

Four new *Isomira* (Coleoptera: Tenebrionidae: Alleculinae): species from Iran, Jordan, and Malta, along with notes on another species of the genus

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Abstract. New species of *Isomira* Mulsant, 1856 from the Palaearctic Region are described as *Isomira* (*Isomira*) *ajlounica* sp. nov. and *Isomira* (*Isomira*) *dhanaica* sp. nov. from Jordan, *Isomira* (*Isomira*) *kandelouica* sp. nov. from Iran and *Isomira* (*Isomira*) *maltaica* sp. nov. from Island Malta. New colour variability and male genitalia of the species *Isomira* (*Isomira*) *nitidula* (Kiesenwetter, 1861), *Isomira* (*Isomira*) *sanquinicollis* Reitter, 1911 and *Isomira* (*Muheimira*) *bicolorata* Mucho, 1982 are illustrated. The taxa *I. (I.) sanguinicollis* Reitter, 1911 and *I. (Muheimira) bicolorata* Mucho, 1982 are known as species with red pronotum in the typical form; new colour variability with pronotum in brown or dark brown colour for both species is presented and illustrated. Colour variability of the species *Isomira* (*I.*) *nitidula* (Kiesenwetter, 1861) with red pronotum is shown for the first time. Male genitalia of the species *I. (Muheimira) bicolorata* Mucho, 1982 are presented and illustrated for the first time. New distributional data (Lebanon and Syria) for species *Isomira* (*I.*) *nitidula* (Kiesenwetter, 1861) are added.

INTRODUCTION

Mulsant (1856) described the genus *Isomira* in 1856 with the type species *Chrysomela murina* Linnaeus, 1758. The genus belongs to the subtribe Gonoderina. The members of the genus live in all zoogeographical regions with exceptions of the Australian and Neotropical ones (Novák 2014a). Almost 120 species are known so far. Borchmann (1910) listed 51 species from world, Mader (1928) 35 species and Novák & Pettersson (2008) 73 species in six subgenera of the genus *Isomira* from the Palaearctic Region.

The subgenus *Asiomira* Dubrovina, 1973 was elevated to the generic level by Novák (2016).

Novák (2016) established a new subgenus *Muheimira* Novák, 2016 with its type species *Isomira stoetzneri* Mucho, 1981 and included ten species from China (Sichuan, Yunnan), Nepal, Saudi Arabia and Yemen (Novák 2009, 2014b).

From Japan (Ishigaki Is.) the species *Isomira* (*Isomira*) *ishigakiensis* was described by Hanatsuka, Masumoto & Kon (2005), and finally, Soldati & Lemaire (2010) described the species *Isomira* (*I.*) *aliquoi* from Cyprus. The nominotypical subgenus *Isomira* currently contains 60 species living in the Palaearctic Region.

New species *Isomira* (*Isomira*) *ajlounica* sp. nov. and *I. (I.) dhanaica* sp. nov. from Jordan, *I. (I.) kandelouica* sp. nov. from Iran and *I. (I.) maltaica* sp. nov. from Island Malta are presently described, illustrated and compared with similar species.

New distributional data (Cyprus, Lebanon and Syria) for species *Isomira* (*I.*) *nitidula* (Kiesenwetter, 1861) are added.

MATERIAL AND METHODS

Two important morphometric characteristics used to describe species of the subfamily Alleculinae, the "ocular index" (Campbell & Marshall 1964) and "pronotal index" (Campbell

1965), are also used in this paper. The ocular index is equal to: (100× minimum dorsal distance between eyes) / (maximum width of head across eyes). The pronotal index is: (100× length of pronotum along midline) / (width across basal angles of pronotum).

In the list of type or examined material, a slash (/) separates data in separate rows.

The following codes for collections are used:

- HNHM Hungarian Natural History Museum, Budapest, Ottó Merkl, Hungary;
 NMEG Naturkundemuseum, Erfurt, Matthias Hartmann, Germany;
 NMPC National Museum, Praha, Jiří Hájek, Czech Republic;
 VNPC private collection of Vladimír Novák, Praha, Czech Republic;
 ZSPC private collection of Zdeněk Švec, Praha, Czech Republic.

Measurements of body parts and corresponding abbreviations used in the text are as follows: AL - total antennae length, BL - maximum body length, EL - maximum elytral length, EW - maximum elytral width, HL - maximum length of head (visible part), HW - maximum width of head, OI - ocular index dorsally, PI - pronotal index dorsally, PL - maximum pronotal length, PW - pronotal width at base, RLA - ratios of relative lengths of antennomeres 1-11 from base to apex (3=1.00), RL/WA - ratios of length / maximum width of antennomeres 1-11 from base to apex, RLT - ratios of relative lengths of tarsomeres 1-5 respectively 1-4 from base to apex (1=1.00).

The measurements were made using an Olympus SZ 40 stereoscopic microscope with continuous magnification and a Soft Imaging System ANALYSIS. Snapshots were taken by using camera Canon EOS 550 D, and Canon Macro Photo Lens MP-E and software Helicon Focus 5.2.

TAXONOMY

genus *Isomira* Mulsant, 1856

Type species. *Chrysomela murina* Linnaeus, 1758.

subgenus *Isomira* Mulsant, 1856

Type species. *Chrysomela murina* Linnaeus, 1758.

Isomira (Isomira) ajlounica sp. nov.

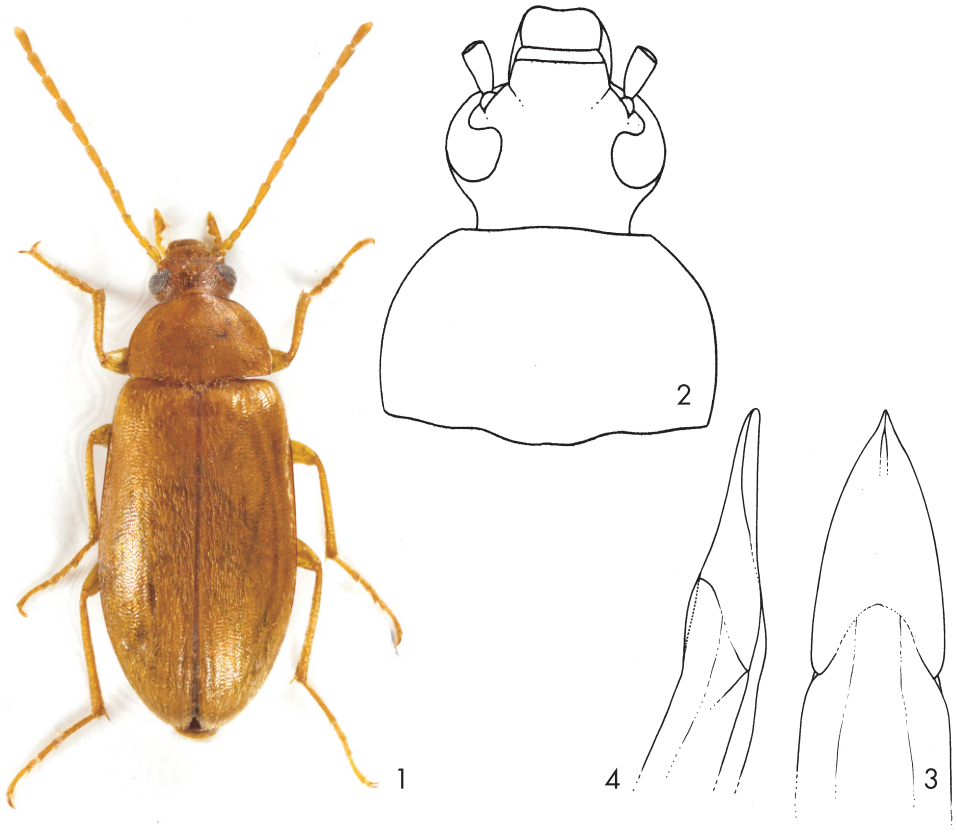
(Figs. 1-4)

Type locality. Jordan, Gouvernement Ajloun, NNW of Ajbun, N32°21'29.9'' E 35°43'43.4''.

