasus Mts., Topçu env., (40°52'N 48°5'E), 588 m amsl, 4.VI.2010, 1♂, AL; Qəbələ rayonu, Caucasus Mts., Qəmərvan (41°3'N 47°47'E), 1020 m amsl, 4–9.VI.2010, 1♀, RK; Lerik rayonu, Talysh Mts., 2 km SE of Peştətük (38°46'N 48°34'E), 375 m amsl, 2–3.VI.2010, 1♂, RK; 3.VI.2010, 2♀, on cut branches of *Carpinus* sp, AL; .5–12.V.2014, 4♂, on flowering *Cydonia* sp., *Crataegus* sp., AL, RK; Yardımlı rayonu, Talysh Mts., Üzyübaşı Mt., 3 km NW of summit (38°52'N 48°6'E), 1890 m amsl, 2–6.VI.2013, 5♂ 2♀, on flowering *Rosa* sp., RK; Yardımlı rayonu, Talysh Mts., 32 km NE of Yardımlı, (38°57'N 48°29'E), 290 m amsl, 13.V.2014, 1♂, on flowering *Crataegus* sp., *Rosa* sp., RK; **Bulgaria:** Burgas Prov., Arkutino (42°20'N 27°43'E), 19.VI.1980, 1♂, LB; Burgas Prov., Obzor (42°49'N 27°53'E), 24.VI–8.VII.2003, 5♂ 5♀, LK; Plovdiv Prov., Rodopi Mts., Asenova Krepост' (41°52'N 24°52'E), 400 m amsl, 17.VI.2001, 1♀, LB; [Vidin Prov.], Rabisha, 9.VI.1994, 1♂, JL (AL); **Georgia:** Kachetia Reg., Dedoplistskaro (41°28'N 46°6'E), 1.VII.2011, 1♂, leg. R. Plewa (coll. RK); Kachetia Reg., Vashlovani NP (41°16'N 46°38'E), 790 m amsl, 27.VI.2017, 11♂, RD (coll. USMB); Kakheta, Vashlovani NP., Shavi Mta (41°16'N 46°38'E), 780 m amsl, 15.VI.2021, 1♂, AL; Mtskheta-Mtianeti Reg., Karsani (41°50'N 44°42'E), 700 m amsl, 13.V.2019, 1♂1♀, AL, RK; [Mtskheta-Mtianeti], Tbilisi Jvari, 26.V.1973, 1♂, leg. M. Šprysl (coll. DF); [Tbilisi], Tbilisi env., 18–30.V.2012, 4♂, 22.VI–5.VII.2013, 1♂, leg. J. Hromádka (coll. DF); **Greece:** Central Macedonia Reg., 10 km N of Nea Santa (40°53'N 22°55'E), 25.V.2013, 1♀, leg. B. Bujnik (coll. RK); **Iran:** Färs Prov., 13 km SW of Dasht-e Arzhan (29°33'N 51°56'E), 2250 m amsl, 4–5.V.2016, 1♀, DF; Färs Prov., 5 km SW of Dasht-e Arzhan (29°38'N 51°56'E), 2160 m amsl, 30.IV.2016, 1♀, white pan trap with yellow dot, RK; 10.V.2017, 1♂1♀, leg. M. Walczak (AL); Färs Prov., Persepolis (29°56'N 52°53'E), 1643 m amsl, 7.V.2017, 1♀, ex cult. from twigs of *Fraxinus* sp. II.2018, RK; Färs Prov., 21km SE of Yäsüj (30°30'N 51°42'E), 2410 m amsl, 28.IV.2016, 3♂ 3♀, AL, RK; 15.V.2017, 16♂ 5♀, AL, RK; Kohgīrūye-o Büyer-Ahmad Prov., Si Sakht env., 1700–4000 m amsl, 11–16.VII.2003, 1♀, ex l., leg. Ivo Jeniš (coll. MK); Lorestān Prov., SW of Dorud (33°29'N 49°3'E), 1610 m amsl, 23–24.IV.2016, 4♂ 1♀, AL, RK; Lorestān Prov., Oshtrankuh Protected Area (33°21'N 49°12'E), 2120 m amsl, 22–23.IV.2015, 1♂, leg. S. Murzin (coll. RK); Māzandarān Prov., 10 km N Gachsar (36°09'N 51°18'E), 1900–2700 m 7.VI.2014, 2♂, leg. J. Halada (coll. MK); Tehrān Prov., N of Tehrān (35°50'N 51°27'E), 28.V.2019, 1♂ 1♀, LK; Qazvin Prov., Ziyaran Samgh Abad (36°07'N 50°37'E +/- 300m), elev. 1900 m 16.V.2016, 8♂ 2♀, MK; **Israel:** Haifa Distr., Kiryat Ata (32°48'N 35°6'E), 2.V.2014, 4♂, (coll. RK); [Haifa Distr.], Mt. Carmel, 22.IV.2014, 2♂ 3♀, (coll. AL) **Romania:** Tulcea County, Babadag (44°49'N 28°41'E), 97 m amsl, 1.V.2012, 5♂, on flowering *Crataegus* sp., RK; **Russia:** [Krasnodar Krai], Caucasus occ., Adler [at present part of Sochi], 21.VI.1971, 1♀, leg. J. Voříšek (coll. DF); Krasnodar Reg., Novorossiysk env. (44°43'N 37°45'E), 1000 m amsl, 24.V.2004, 1♂, (coll. AL); **Turkey:** Balıkeşir Prov., 6 km W of Balya (39°46'N 27°31'E), 308 m amsl, 13.V.2008, 1♂ 1♀, RK; Balıkeşir Prov., 14 km S of Balya (39°38'N 27°32'E), 276 m amsl, 20.V.2008, 1♂, RK; Balıkeşir Prov., 8 km NW of Sametli (39°55'N 27°21'E), 390 m amsl, 2.VI.2008, 1♂, AL; Erzincan Prov., Girlevik Mts, Caglayan, 12–19.

