

Phyllobrotica malinka sp. nov. from Turkey and Iran
and a review of allied species
(Coleoptera: Chrysomelidae: Galerucinae)

Jan BEZDĚK

Mendel University, Department of Zoology, Zemědělská 1, CZ-613 00 Brno, Czech Republic;
e-mail: bezdek@mendelu.cz

Abstract. *Phyllobrotica malinka* sp. nov. from Turkey and Iran is described, illustrated and compared with closely related *P. frontalis* Weise, 1886 and *P. elegans* Kraatz, 1866. Male and female genitalia are figured for all three species. The distribution of *P. frontalis* and *P. elegans* is summarized based on literature and newly identified material. *Phyllobrotica elegans* is recorded for the first time from Lebanon and Syria, and *P. frontalis* is confirmed from Syria. An identification key to the West Palaearctic species of *Phyllobrotica* Chevrolat, 1836 is provided.

Key words. Coleoptera, Chrysomelidae, Galerucinae, *Phyllobrotica*, taxonomy, new species, Iran, Turkey, Palaearctic Region.

Introduction

The genus *Phyllobrotica* Chevrolat, 1836, is distributed in the Palaearctic, Oriental and Nearctic Regions. The West Palaearctic species were revised and keyed by WARCHAŁOWSKI (1998). *Phyllobrotica aslani* Warchałowski, 1998 was later synonymized with *P. binotata* Ogloblin, 1936 by BEZDĚK (2002). Currently, 11 species are known from the Palaearctic, 2 from the Oriental and 17 from the Nearctic Region (WILCOX 1973, RILEY et al. 2003, BEENEN 2010). Three species from Taiwan (*P. chujoi* Kimoto, 1969, *P. sauteri* Chûjô, 1935 and *P. shirozui* Kimoto, 1969) and *P. elegantula* Jacoby, 1896 from Sumatra, however, obviously do not belong to the genus *Phyllobrotica* and, pending further studies in future, they should be transferred to other genera.

Although the chrysomelid fauna of Turkey and Iran is relatively well studied and many expeditions were conducted to these countries recently, new species are still being discovered. My dear colleagues Zdeněk Malinka and Kamil Orszulik surprisingly collected five specimens of a *Phyllobrotica* species in southern Turkey which resembled *P. frontalis* Weise, 1886 and *P. elegans* Kraatz, 1866 but differed remarkably in the structure of the aedeagus. Additional material of this species from Turkey and Iran was later found in some other collections. The description of this new species is given below.

Material and methods

All measurements were made using an ocular grid mounted on the MBS-10 stereomicroscope (at 16× magnification for the body length and 32× magnification for the remaining measurements).

The material is housed in the following collections:

DEI	Deutsches Entomologisches Institut, Müncheberg, Germany (Lothar Zerche);
FKCC	František Kantner collection, Českých Budějovice, Czech Republic;
JBBC	Jan Bezděk collection, Brno, Czech Republic;
JVCC	Jiří Voříšek collection, Jirkov, Czech Republic;
KOFC	Kamil Orszulik collection, Frýdek-Místek, Czech Republic;
MDAG	Manfred Döberl collection, Abensberg, Germany;
MDVI	Mauro Daccordi collection, Verona, Italy;
MSNV	Museo Civico di Storia Naturale, Verona, Italy (Leonardo Latella);
NHMB	Naturhistorisches Museum Basel, Switzerland (Eva Sprecher-Uebersax, Michel Brancucci);
NMPC	National Museum, Praha, Czech Republic (Jiří Hájek);
RBCN	Ron Beenen collection, Nieuwegein, the Netherlands;
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany (Wolfgang Schawaller);
ZMHB	Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (Johannes Frisch, Joachim Willers).

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: [p] – preceding data are printed, [h] – preceding data are handwritten, and [w] – white label.

Taxonomy

Phyllobrotica malinka sp. nov.

(Figs. 1–3, 6–8, 14–15, 22)

Type locality. Turkey, Mardin province, Hop Geçidi (Mardin env.).