Type material. Holotype (♂): "Jordania, gouv. Ajloun: wl: N32°21'29.9'' E 35°43'43.4'' / Jordaniien, gouv. Ajloun / Ajbun NNW JD 22 / *Eichenbuschwald (Kalk)* / 21.04.2016 897m üNN LF / leg.: SCHNITZER/SHELLHORN", (NMEG). Paratypes: 44 spec., same data as holotype, (NMEG, VNPC). The types are provided with one printed red label: *Isomira ajlounica* sp. nov. / HOLOTYPE [resp. PARATYPE] / V. Novák det. 2019.

Description of holotype. Habitus as in Fig. 1, body elongate oval, from ochre yellow to brown, slightly shiny, dorsal surface with setation, BL 6.22 mm. Widest near two thirds elytral length; BL/EW 2.70.

Head (Fig. 2) slightly longer than wide, with relatively long, pale setation, microgranulation and dense shallow punctuation, punctures medium sized, interspaces between punctures narrow. Posterior part brown, distinctly darker than pale brown anterior part and clypeus. HW 1.03 mm; HW/PW 0.63; HL (visible part) 1.13 mm. Eyes smaller, transverse, distinctly excised. Space between eyes relatively wide, distinctly wider than diameter of one eye, OI equal to 52.51.



Figs. 1-4. *Isomira (I.) ajlounica* sp. nov.: 1-Habitus of male holotype; 2- head and pronotum of male holotype; 3- aedeagus, dorsal view; 4- aedeagus, lateral view.

Antennae. Relatively long, filiform, with dense pale setation, fine microgranulation and small punctures. Antennomeres 1-4 ochre yellow, slightly shiny, antennomeres from 5 or 6 slightly darker, pale brown, rather matte. AL 3.25 mm; AL/BL 0.52. Antennomere 2 shortest, antennomere 11 longest, antennomeres 4-10 approximately as long as antennomere 3.

RLA(1-11): 0.70 : 0.47 : 1.00 : 1.00 : 0.98 : 0.98 : 0.99 : 1.05 : 0.98 : 1.01 : 1.14.

RL/WA(1-11): 1.88 : 1.68 : 3.55 : 3.55 : 3.14 : 3.14 : 3.35 : 3.55 : 3.14 : 3.09 : 3.08.

Maxillary palpus. Ochre yellow with yellow setae and fine microgranulation. Palpomeres 2, 3 distinctly narrowest at base and broadest at apex with few long setae. Ultimate palpomere longer, longly axe-shaped, with darker sides and apex.

Pronotum (Fig. 2). Pale brown, transverse, wider than semicircular, distinctly wider than head, approximately as wide as elytron at base, with dense pale setae, dense and shallow punctation, punctures medium sized, interspaces between punctures narrow. PL 1.00 mm; PW 1.63 mm; PI equal to 61.35. Border lines complete, lateral margins arcuate. Posterior and anterior angles obtuse. Anterior margin almost straight.

Scutellum. Ochre yellow, with sides narrowly darker, roundly triangular, shiny, with microgranulation and pale setae.

Elytron. Ochre yellow, widest near two thirds length from base to apex, slightly shiny, sides slightly darker, dorsal surface with long and dense pale setation, dense punctation and microgranulation, slightly shiny. Suture narrowly darker. EL 4.09 mm; EW 2.30 mm; EL/EW 1.78. Elytral striae indistinct.

Elytral epipleura. Well developed, ochre yellow, same colour as elytron, slightly shiny, with pale setae, broadest near base, regularly narrowing to ventrite 1, then leading parallel.

Legs. Ochre yellow, narrow and long, with microgranulation and sparse, small punctures and pale setation. Tibia with stronger setae in inner side. Protarsomeres 2-4 distinctly wider than meso- and metatarsomeres, claws reddish brown. RL: 1.00 : 0.79 : 0.71 : 0.61 : 2.08 (protarsus); 1.00 : 0.41 : 0.31 : 0.28 : 0.85 (mesotarsus); 1.00 : 0.36 : 0.27 : 0.57 (metatarsus).

Anterior tarsal claws with 4 teeth.

Ventral side of body. Reddish brown, slightly shiny, with short pale setation and small punctures. Abdomen pale reddish brown with relatively dense, pale setation, small, shallow punctures and microgranulation. Ultimate ventrite and sides of ventrites 1-4 distinctly darker.

Aedeagus (Figs. 3, 4). Ochre yellow. Basal piece slightly rounded laterally and slightly narrowing dorsally. Apical piece slightly darker, widely triangular, beak-shaped dorsally and laterally. Ratio of length of apical piece to length of basal piece 1 : 2.74.

Female more wide and robust than male, antennae slightly shorter, anterior tarsal claws with 2 teeth and protarsomeres 2-4 approximately as wide as meso- and metatarsomeres.

Variability. The type specimens somewhat vary in size; each character is given as its mean value, with full range in parentheses. Specimens (n=45). BL 6.08 mm (5.74-6.63 mm); HL 0.83 mm (0.77-0.92 mm); HW 1.02 mm (0.94-1.09 mm); OI 51.14 (47.85-53.65); PL 1.02 mm (0.88-1.13 mm); PW 1.68 mm (1.53-1.76 mm); PI 60.52 (57.52-65.32); EL 4.22 mm (4.02-4.58 mm); EW 2.37 mm (2.27-2.47 mm).

Differential diagnosis. No *Isomira* species has been yet known from Jordan. Most similar species are *Isomira* (*I.*) *aliquoi* from Cyprus and *I.* (*I.*) *dhanaica* sp. nov. from Jordan. *Isomira aijlounica* sp. nov. clearly differs from the species *I.* (*I.*) *aliquoi* mainly by lateral margins of pronotum slightly arcuate, disc of pronotum with shallow punctures and by shape of aedeagus, *I.* (*I.*) *aliquoi* has lateral margins of pronotum more arcuate, disc of pronotum with course punctures. *I.* (*I.*) *aijlounica* sp. nov. is clearly different from the species *Isomira dhanaica* sp. nov. mainly by large body (BL 5.73-6.63 mm) and antennomeres 4-10 approximately as long as antennomere 3; while *I.* (*I.*) *dhanaica* sp. nov. has small body (BL 4.13-5.08 mm) and antennomeres 4-10 are distinctly longer than antennomere 3 (1.1-1.3 times longer).

Etymology. Toponymic, named after the type locality - Gouvernement Ajloun in Jordan.

Distribution. Jordan.

Isomira (*Isomira*) *aliquoi* Soldati & Lemaire, 2010

(Figs. 5-7)

Isomira aliquoi Soldati & Lemaire, 2010: 306; 307: figs 1-4.

Type locality. "Cyprus, Pano Platres, Kimasol, village Fini and surroundings, 1100 m".

Material examined. Central Cyprus, Lefkara env., 10.v.2005, V Novák lgt., 1 ♂ (VNPC).

Remarks. *Isomira aliquoi* was recently described in 2010 (Soldati & Lemaire 2010) as yellow or ochre yellow, slightly oval *Isomira* species from Cyprus. Lateral margins of pronotum as you can see in Fig. 5 (Habitus of male) are arcuate, aedeagus as in Figs. 6 and 7. Anterior tarsal claws with 5 visible teeth.