VI.1993, 2000 m amsl, 1♂, PK; Hakkari Prov., Hakkari Mts, Hakkari, 16–18.VI.1997, 1800 m amsl, 1♂, PK; Kırklareli Prov., 5 km E of Demirköy (41°50'N 27°46'E), 22–24.VI.2000, 1♂, RK; Kırklareli Prov., 7 km S of İğneada (41°49'N 27°57'E), 25 m amsl, 4–5.VI.2001, 1♂, RK; 31.V.2008, 1♂, AL; Kırklareli Prov., 16 km NE of Yenice (41°44'N 27°38'E), 4–5.VI.2000, 1♂, RK; Manisa Prov., 10 km S of Salihli (38°25'N 28°5'E), 860 m amsl, 12.V.2005, 1♂ 2♀, RK; Mersin Prov., Aydınlar env. (36°44'N 34°9'E), 10–12.VI.2000, 2♂ 2♀, RD & RK; Mersin Prov., Aydınlar (former Avgadı vill.) env. (36°42'N 34°10'E), 1400 m amsl, 21–22.VI.2004, 2♂, RK; Mersin Prov., 10 km S of Aydınlar (36°41'N 34°10'E), 1000 m amsl, 28–30.V.2001, 6♂ 1♀, RK; Mersin Prov., 3 km N of Erdemli (36°37'N 34°15'E), 300 m amsl, 5.VI.2011, 1♂, RK; Mersin Prov., 22 km NW of Erdemli (36°42'N 34°10'E), 990 m amsl, 6.VI.2008, 2♂ 1♀, AL; Mersin Prov., Toros Mts, Erdemli–Arslanlı, 23–28.VI.1997, 1100 m amsl, 1♀, PK; Mersin Prov., Meşelik vill. (37°4'N 34°46'E), 16.IV.1997, 1♂ 6♀, ex cult. from trunk of *Olea europaea* L., 1♂ 6♀, 18–22.IV.1997, RK; Mersin Prov., Meşelik vill. (37°4'N 34°46'E), 10.V.1998, 1♂, RK; Osmaniye Prov., Hasanbeyli vill. env. (37°9'N 36°34'E), 3–4.V.1998, 9♂ 3♀, RK; 7.VI.2011, 1♀, AL; Osmaniye Prov., Hasanbeyli vill. env., pass (37°7'N 36°34'E), 985 m amsl, 19–25.V.2001, 2♂ 4♀, leg. J. Kurzawa & RK (coll. RK); 5–6.VI.2005, 2♂, RD; 872–1120 m amsl, 6.VI.2011, 1♂, RK; Osmaniye Prov., 9 km S of Hasanbeyli vill. (37°3'N 36°31'E), 930 m amsl, 24.V.2001, 2♂ 2♀, RK; Tunceli Prov., by the road from Pülümür to Tunceli (39°7'N 39°32'E – 39°30'N 39°54'E), 17–19.VI.2002, 3♂, RK; Tunceli Prov., 8 km N of Pülümür (39°35'N 39°53'E), 16.VI.2002, 1♀, RK; Tunceli Prov., 12 km S of Pülümür (39°25'N 39°50'E), 1300 m amsl, 16–17.VI.2004, 1♂ 2♀, AL, RK; Tunceli Prov., 10 km NW of Tunceli (39°11'N 39°29'E), 18.VI.2002, 1♀, RK.