Type material. HOLOTYPE: ♂, ‘TR – prov. Mardin / Hop Gecidi, Mardin env. / 11.-14.5.2005 / Z. Malinka lgt. [w, p]’ (NMPC). PARATYPES: 1 ♂ 3 ♀♀, ‘TURKEY prov. Mardin / Hop Gecidi, Mardin env. / 11.-14.5.2005 / lgt. Orszulik [w, p]’ (1 ♂ in JBBC, 1 ♀ in NMPC, 2 ♀♀ in KOFC); 1 ♀, ‘Turkey / 20 km N of Bağışli / 5.VI.1992 / V. Biža – Z. Košťál lgt. [w, p]’ (JBBC); 1 ♀, ‘Zeitun [= Kahramanmaraş prov., Suleymanli, 38°5’25”N, 36°49’26”E] / Staud. [= Staudinger leg.] [w, h] // [small blank white label]’ (ZMHB); 2 ♂♂, ‘S IRAN, prov. Färs / pass 140 km NE Siraáz / 20.-21.IV.2002 / lgt. S. Kadlec [w, p]’ (JVCC); 1 ♂, ‘IRAN – Fars – m. 2245 / Safsahar (Dehbid) N. Shiraz / 18/26.IV.2006. G. Sama leg. [w, p]’ (JBBC). The specimens are provided with additional printed red labels: ‘HOLOTYPUS [or PARATYPUS], / *Phyllobrotica* / *malinka* sp. n., / det. J. Bezděk 2010’.

Description. Body length: ♂♂ 6.05–6.95 mm (holotype 6.95 mm); ♀♀ 6.25–7.35 mm.

Male (holotype). Body flattened, parallel, glabrous, semiopaque. Head pale orange, vertex with a large black spot, apices of mandibles black. Antennomeres 1–4 orange, antennomeres 5 and 6 gradually darkening dorsally, antennomeres 7–11 black. Pronotum and elytra pale orange, each elytron with a black round spot in the apical third. Scutellum black. Prosternum pale orange, meso-, metasternum and abdomen black. Fore and mid legs orange, outer side of fore femora and inner side of mid femora with a black spot basally. Hind legs orange, femora black with only bases and apices orange.



Figs. 1–2. Habitus of *Phyllobrotica malinka* sp. nov. 1 – paratype from Turkey, Mardin prov., Hop Gecidi (male, 6.90 mm); 2 – paratype from Iran, Fars prov., pass 140 km NE of Shiraz (male, 6.05 mm).

Head covered with microsculpture, nearly impunctate, almost glabrous. Labrum transverse, covered with several pale setae, anterior margin broadly triangularly incised. The anterior part of head sparsely covered with pale setae. Frontal tubercles large, subtriangular, slightly elevated, separated from each other by a distinct furrow. Frons separated from frontal tubercles by a distinctly impressed furrow. Vertex with indistinctly impressed median line. Antenna slender, 0.70 times as long as body, length ratio of antennomeres 1–11 equal to 20-12-17-22-21-19-19-18-16-17-18.

Pronotum transverse, 1.45 times as broad as long, widest at the anterior third, slightly narrowed anteriorly and distinctly posteriorly. Surface evenly convex, semiopaque, covered with microsculpture and some sparse fine punctures. Anterior margin slightly concave, not bordered. Lateral margins distinctly bordered, slightly sinuate, with short pale setae. Posterior margin almost straight in middle and rounded on sides, distinctly bordered. Anterior angles

nearly rectangular, posterior angles obtusely angular; all angles with setigerous pore bearing one long pale seta.

Scutellum subtriangular with widely rounded apex, semiopaque, covered with microsculpture, glabrous.

Elytra parallel, semiopaque, covered with microsculpture and densely with fine confused punctures. Humeral calli well-developed, distinctly covered with short pale hairs. Elytral disc almost glabrous, sparse short hairs visible only in lateral view in the apical third. Epipleurae not developed. Macropterous.

Abdomen modified (Fig. 22): ventrite 2 with two small groups of longer hairs in the middle. Ventrite 3 with two distinct bulges directed posteriad, covered with long hairs and connected by flat lamella. Ventrite 4 with a deep semicircular cavity in the middle. Ventrite 5 with very deep elongate cavity in the middle.

Hind tarsomere 1 ca. 0.85 times as long as the two following tarsomeres combined. Claws appendiculate.

Apex of aedeagus laterally dilated, tip widely triangularly incised (Fig. 3).