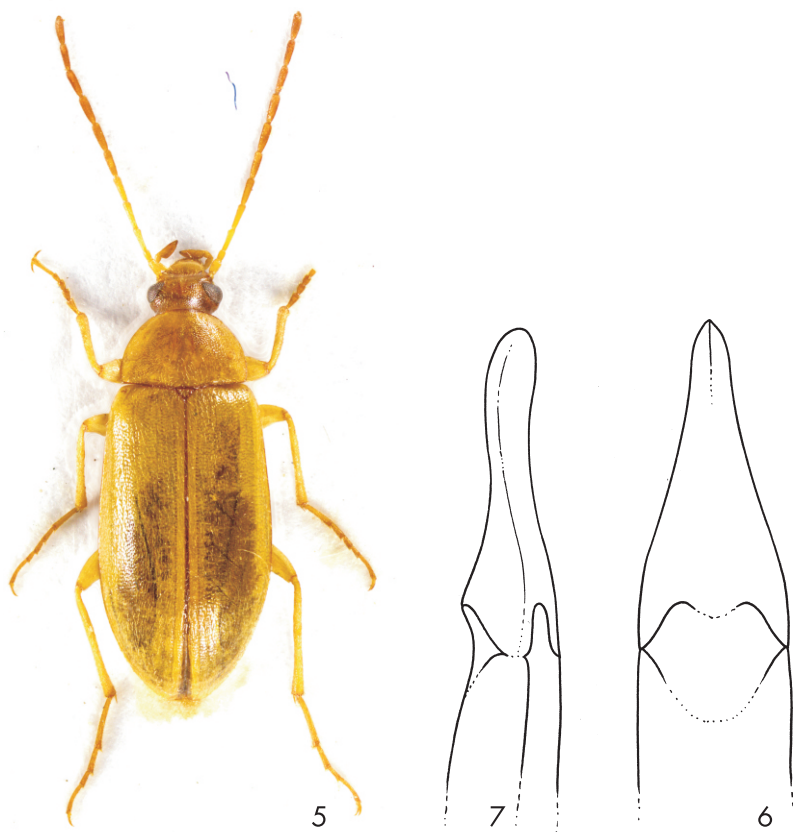
Measurements of male body. BL 5.98 mm; HL 0.71 mm; HW 1.06 mm; OI 53.49; PL 1.04 mm; PW 1.64 mm; PI 63.42; EL 4.23 mm; EW 2.31 mm; AL 3.66 mm; AL/BL 0.61; HW/PW 0.65; BL/EW 2.59; EL/EW 1.83; AED 1: 2.36.

RLA(1-11): 0.52 : 0.41 : 1.00 : 1.03 : 1.07 : 1.01 : 1.09 : 1.12 : 1.07 : 1.04 : 1.14.

RL/WA(1-11): 1.37 : 1.53 : 4.44 : 3.48 : 3.30 : 3.60 : 3.85 : 3.76 : 4.00 : 3.90 : 3.86.

RLT: 1.00 : 0.60 : 0.62 : 0.44 : 1.46 (protarsus); 1.00 : 0.52 : 0.43 : 0.34 : 0.83 (mesotarsus); 1.00 : 0.53 : 0.30 : 0.65 (metatarsus).

Distribution. Cyprus.



Figs. 5-7. *Isomira (I.) aliquoi* Soldati & Lemaire, 2010: 5- Habitus of male; 6- aedeagus, dorsal view; 7- aedeagus, lateral view.

***Isomira (Isomira) dhanaica* sp. nov.**

(Figs. 8-11)

Type locality. Jordan, Gouvernement-Tafila, Dhana Nature Reserve, N30°38'28.5'' E 35°36'52.2'', 1165 m.**Type material.** Holotype (♂): "Jordania, gouv. al-Tafila N30°38'28.5'' E 35°36'52.2'' / Jordanien, gouv. al-Tafila / Dhana Nature Reserve JD 30 / *Juniperus/Quercus* (Sandstein) / 24.04.2016 1.165m üNN LF / leg.: SCHNITTER/SHELLHORN", (NMEG). Paratypes: (21 spec.): same data as holotype, (NMEG, VNPC). The types are provided with one printed red label: *Isomira dhanaica* sp. nov. / HOLOTYPUS [resp. PARATYPUS] / V. Novák det. 2019.**Description of holotype.** Habitus as in Fig. 8, body elongate oval, from ochre yellow to brown, slightly shiny, dorsal surface with pale setation and punctuation, BL 4.33 mm. Widest near two thirds elytral length; BL/EW 2.79.

Head (Fig. 9) slightly longer than wide, shiny, with sparse, pale setation and dense, coarser punctuation, punctures medium sized, interspaces between punctures narrow. Posterior part brown, distinctly darker than pale brown anterior part and ochre yellow clypeus. Punctuation of clypeus not clearly distinct. HW 0.71 mm; HW/PW 0.68; HL (visible part) 0.83 mm. Eyes smaller, transverse, distinctly excised. Space between eyes relatively wide, distinctly wider than diameter of one eye, OI equal to 50.66.

Antennae. Relatively long, filiform, with dense and short, pale setation, fine microgranulation and small punctures. Antennomeres 1-4 ochre yellow, slightly shiny, antennomeres from 5 or 6 slightly darker, pale brown or brown, rather matte. AL 2.95 mm; AL/BL 0.68. Antennomere 2 shortest, antennomere 11 longest, antennomeres 4-10 distinctly longer than antennomere 3.

RLA(1-11): 0.60 : 0.37 : 1.00 : 1.16 : 1.12 : 1.10 : 1.29 : 1.29 : 1.29 : 1.19 : 1.37.

RL/WA(1-11): 1.60 : 1.25 : 2.74 : 3.10 : 2.67 : 2.74 : 3.14 : 3.29 : 3.29 : 3.18 : 3.34.

Maxillary palpus. Ochre yellow with yellow setae and fine microgranulation. Palpomeres 2, 3 distinctly narrowest at base and broadest at apex. Ultimate palpomere longer, longly axe-shaped, with darker sides and apex.

Pronotum (Fig. 9). Pale brown with brown spots in middle of dorsal surface, transverse, wider than semicircular, distinctly wider than head, very slightly narrower than elytron at base, with longer, pale setae, dense, coarser punctuation, punctures medium sized, interspaces between punctures narrow. PL 0.65 mm; PW 1.04 mm; PI equal to 62.50. Border lines complete, lateral margins arcuate. Posterior and anterior angles roundly obtuse. Anterior margin slightly arcuate, base finely bisinuate.

Scutellum. Ochre yellow, roundly triangular, slightly shiny, with microgranulation and pale setae.