Anthaxia candiota. **Cyprus**: Paphos Distr., W of Pachyammos, (35°10'N 32°34'E), 30 m amsl, 5.VI.2022, 3♂ 3♀, beaten from olive branches – *Olea europaea* L., RK; **Greece**: Crete, Selena Oros., 2 km N of Kera (35°14'N 25°27'E), 590 m amsl, 6.V.2006, 1♂, JL; **Turkey**: Mersin Prov., Taşeli Platosu, 3 km N of Erdemli (36°37'N 34°19'E), 1.VI.2005, 1♀, AL.

Anthaxia madridensis. **Spain**: Madrid, Monte de Batres (40°14.557'N 3°56.905'W), ex larva 2012, 1♂ (paratype), M. Kafka lgt.

Anthaxia magnanii. **Iran**: Fars Prov., Dasht Arjan 15 km E, (29°33'23.44"N 51°56'45.47"E), 2195–2213 m amsl, 27–28.V.2015, 1♂, Jaroslav Dalihod lgt.; Dasht Arjan, (29.641°N 51.913°E +/- 1km), elev. 2040 m amsl, 6.V.2016, ex larva 2017, 1♀ M. Kafka lgt.

COMMENTS

Both species described in this paper belong to the *A. dimidiata* species-group (OBENBERGER 1917), and within this to the *A. dimidiata* complex (species with elytral apices but without deep apical punctures and with bicolorous antennae in males) (BİLÝ 1984).

NIEHUIS & STRAUSS (2019) proposed distinguishing two subgroups in this complex: the *A. podolica* subgroup – species with an inconspicuous or non-existent scutellar triangle and an almost black pronotum – and the *A. bicolor* subgroup – species with a large green or blue scutellar triangle and a coloured pronotum. The following species can be assigned to the second group: *A. dimidiata*, *A. bicolor* (including subspecies), *A. candiota* (until recently treated as a subspecies of *A. bicolor*). The base of the scutellar triangle in these species is spread wide, reaching the shoulders of the elytra. In addition, the body is on average larger than in the other species of the *A. dimidiata* complex.

At first sight, the brownish-gold tone of the colouring of *Anthaxia mareki* sp. nov. is suggestive of *A. magnanii*, another species from Iran. But analysis of the characters in specimens of *A. magnanii* and also of similarly coloured species like *A. chaerodrys* and

A. madridensis reveals distinct differences, inter alia in the pubescence of the forehead, which is practically non-existent in *A. mareki* sp. nov., but is clearly visible in *A. chaerodrys*, *A. madridensis* and *A. magnanii*. Furthermore, the arrangement of colours on the pronotum as well as its shape and size indicates that *A. mareki* sp. nov. is more closely related to *A. bicolor*.