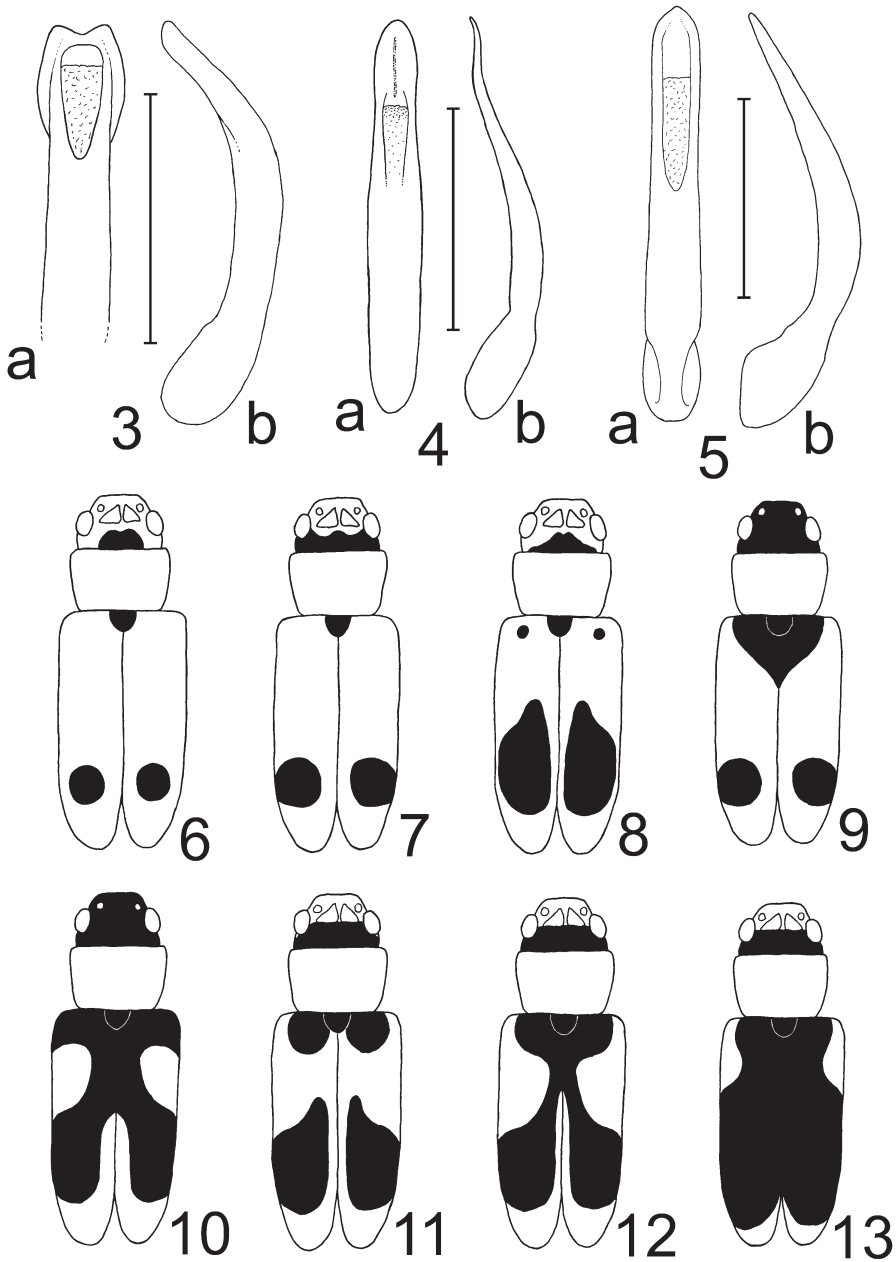
Female. Microsculpture on head, pronotum and elytra less pronounced than in male, thus especially head and pronotum shining, not semiopaque. All ventrites regularly convex, without any depressions or appendices, posterior margin of the last ventrite entire. Tarsi slightly narrower than in males. Spermatheca C-shaped, with almost indistinct nodulus, basal part of cornu covered with fine wrinkles, ductus robust, well-sclerotized (Figs. 14–15).

Variability. The width/length ratio of pronotum varies between 1.40–1.60 in males and 1.50–1.60 in females. The black spot on vertex is variable in size and shape: it is small and rounded in paler specimens and larger, subtriangular or extended covering most of vertex in darker specimens. The coloration of elytra differs in the populations from Turkey and Iran. All specimens from Turkey have the black pattern on elytra reduced to a single round spot in the apical third of each elytron. The specimens from Iran have slightly more distinct punctures on the pronotum and there are two black spots on each elytron (one small between scutellum and humeral callus and another large, elongate, slightly produced anteriad along the suture). The variability of the black pattern is shown in Figs. 6–8. One male from Iran also has darkened apices of the mid and hind tibiae.