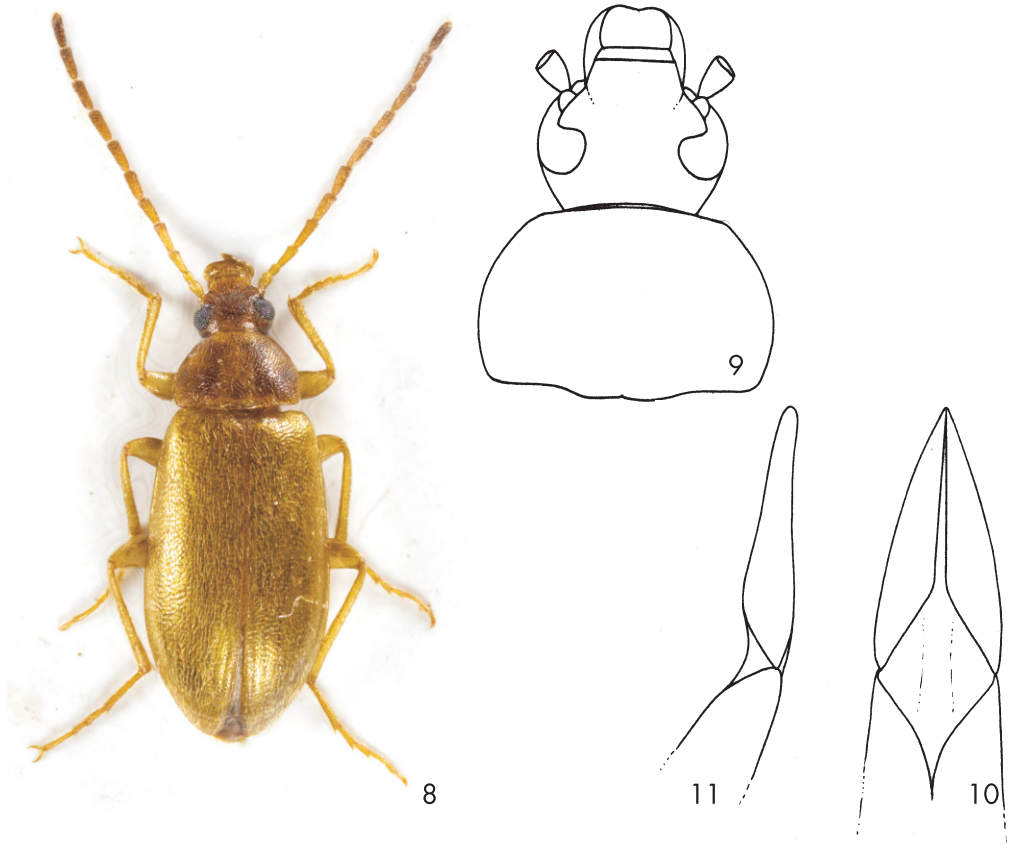
Elytron. Ochre yellow, widest near two thirds of length from base to apex, shiny, dorsal surface with long and dense pale setation, dense punctuation and very fine microgranulation. Punctures medium sized and relatively coarse. EL 2.85 mm; EW 1.55 mm. EL/EW 1.84. Elytral striae indistinct.

Elytral epipleura. Well developed, ochre yellow, same colour as elytron itself, shiny, with pale setae, broadest near base, regularly narrowing to ventrite 1, then leads parallel.

Legs. Ochre yellow, narrow and long, with sparse, small punctures and short, pale setation. Tibia with stronger setae in inner side. Tarsi with fine microgranulation. Claws ochre yellow. RLT: 1.00 : 0.61 : 0.49 : 0.42 : 1.61 (protarsus); 1.00 : 0.64 : 0.51 : 0.39 : 0.92 (mesotarsus); 1.00 : 0.49 : 0.32 : 0.77 (metatarsus).

Anterior tarsal claws with 3 teeth.

Ventral side of body. Prothorax ochre yellow with very small punctures, meso- and metathorax



Figs. 8-11. *Isomira (I.) dhanaica* sp. nov.: 8- Habitus of male holotype; 9- head and pronotum of male holotype; 10- aedeagus, dorsal view; 11- aedeagus, lateral view.

dark reddish brown with small punctures and sparse pale setae. Abdomen pale brown with relatively dense and long, pale setation, shallow punctures and fine microgranulation. Sides of ventrites and penultimate ventrite distinctly darker. Ultimate ventrite with shallow impression in middle.

Aedeagus (Figs. 10, 11). Ochre yellow, apical piece slightly darker. Basal piece rounded laterally and slightly narrowing dorsally. Apical piece beak-shaped, narrowly triangular laterally and widely triangular dorsally. Ratio of length of apical piece to length of basal piece 1 : 2.38.

Female. Antennae shorter than in males. Antennomere 11 shorter, distinctly not longest. Anterior tarsal claws with 2 teeth.

Variability. The type specimens somewhat vary in size; each character is given as its mean value, with full range in parentheses. Specimens (n=22). BL 4.53 mm (4.13-5.08 mm); HL 0.59 mm (0.55-0.63 mm); HW 0.75 mm (0.68-0.83 mm); OI 47.70 (44.72-50.76); PL 0.76 mm (0.68-0.85 mm); PW 1.23 mm (1.11-1.47 mm); PI 61.81 (56.72-66.38); EL 3.12 mm (2.80-3.68 mm); EW 1.75 mm (1.54-2.12 mm).

Differential diagnosis. No *Isomira* species has been yet known from Jordan. Most similar species are *Isomira* (*I.*) *aliquoi* Soldati & Lemaire, 2010 from Cyprus and *Isomira* (*I.*) *ajlounica* sp. nov. from Jordan. *Isomira dhanaica* sp. nov. clearly differs from the species *I.* (*I.*) *aliquoi* Soldati & Lemaire, 2010 and *Isomira ajlounica* sp. nov. mainly by small body (BL 4.13-5.08 mm) and antennomeres 4-10 distinctly longer (1.1-1.3 times longer) than antennomere 3; while *I.* (*I.*) *aliquoi* and *I.* (*I.*) *ajlounica* have larger body (BL 5.73-6.63 mm) and each antennomere 4-10 is shorter, only 0.98-1.05 in *I.* (*I.*) *ajlounica* and 1.01-1.12 in *I.* (*I.*) *aliquoi* as long as antennomere 3.

Etymology. Toponymic, named after the type locality - Dhana Nature Reserve in government al-Tafila.

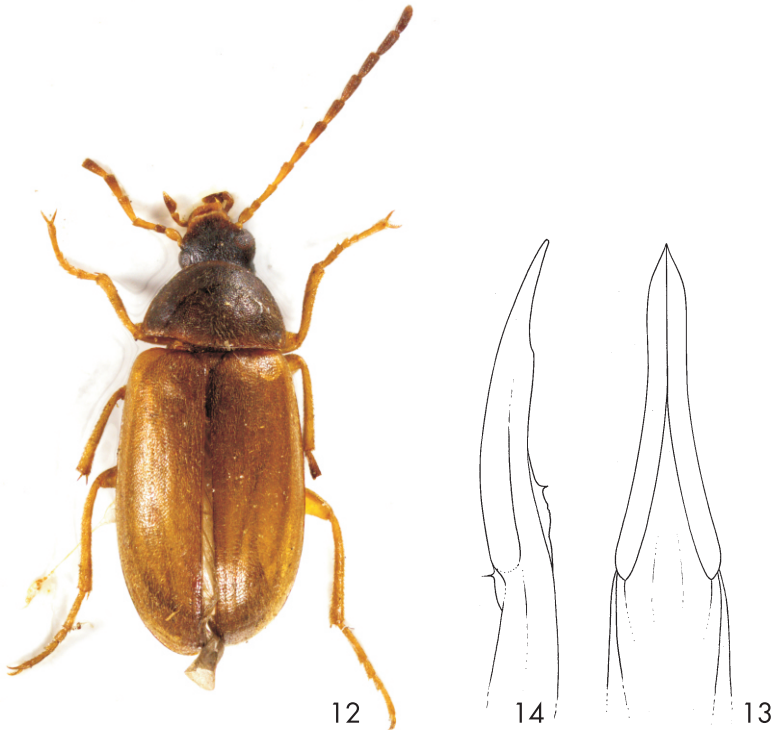
Distribution. Jordan.

***Isomira* (*Isomira*) *gracilicornis* Roubal, 1919**
(Figs. 12-14)

Isomira gracilicornis Roubal, 1919: 63.