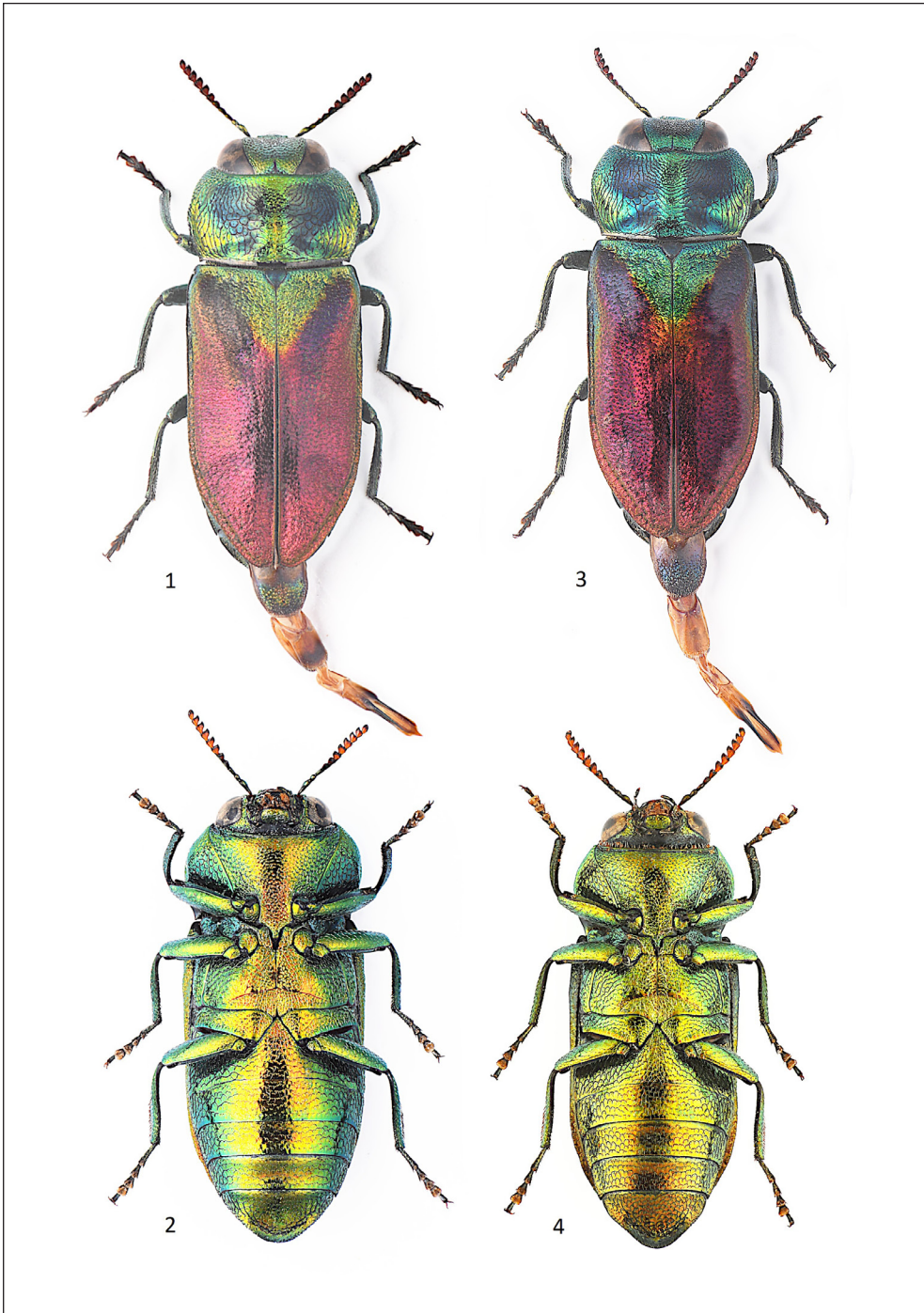
Since the *A. dimidiata* species-group was defined (OBENBERGER 1917) it has been split into species subgroups (complexes) several times (BILÝ 1984, NIEHUIS 1990, NIEHUIS & STRAUSS 2019) and further new species have been described. We are inclined to agree with the statement that the group needs a more detailed revision (BAIOCCHI 2011).