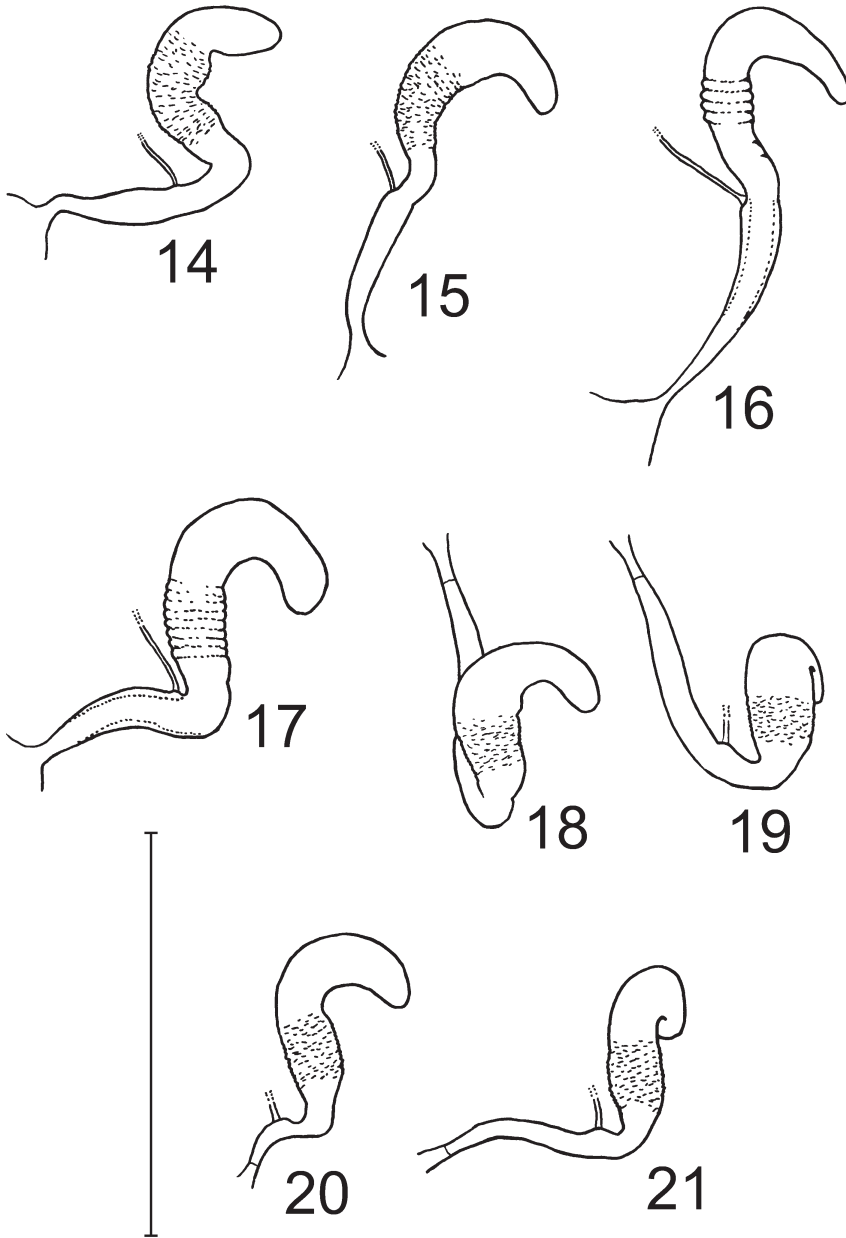
Differential diagnosis. In the structure of the male abdomen and the body coloration, *P. malinka* sp. nov. resembles *P. elegans* and *P. frontalis*. All three species can be easily distinguished by the structure of the aedeagus, which is relatively shorter and triangularly incised at apex in *Phyllobrotica malinka* sp. nov. while the aedeagi of *P. elegans* and *P. frontalis* are longer and not incised (Figs. 3–5).