Isomira fallax lablokoff-Khnzorian, 1976: 323, 327: fig. 1d; 328: figs 2a,d (synonymized by Dubrovina 1982: 141).

Type locality. "Caucasus borealis, Kislovodsk".



Figs. 12-14. *Isomira* (*I.*) *gracilicornis* Roubal, 1919: 12-Habitus of male; 13-aedeagus, dorsal view; 14-aedeagus, lateral view.

Material examined. Kavkaz, coll. Dr. Veselý, 1 ♂, (VNPC).

Remarks. *Isomira gracilicornis* Roubal, 1919 was described as a species with black head, reddish brown pronotum and elytra brown with sides yellowish. Habitus of male as in Fig. 12, aedeagus (Figs. 13 and 14). Anterior tarsal claws with 5 visible teeth.

Measurements of male body. BL 5.24 mm; HL 0.72 mm; HW 0.88 mm; OI 51.91; PL 0.97 mm; PW 1.60 mm; PI 60.63; EL 3.55 mm; EW 2.16 mm; AL 3.15 mm; AL/BL 0.60; HW/PW 0.55; BL/EW 2.43; EL/EW 1.64; AED 1: 1.65.

RLA(1-11): 0.75 : 0.60 : 1.00 : 1.43 : 1.34 : 1.38 : 1.40 : 1.53 : 1.49 : 1.51 : 1.55.

RL/WA(1-11): 1.30 : 1.47 : 2.61 : 2.79 : 2.74 : 2.83 : 2.75 : 2.88 : 3.18 : 3.09 : 3.84.

Distribution. Armenia, Georgia and southern territory of Russia.

Isomira (Isomira) kandelouica sp. nov.

(Figs. 15-18)

Type locality. Iran, Mazandaran province, Kandelou, 40 km south of Chalus.

Type material. Holotype (♂): Iran: "Iran - Mazandaran Prov., / KANDELOU / 40 km S Chalus / S. Kadlec leg. 24.vi.2000", (NMPC). Paratypes: (6 spec.): same data as holotype, (NMPC, VNPC). The types are provided with one printed red label: *Isomira kandelouica* sp. nov. / HOLOTYPUS [resp. PARATYPUS] / V. Novák det. 2019.

Description of holotype. Habitus as in Fig. 15, body elongate oval, from ochre yellow to blackish brown, slightly shiny, dorsal surface with pale setation, punctuation, rugosities and microgranulation, BL 6.74 mm. Widest near half elytral length; BL/EW 2.60.

Head (Fig. 16) slightly longer than wide, slightly shiny, with pale setation and dense punctuation, punctures medium sized. Posterior part blackish brown with microgranulation inside punctures, distinctly darker than brown or pale brown anterior part with microgranulation outside punctures. Pale brown clypeus with a few long pale setae and fine microgranulation, punctuation indistinct. HW 1.04 mm; HW/PW 0.52; HL (visible part) 1.11 mm. Eyes smaller, transverse, distinctly excised. Space between eyes relatively wide, distinctly wider than diameter of one eye, OI equal to 52.61.

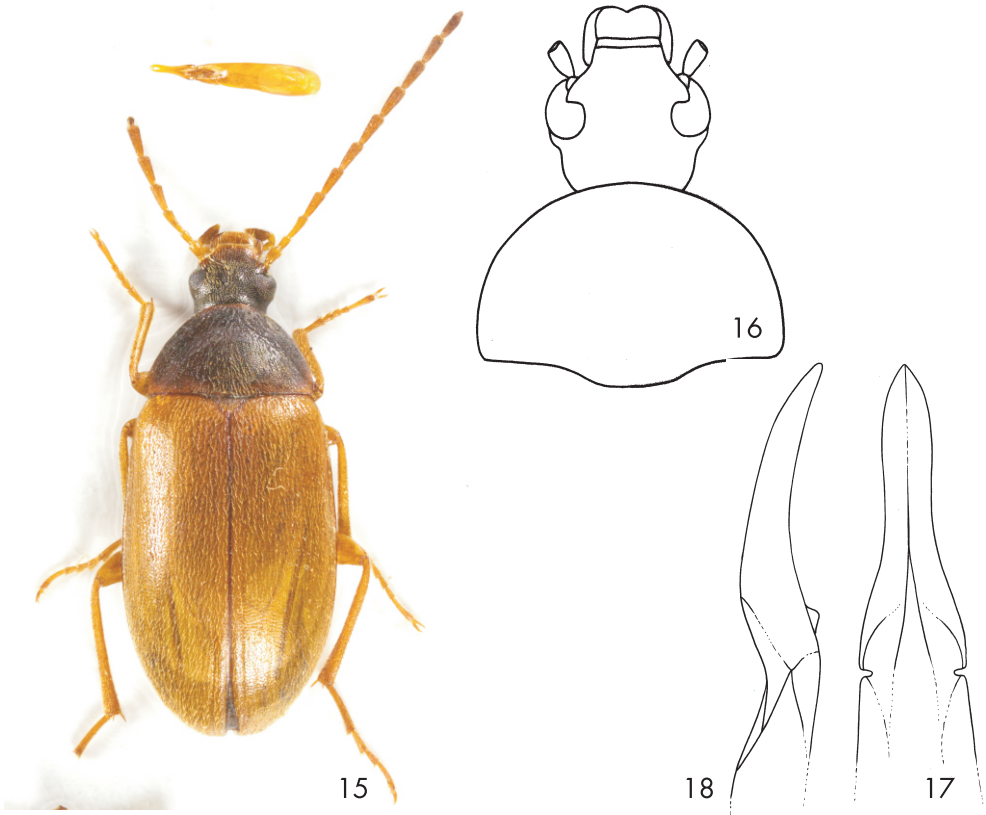
Antennae. Relatively long, filiform, distinctly exceeding half body length, with fine microgranulation and small punctures. Antennomeres from 1 to basal half of antennomere 4 ochre yellow, slightly shiny, with pale setation, antennomeres from apical half of antennomere 4 to antennomere 11 distinctly darker, with darker setation, matte, antennomeres 9-11 brown, distinctly darker than pale brown antennomeres 5-8. AL 3.95 mm; AL/BL 0.59. Antennomere 2 shortest, antennomeres 4-11 distinctly longer than antennomere 3.

RLA(1-11): 0.84 : 0.59 : 1.00 : 1.18 : 1.12 : 1.30 : 1.33 : 1.33 : 1.28 : 1.24 : 1.26.

RL/WA(1-11): 1.90 : 1.96 : 3.04 : 3.91 : 3.54 : 4.50 : 4.21 : 4.21 : 4.41 : 4.95 : 5.65.

Maxillary palpus. Ochre yellow with pale setae and fine microgranulation, slightly shiny. Palpomeres 2, 3 distinctly narrowest at base and broadest at apex. Ultimate palpomere longer, longly axe-shaped, distinctly darker than penultimate.

Pronotum (Fig. 16). Blackish brown, transverse, almost semicircular, in base and near anterior margin narrowly pale brown, distinctly wider than head, as wide as elytron in base, with longer, dense, pale setation, fine microgranulation and dense, shallower punctuation, punctures distinctly smaller than those in posterior part of head, interspaces between punctures with distinct



Figs. 15-18. *Isomira (l.) kandelouica* sp. nov.: 15- Habitus of male holotype; 16- head and pronotum of male holotype; 17- aedeagus, dorsal view; 18- aedeagus, lateral view.

microgranulation. Setation in the middle of dorsal surface dark. PL 1.14 mm; PW 2.02 mm; PI 56.74. Border lines complete, narrow in lateral margins. Anterior and lateral margins arcuate. Posterior angles rectangular, anterior angles indistinct.