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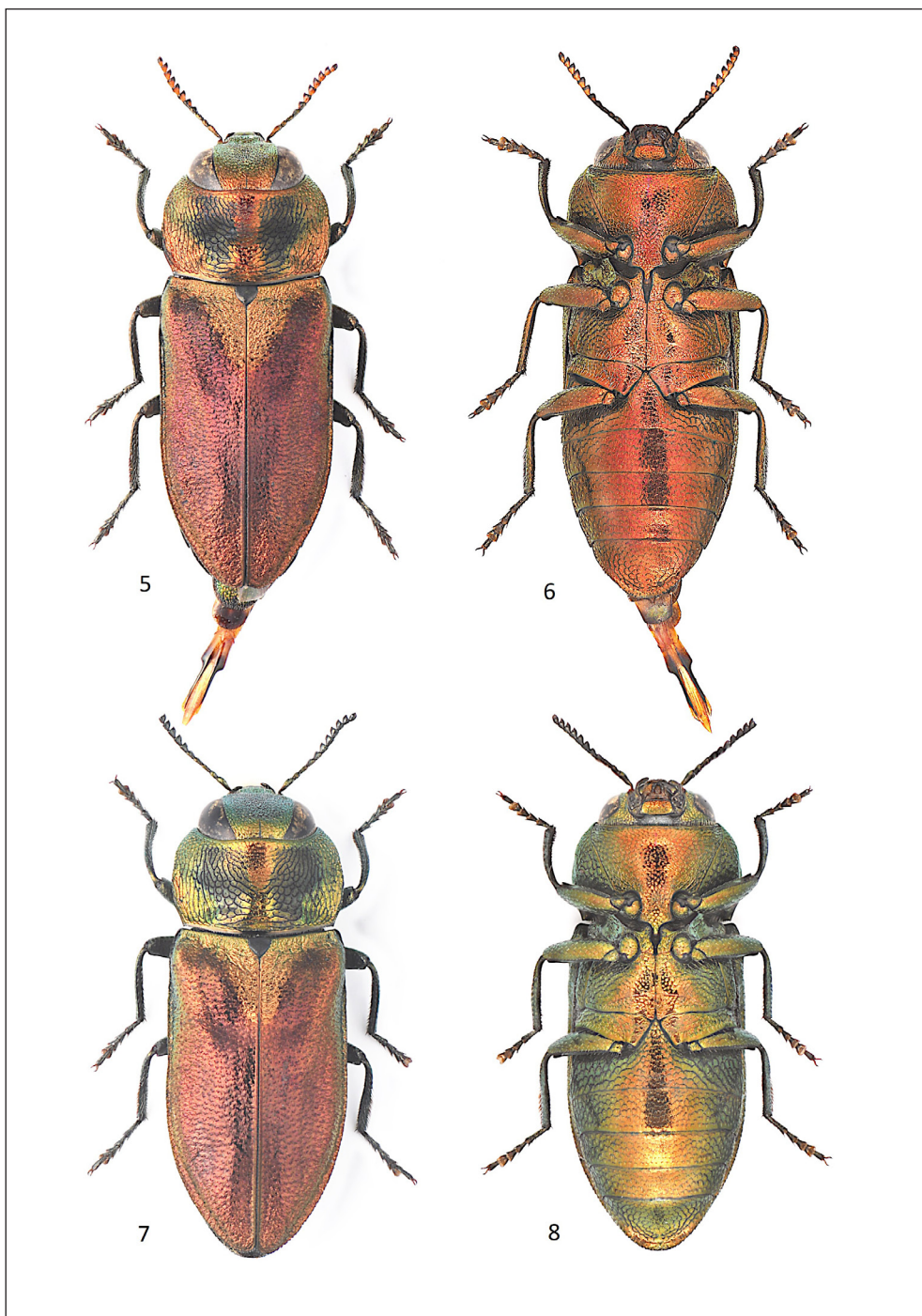
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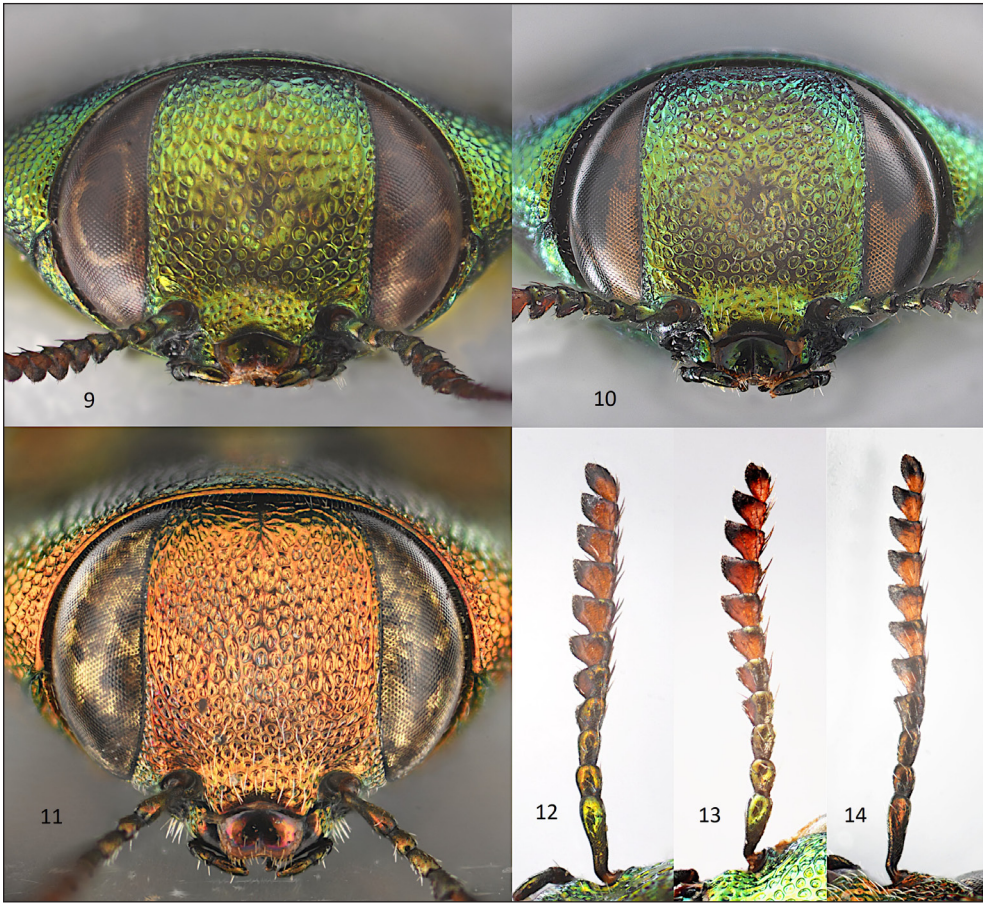
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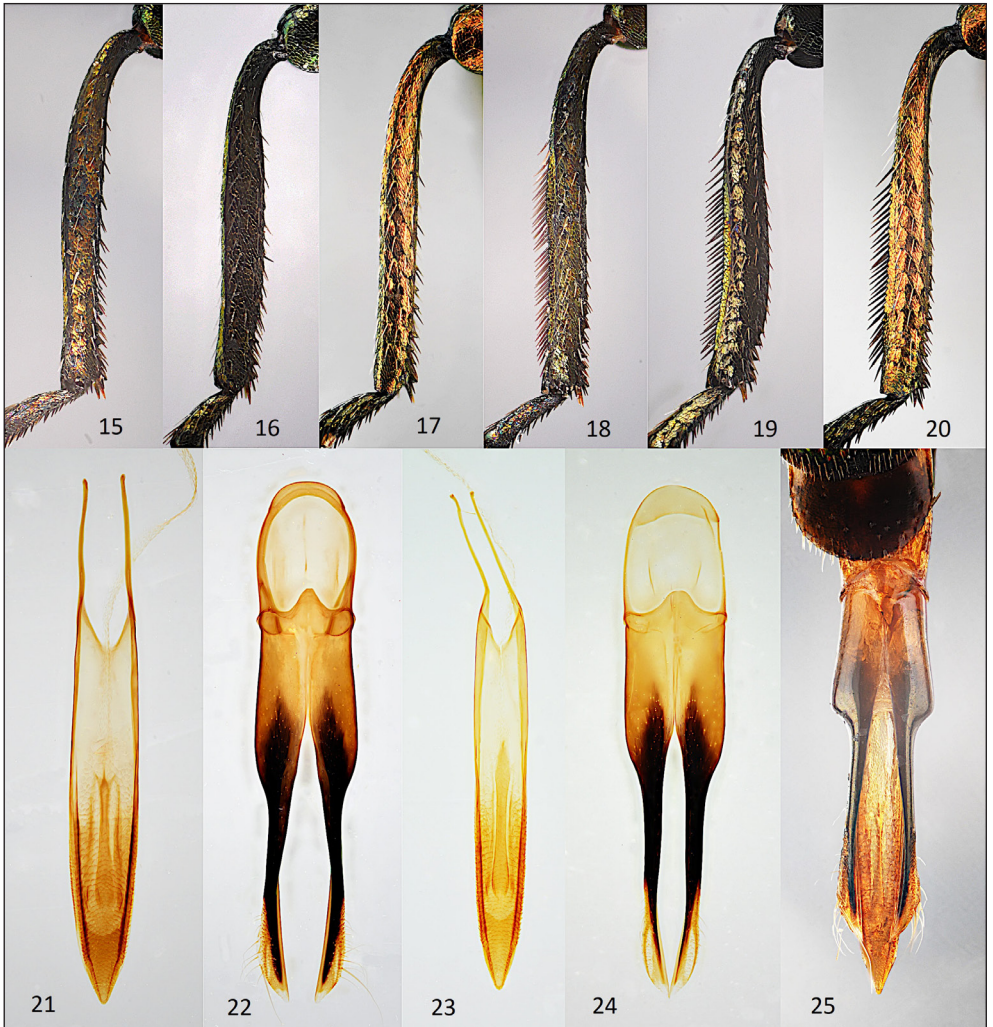
Figs. 1–4. Fig. 1, *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, ♂, dorsal view, 6.2 mm; Fig. 2, *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, ♂, ventral view; Fig. 3, *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**, holotype ♂, dorsal view, 6.4 mm; Fig. 4, *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**, paratype ♂, ventral view.