The shape of the spermatheca is somewhat variable in all three species, some other characters, however, seem to be stable. Basal parts of the cornu are covered with fine wrinkles in *P. malinka* sp. nov. and *P. elegans* while there are several more or less distinct collars in *P. frontalis*. The spermathecal duct and the spermatheca are situated in the same plane in *P. malinka* sp. nov. and *P. frontalis*, while they form a right angle in *P. elegans* (Figs. 14–21).

In coloration, *P. malinka* sp. nov. is characterised by somewhat reduced black pattern on head. All specimens from Turkey have only one round black spot in the apical third of each elytron (without any black pattern in the scutellar area), the specimens from Iran are



Figs. 3–13. 3–5 – Aedeagus (a – dorsal view; b – lateral view). 3 – *Phyllobrotica malinka* sp. nov.; 4 – *P. elegans* Kraatz, 1866; 5 – *P. frontalis* Weise, 1886. 6–13 – Variability of black pattern. 6–8 – *P. malinka* sp. nov.; 9–10 – *P. elegans* Kraatz, 1866; 11–13 – *P. frontalis* Weise, 1886. Scale bar = 1 mm for Figs. 3–5.



Figs. 14–21. Spermatheca. 14 – *Phyllobrotica malinka* sp. nov. (from Hop Geçidi); 15 – *P. malinka* sp. nov. (from 20 km N of Bağışlı); 16 – *P. frontalis* Weise, 1886 (from Barla env.); 17 – *P. frontalis* Weise, 1886 (from Nemrut Dağı Mts.); 18 – *P. elegans* Kraatz, 1866 (from Tbilisi); 19 – same from behind; 20 – *P. elegans* Kraatz, 1866 (from Mürseler); 21 – same from behind. Scale bar = 0.5 mm.

similarly coloured as paler specimens of *P. frontalis*, e.g. the apical spot on elytron is large, elongated, and there is another small black spot between the scutellum and the humeral callus. *Phyllobrotica elegans* has a completely black head and elytra with a large triangular black spot around scutellum (often broadly connected with the apical spots). Head of *P. frontalis* is bicoloured: the anterior part and frontal tubercles are orange, posterior part behind frontal tubercles is completely black. Elytral pattern in *P. frontalis* is very variable. Paler specimens have two black spots on each elytron, one between the scutellum and the humeral callus, another elongated in the apical half. The darkest specimens have the black pattern extended, only the humeral and apical areas being orange. The variability of the black pattern of all three species is shown in Figs. 6–13.

Within the West Palaearctic *Phyllobrotica* species, *P. malinka* sp. nov., *P. elegans* and *P. frontalis* form a group with a very similar structure of abdomen in the males. The last ventrite of *P. elegans* has only a thin furrow in the middle and the median plate on the posterior margin of the last ventrite is shallowly impressed. The pair of processes arising from the posterior margin of the second ventrite is connected by a subtriangular lamella. The last ventrites of *P. malinka* sp. nov. and *P. frontalis* have a deep elongate cavity in the middle continued by a semicircular impression on the penultimate ventrite. The pair of processes arising from the third ventrite is connected by a transverse lamella in *P. malinka* sp. nov., while this lamella is lacking in *P. frontalis*.

Etymology. Dedicated to the collector of the holotype, Zdeněk Malinka (Opava, Czech Republic). Noun in apposition.

Bionomy. Unknown.

Distribution. Southern Turkey, provinces of Mardin and Kahramanmaraş; southwestern Iran: Fars province.

Phyllobrotica elegans Kraatz, 1866

(Figs. 4, 9–10, 18–21, 23)

Phyllobrotica elegans Kraatz, 1866: 285.

Phyllobrotica elegans: SCHNEIDER & LEDER (1879), WEISE (1886), LABOISSIÈRE (1913), SAHLBERG (1913), WEISE (1924) (catalogue), WINKLER (1930) (catalogue), OGLOBLIN (1936), MEDVEDEV & SHAPIRO (1957), MEDVEDEV (1965) (key), TOMOV (1971), BROVDJ (1973), WILCOX (1973) (catalogue), GRUEV & TOMOV (1979), TOMOV (1979), SAMEDOV & MIRZOEVA (1981), SAMEDOV & MIRZOEVA (1982), GRUEV & TOMOV (1986), WARCHALOWSKI (1994) (key), ASLAN (1998), GRUEV & TOMOV (1998) (catalogue), WARCHALOWSKI (1998), BIENKOVSKI (1999) (key), ASLAN et al. (2000), MIRZOEVA (2001), LOPATIN et al. (2003), WARCHALOWSKI (2003) (key), BIENKOVSKI (2004) (key), GÖK & DURAN (2004), LOPATIN et al. (2004) (catalogue), GRUEV & TOMOV (2007) (catalogue).