Scutellum. Ochre yellow, with sides darker, triangular, slightly shiny, with microgranulation.

Elytron. Ochre yellow, widest near half elytral length, slightly shiny, dorsal surface with long and dense pale setation, fine microgranulation and rugosities, suture slightly darker. EL 4.49 mm; EW 2.59 mm. EL/EW 1.58. Elytral striae indistinct.

Elytral epipleura. Well developed, ochre yellow, same colour as elytron itself, shiny, with dense pale setation, broadest near base, regularly narrowing to ventrite 1, then relatively wide leads parallel.

Legs. Ochre yellow, narrow and long, with sparse, small punctures, microgranulation and dense, pale setation. Tibia with stronger setae in inner side. RLT: 1.00 : 0.38 : 0.39 : 0.38 : 1.38 (protarsus); 1.00 : 0.45 : 0.33 : 0.41 : 0.93 (mesotarsus); 1.00 : 0.44 : 0.29 : 0.73 (metatarsus).

Anterior tarsal claws with 4 visible teeth.

Ventral side of body with sparse pale setae and sparse punctures. Prothorax and mesothorax reddish brown, metathorax blackish brown. Abdomen blackish brown with relatively dense and long, pale setation, microgranulation and rugosities. Base and apex of ventrites narrowly reddish

brown. Ultimate ventrite ochre yellow in apex.

Aedeagus (Figs. 17, 18) ochre yellow, slightly shiny. Basal piece rounded laterally and slightly narrowing dorsally. Apical piece beak-shaped, dorsally and laterally. Ratio of length of apical piece to length of basal piece 1 : 2.37.

Female without distinct differences, only antenna slightly shorter and body slightly robust than in male.

Variability. The type specimens somewhat vary in size; each character is given as its mean value, with full range in parentheses. Specimens (n=7). BL 6.21 mm (5.95-6.54 mm); HL 0.81 mm (0.76-0.91 mm); HW 1.04 mm (0.99-1.09 mm); OI 53.85 (50.50-57.87); PL 1.12 mm (1.02-1.25 mm); PW 1.98 mm (1.80-2.09 mm); PI 56.77 (53.13-59.81); EL 4.18 mm (4.12-4.49 mm); EW 2.63 mm (2.45-2.88 mm).

Differential diagnosis. Most similar species is *Isomira (I.) gracilicornis* Roubal, 1919. *Isomira (I.) kandelouica* sp. nov. clearly differs from the species *I. (I.) gracilicornis* mainly by antennomeres 4-10 each only slightly longer than antennomere 3 (1.12-1.33 times), by coarser, denser punctuation of anterior part of head with larger punctures and by shape of aedeagus (Figs. 17 and 18); while *I. (I.) gracilicornis* has each of antennomeres 4-10 distinctly longer than antennomere 3 (1.34-1.53 times), punctuation of anterior part of head is sparser and shallower, with small punctures. The shape of aedeagus as in Figs. 13 and 14.

Etymology. Toponymic, named after the type locality - Kandelou in Mazandaran province (Iran).

Distribution. Iran (province Mazandaran).

***Isomira (Isomira) maltaica* sp. nov.**

(Figs. 19-22)

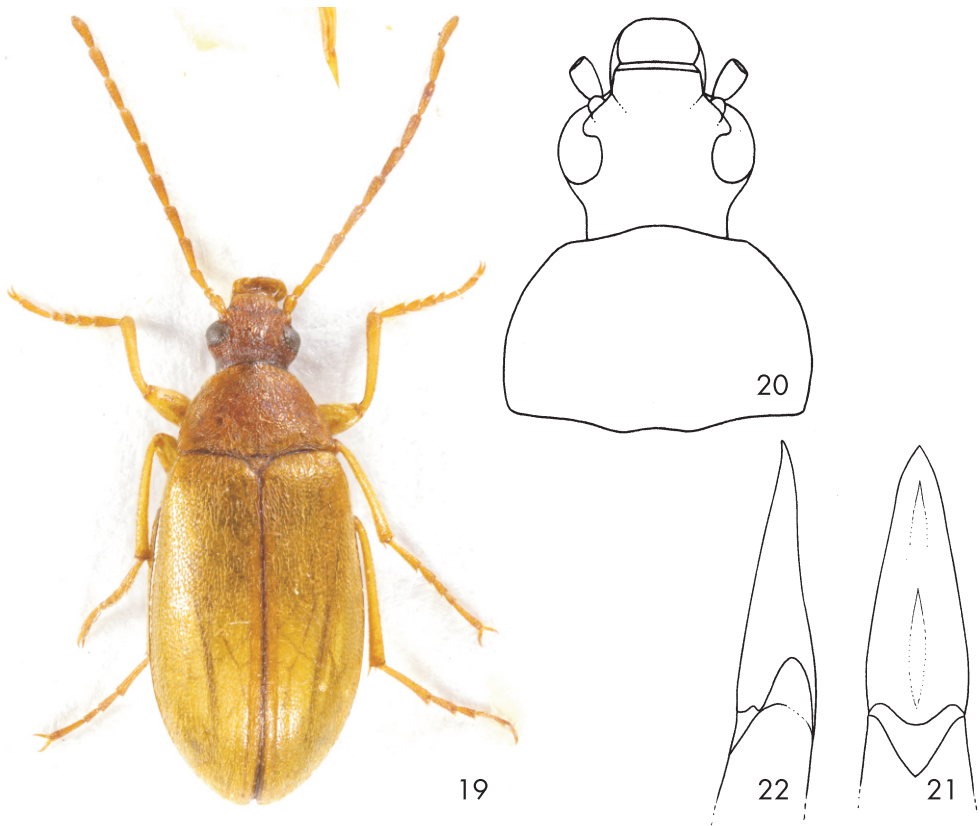
Type locality. Insel Malta, Busket.

Type material. Holotype (♂): Malta: "MALTA, BUSKET / 22.iv.2003 Z. Švec / lgt.", (VNPC). Paratypes: (1♂ spec.): same data as holotype, (VNPC, ZSPC). The types are provided with one printed red label: *Isomira maltaica* sp. nov. / HOLOTYPUS [resp. PARATYPUS] / V. Novák det. 2019.

Description of holotype. Habitus as in Fig. 19, body elongate oval, from ochre yellow to reddish brown, rather matte, dorsal surface with pale setation, punctuation and microgranulation, BL 5.90 mm. Widest near two thirds elytral length; BL/EW 2.54.

Head (Fig. 20) slightly longer than wide, rather matte, with pale setation and shallow punctuation, punctures small sized. Posterior part reddish brown, distinctly darker than pale brown anterior part and clypeus. Punctuation of clypeus not clearly distinct. HW 1.01 mm; HW/PW 0.62; HL (visible part) 1.15 mm. Eyes smaller, transverse, distinctly excised. Space between eyes relatively wide, distinctly wider than diameter of one eye, OI equal to 58.64.

Antennae. Relatively long, filiform, distinctly exceeding half body length, with dense and short, pale setation, fine microgranulation and small punctures, rather matte. Antennomeres from 1 to basal half of antennomere 4 ochre yellow, antennomeres from apical half of antennomere 4 to antennomere 11 distinctly darker, pale brown or brown. AL 3.45 mm; AL/BL 0.59. Antennomere



Figs. 19-22. *Isomira (I.) maltaica* sp. nov.: 19- Habitus of male holotype; 20- head and pronotum of male holotype; 21- aedeagus, dorsal view; 22- aedeagus, lateral view.

2 shortest, antennomeres 4-10 distinctly longer than antennomere 3.