Figs. 5–8. Fig. 5, *Anthaxia (Anthaxia) mareki* **sp. nov.**, holotype ♂, dorsal view, 5.7 mm; Fig. 6, the same, ventral view; Fig. 7, *Anthaxia (Anthaxia) mareki* **sp. nov.**, paratype ♀, dorsal view, 5.5 mm; Fig. 8, the same, ventral view.



Figs. 9–14. Fig. 9, *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, ♂, frontal view of head; Fig. 10, *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**, holotype ♂, frontal view of head; Fig. 11, *Anthaxia (Anthaxia) mareki* **sp. nov.**, holotype ♂, frontal view of head; Fig. 12, *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, ♂, right antenna; Fig. 13, *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**, holotype ♂, right antenna; Fig. 14, *Anthaxia (Anthaxia) mareki* **sp. nov.**, holotype ♂, right antenna.



Figs. 15–25. Fig. 15, *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, ♂, right mesotibia; Fig. 16, *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**, paratype ♂, right mesotibia; Fig. 17, *Anthaxia (Anthaxia) mareki* **sp. nov.**, holotype ♂, right mesotibia; Fig. 18, *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, ♂, right metatibia; Fig. 19, *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**, paratype ♂, right metatibia; Fig. 20, *Anthaxia (Anthaxia) mareki* **sp. nov.**, holotype ♂, right metatibia; Fig. 21, *Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835, ♂, median lobe; Fig. 22, the same, parameres; Fig. 23, *Anthaxia (Anthaxia) bicolor lugowoji* **ssp. nov.**, holotype ♂, median lobe; Fig. 24, the same, parameres; Fig. 25, *Anthaxia (Anthaxia) mareki* **sp. nov.**, holotype ♂, aedeagus.