RLA(1-11): 0.63 : 0.47 : 1.00 : 1.27 : 1.24 : 1.24 : 1.29 : 1.34 : 1.27 : 1.21 : 1.34.

RL/WA(1-11): 1.50 : 1.53 : 2.70 : 3.29 : 3.42 : 3.21 : 3.48 : 3.95 : 3.29 : 3.13 : 3.77.

Maxillary palpus. Ochre yellow with pale setae and fine microgranulation. Palpomeres 2, 3 distinctly narrowest at base and broadest at apex. Ultimate palpomere longer, longly axe-shaped, with darker, reddish brown apex.

Pronotum (Fig. 20). Pale reddish brown, transverse, slightly narrower than semicircular, in base distinctly wider than head, as wide as elytron in base, with longer, dense, pale setae, fine microgranulation and dense, shallower punctuation, punctures medium sized, interspaces between punctures narrow. PL 0.95 mm; PW 1.62 mm; PI 58.64. Border lines complete, distinctly darker than dorsal surface, anterior and lateral margins slightly arcuate. Posterior and anterior angles obtuse, base finely bisinuate.

Scutellum. Ochre yellow, roundly triangular, slightly shiny, with microgranulation and pale setae.

Elytron. Ochre yellow, widest near two thirds length from base to apex, shiny, dorsal surface with long and dense pale setation, dense punctuation and very fine microgranulation. Punctures medium sized and relatively coarse. EL 3.80 mm; EW 2.32 mm. EL/EW 1.64. Elytral striae indistinct.

Elytral epipleura. Well developed, ochre yellow, same colour as elytron itself, shiny, with pale setae, broadest near base, regularly narrowing to ventrite 1, then leads parallel.

Legs. Ochre yellow, narrow and long, with sparse, small punctures and short, pale setation. Tibia with stronger setae on inner side. Tarsi with fine microgranulation. Claws ochre yellow. RLI: 1.00 : 0.59 : 0.52 : 0.36 : 1.30 (protarsus); 1.00 : 0.46 : 0.40 : 0.33 : 0.93 (mesotarsus); 1.00 : 0.42 : 0.31 : 0.62 (metatarsus).

Anterior tarsal claws with 3 teeth.

Ventral side of body. Prothorax ochre yellow with very small punctures, meso- and metathorax dark reddish brown with small punctures and sparse pale setae. Abdomen pale brown with relatively dense and long, pale setation, shallow punctures and fine microgranulation. Sides of ventrites and penultimate ventrite distinctly darker. Ultimate ventrite with shallow impression in middle.

Aedeagus (Figs. 21, 22). Ochre yellow, apical piece slightly darker. Basal piece rounded laterally and slightly narrowing dorsally. Apical piece beak-shaped, narrowly triangular laterally and widely triangular dorsally. Ratio of length of apical piece to length of basal piece 1 : 2.36.

Female without distinct differences.

Variability. The type specimens somewhat vary in size; each character is given as its mean value, with full range in parentheses. Specimens (n=17). BL 6.03 mm (5.60-6.64 mm); HL 0.86 mm (0.76-0.96 mm); HW 1.05 mm (0.99-1.12 mm); OI 54.60 (53.08-56.14); PL 1.03 mm (0.90-1.15 mm); PW 1.78 mm (1.55-2.05 mm); PI 59.76 (56.84-63.74); EL 4.14 mm (3.80-4.67 mm); EW 2.50 mm (2.31-2.79 mm).

Differential diagnosis. The most similar species is *Isomira (I.) melanophthalma* (Kiesenwetter, 1861). *Isomira (I.) maltaica* sp. nov. clearly differs from similar species *I. (I.) melanophthalma* (Kiesenwetter, 1861) mainly by shape of pronotum (sides less arcuate - Fig. 20), by dense punctuation of elytra, by shape of aedeagus (Figs. 21, 22) and by antennomeres 4-10 only slightly longer than antennomere 3 (1.21-1.35 times) and 3.13-3.95 longer than wide; while *I. (I.) melanophthalma* has sides of pronotum more arcuate, punctuation of pronotum is sparser and antennomeres 4-10 are distinctly longer (1.27-1.43 times) than antennomere 3 and 3.75-4.53 longer than wide.

Etymology. Toponymic, named after the type locality - island Malta.

Distribution. Island Malta.

***Isomira (Isomira) melanophthalma* (Lucas, 1846)**

(Figs. 23-25)

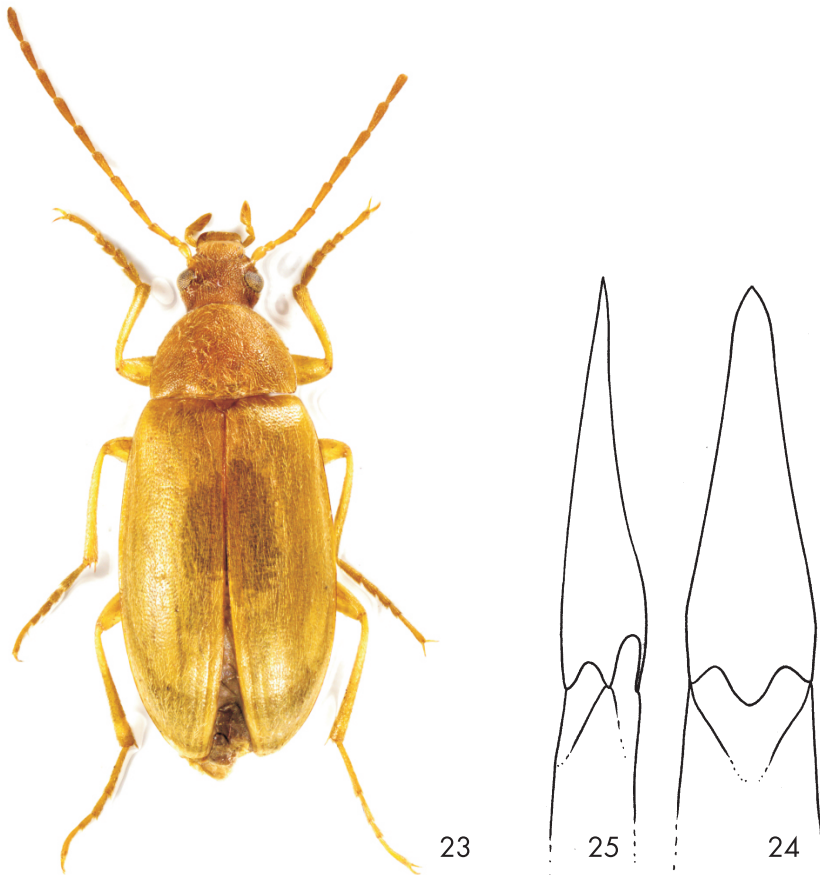
Cistela melanophthalma Lucas, 1846: 356.

Cistela ferruginea Küster, 1850: 78.

Isomira corsica Mulsant, 1856: 22.

Type locality. Alger, environs of El Kala (Lacalle) near lakes Tonga and Oubiera (Houbaira).

Material examined. Italy, Puglia, Le Cesine, S. Catalolo, 11.-21.VI. 95, leg. F. Angelini, 1 ♂, (VNPC).



Figs. 23-25. *Isomira* (*I.*) *melanophthalma* (Lucas, 1846): 23- Habitus of male; 24- aedeagus, dorsal view; 25- aedeagus, lateral view.

Remarks. *Isomira* (*I.*) *melanophthalma* Lucas, 1846 was originally described in 1846 (Lucas 1846) as *Cistela*. Species with slightly oval, ochre yellow or pale brown elytra and reddish brown head and pronotum. Habitus of male as in Fig. 23, aedeagus (Figs. 24 and 25). Anterior tarsal claws with 5 visible teeth.