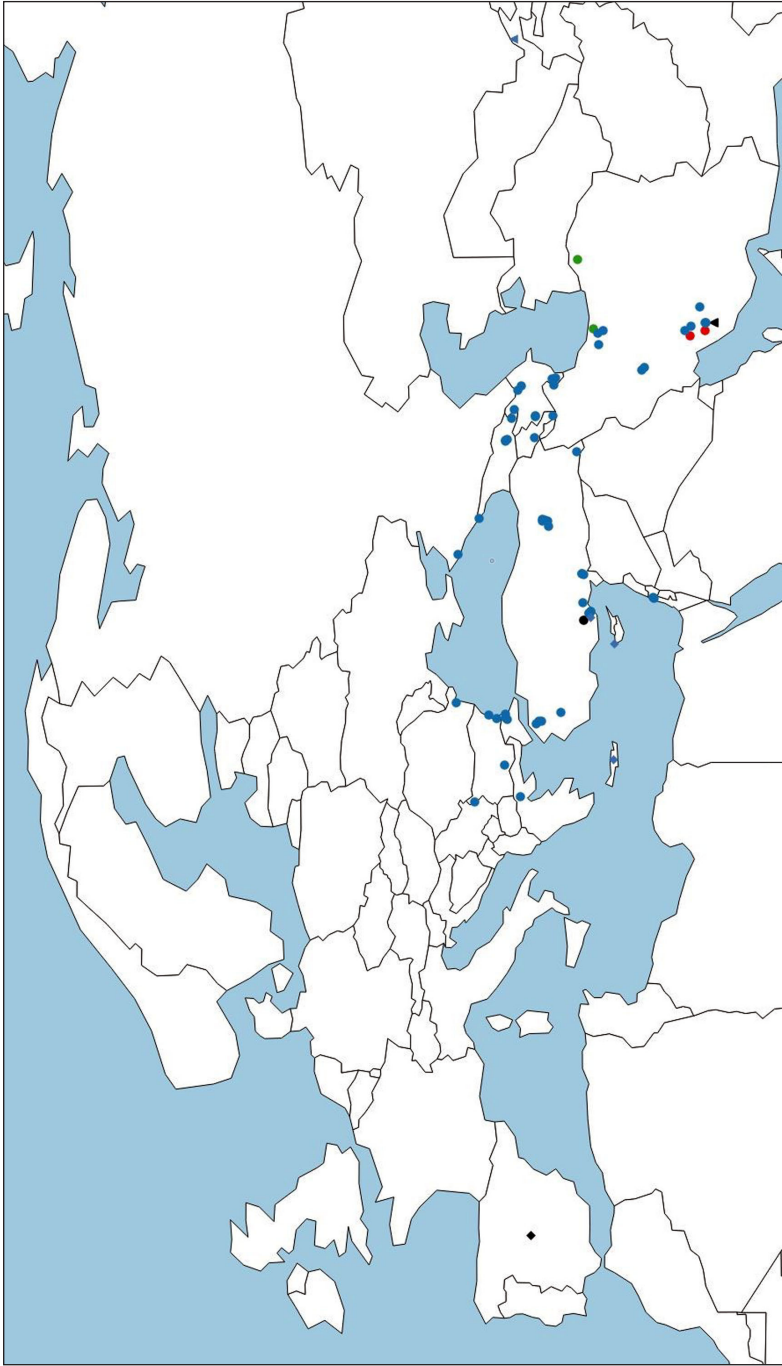


Fig. 26. The places of origin of the specimens belonging to the *A. dimidiata* (Thunberg, 1789) species-group: *Anthaxia (Anthaxia) bicolor bicolor* Faldermann, 1835 (blue circle), *Anthaxia (Anthaxia) bicolor uzbekistana* Blü.y, 2002 (blue triangle), *Anthaxia (Anthaxia) candida* Obenberger, 1938 (blue square), *Anthaxia (Anthaxia) chaerodrys* Szallies, 2001 (black circle), *Anthaxia (Anthaxia) madridensis* Blü.y & Verdugo, 2014 (black square), *Anthaxia (Anthaxia) magnanii* Baiocchi, 2011 (black triangle), *Anthaxia (Anthaxia) bicolor lugowoji* **sp. nov.** (green circle), *Anthaxia (Anthaxia) maretii* sp. nov. (red circle).

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