Measurements of male body. BL 5.92 mm; HL 0.85 mm; HW 0.99 mm; OI 59.24; PL 1.03 mm; PW 1.61 mm; PI 63.98; EL 4.04 mm; EW 2.33 mm; AL 3.45 mm; AL/BL 0.58; HW/PW 0.62; BL/EW 2.54; EL/EW 1.73; AED 1: 2.88.

RLA(1-11): 0.80 : 0.54 : 1.00 : 1.36 : 1.36 : 1.38 : 1.34 : 1.43 : 1.38 : 1.27 : 1.32.

RL/WA(1-11): 1.73 : 1.36 : 2.95 : 3.80 : 4.00 : 4.28 : 3.75 : 4.21 : 4.53 : 4.18 : 4.93.

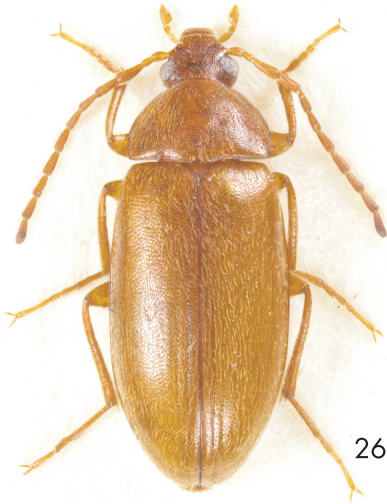
RLT: 1.00 : 0.51 : 0.50 : 0.37 : 0.95 (mesotarsus); 1.00 : 0.46 : 0.35 : 0.64 (metatarsus).

Distribution. Alger, Bosnia and Herzegovina, Croatia, France, Italy, Morocco, Portugal.

COLOUR VARIABILITY

***Isomira (Isomira) nitidula* (Kiesenwetter, 1861)**
(Figs. 26-30)

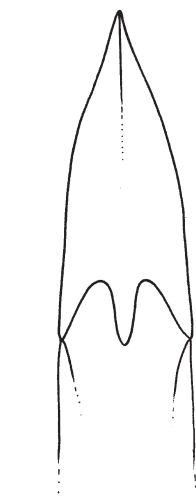
Cistela nitidula Kiesenwetter, 1861: 237.
Isomira pallidior Pic, 1901: 3.
Isomira rhodius Pic, 1901: 3.



26



30



29



27



28

Figs. 26-30. *Isomira (I.) nitidula* (Kiesenwetter, 1861) - male: 26- habitus of typical form; 27- habitus of dark form; 28- habitus of species with orange red pronotum; 29- aedeagus, dorsal view; 30- aedeagus, lateral view.

Type locality. Greece.

Remarks. Males from Bingöl with orange red pronotum has same aedeagus as other examined species (typical and dark form).

Material examined. Turkey, Antalya village, 25 km South of Elmali, Avlanbeli Geçidi [pass], 36°32'N, 29°59'E, 1200 m, S. Kadlec leg., 14-16.v.2006, 1 ♂, (NMPC); Turkey, Bingöl village, 1125 m, 20.6.1986, Kadlec + Voříšek leg., 1 ♂, 1 ♀, (NMPC) (typical form); North West Turkey, South of Yeraligöz, Geçidi pass near Kastamonu, N41°45' E34°03', 1392 m, 21.VI.2006, lgt. P. Kabátek, 1 ♂, (VNPC) (dark form); Turkey, Bingöl village, Buglan Pass, 38°56'N, 41°08'E, 1620 m, S. Kadlec leg. 21-24.v.2001, 2 ♂♂, 1 ♀, (NMPC, VNPC) (specimens with orange red pronotum).

LEBAN., Northern gov., Tanou- / rine env., 2 km N Harissa, / Tanourine Cedars Nat. Res., / 34°12'34''N, 35°55'45''E, // 1750 m, 23.V.2015, leg. / O. Akiki, N. Nemer, T. Németh, / M. Rehayem & W. Yammine, 1 ♂, 2 ♀♀, (HNHM, VNPC); Syria, muh. Al / Ladhgiyah, 10 km S / Kasab, N 35°54.643, / E 35°59.998, 550 m, // 23. IV. 2005, / leg. N. Rahmé, / A. Márkus, A. Kotán / & A Podlussány, 1 ♂, (HNHM); SYRIA, Prov. Latakya, / 3km S Kasab, / pine forest, clearing, / swept, 2. VI. 2010 //leg. Atilla Kotán, Edvard / Mizsei, Tamás / Németh & Nikola Rahmé, 1 ♂, (HNHM); CYPRUS / GERMASOGEIA env. / (NE of Limassol) / S. Kadlec leg., 1.iv.2000, 1 ♂, 2 ♀♀, (NMPC).

Distribution. Greece, Iran, Turkey (European and Asian part), Southern territory of Russia.
New for Cyprus, Lebanon and Syria.

Isomira (Isomira) sanquincollis Reitter, 1911

(Figs. 31-34)

Isomira sanquincollis Reitter, 1911: 354.

Type locality. Turkey, Akbes, Monte Amanus.



Figs. 31-34. *Isomira (I.) sanquincollis* Reitter, 1911: 31- habitus of typical form; 32- habitus of dark form; 33- aedeagus, dorsal view; 34- aedeagus, lateral view.

Remarks. Two specimens with dark pronotum was collected together with one female with red pronotum (typical form) - the same locality (Kizilcik in Anatolia).

Material examined. Turkey, Urfa village, Halfeti, Euphrates river, S. Kadlec leg. 15.v.2001, 9 spec. (NMPC, VNPC); Asian Turkey, Adiyaman province, Nemrut Dađı Mts. Nemrut Mt., 37°58'43.22''N 38°44'19.54''E, mountain steppe, 2100 m a.s.l., 2.vi.2011, P. Kment lgt., 5 spec. (NMPC, VNPC); Turkey, central, oriental Anatolia, Kizilcik, 6.6.92, Kadlec lgt., 1 spec. (NMPC) (typical form). Turkey, central, oriental Anatolia, Kizilcik, 6.6.92, Kadlec lgt., 2 spec. (NMPC, VNPC) (dark form).

Distribution. Israel, Syria, Turkey.

subgenus *Muheimira* Novák, 2016

Type species. *Isomira stoetzneri* Muche, 1981.

Isomira (Muheimira) bicolorata Muche, 1982

(Figs. 35-38)

Isomira (Asiomira) bicolorata Muche, 1982: 121.

Type locality. "Saudi Arabia, Wadi Gaanah".



Figs. 35-38. *Isomira (M.) bicolorata* Muche, 1982 - male: 35-habitus of typical form; 36-habitus of dark form; 37-aedeagus, dorsal view; 38-aedeagus, lateral view.

Remarks. A female with dark pronotum was collected together with one female with red pronotum (typical form) - the same locality (Jabal Bura'á in West Yemen).

Material examined. East Yemen, south east of Sünah, Saywün, N15°41' E48°52', 730 m, 10.x.2005, lgt. S. Kadlec, 1 ♂, (VNPC); West Yemen, 9.-12.iv.2007, Jabal Bura'á, south east of Bajil, 14°53'N 43°26'E, ca 200-600 m, David Král

lgt., 1 ♀, (VNPC) (typical form); West Yemen, 9.-12.iv.2007, Jabal Bura'a, south east of Bajil, 14°53'N 43°26'E, ca 200-600 m, David Král lgt., 1 ♀, (VNPC) (dark forem).

Distribution. Saudi Arabia, Yemen.

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