Luperus nigropunctatus Pic, 1894a: 72.

Phyllobrotica nigropunctata: PIC (1894b).

Luperus nigropunctatus: LABOISSIÈRE (1913) (= *elegans* Kraatz 1866), OGLOBLIN (1936) (= *elegans* Kraatz 1866).

Luperus (Trichelytron) nigropunctatus: WINKLER (1930) (catalogue).

Luperus (Luperus) nigropunctatus: WEISE (1924) (catalogue).

Phyllobrotica trimaculata Ballion, 1890: 33.

Phyllobrotica trimaculata: KRAATZ (1890) (= *elegans* Kraatz, 1866), KRAATZ (1891a) ('? valid species').

Phyllobrotica elegans var. *trimaculata*: LABOISSIÈRE (1913).

Phyllobrotica elegans ab. *trimaculata*: OGLOBLIN (1936), WARCHALOWSKI (1998).

Phyllobrotica trinotata: DEJEAN (1836) (nomen nudum), DEJEAN (1837) (nomen nudum).

Phyllobrotica tripunctata: DEJEAN (1836) (nomen nudum), DEJEAN (1837) (nomen nudum).

Type localities. *Phyllobrotica elegans*: ‘Constantinopel’ [= İstanbul, Turkey]. *Luperus nigropunctatus*: ‘Caucasus’. *Phyllobrotica trimaculata*: ‘Delishan [= Dilijan, Armenia], Novorossijsk [Russia, Krasnodarskiy Kray]’.

Type material. *Phyllobrotica elegans*: SYNTYPE: 1 ♀, ‘Coll. Kraatz [w, p] // Syntypus [red label, p] // *Phyllobrotica* / *elegantula* [sic!] / Kraatz. 3.7. 66. [w, h] // coll. DEI / Müncheberg [w, p]’ (DEI).

The type material of *Luperus nigropunctatus* is probably deposited in the Muséum national d’Histoire naturelle in Paris where the Chrysomelidae collection is currently unavailable for visitors. The deposition of the type material of *Phyllobrotica trimaculata* is unknown to me.

Additional material examined (15 spec.). **AZERBAIJAN**: Altyagach, NW of Baku, 1200 m, 21.–23.vi.1996, 1 ♀, W. Schawaller leg. (SMNS). **BULGARIA**: **BURGAS PROV.**: Eminska planina, 13.–19.vi.1970, 1 ♀, A. Svozil leg. (JBBC). **GEORGIA**: Tbilisi, Kodzori, 21.vi.1957, 1 ♂ 1 ♀, Mañan leg. (NMPC); Tbilisi, Dzhvari, 22.v.1975, 1 ♀, J. Pradáč leg. (NMPC); Borjomi, 22.vi.1957, 1 ♀, Mañan leg. (NMPC); Bakuriani, 17.vi.1975, 1 ♀, Voříšek leg. (MDAG); Tetri, Ckaro, 11.–16.vi.1986, 1 ♀, P. Pacholátko leg. (NHMB); **LIBANON**: Chouf, Djebel Barouk, Passo W. Kefraya, 1700 m, 4.–7.vi.1999, 1 ♀, G. Sama leg. (SMNS). **RUSSIA**: **STAVROPOLSKIY KRAY**: Stavropol, without the date of collecting, 1 ♂, Lutschnik leg. (NMPC). **TURKEY**: **BURSA**: Mürseler, 30 km S of Bursa, 28.v.1996, 1 ♂ 1 ♀, P. Kresl leg. (JBBC); **İSTANBUL**: ‘Stambul’ [= İstanbul], without additional data, 1 ♀ (coll DEI). **SYRIA**: Crac de Chevaliers [= Qal’at al Hisn], 18.iv.2008, 1 ♂, Skoupý leg. (JBBC). ?: Caucasus, Meskiseh Gebirge, without date of collecting, 1 ♀, Leder & Reitter leg. (NHMB – Frey coll.).

Host plants. *Ajuga laxmani* (Lamiaceae) according to GRUEV & TOMOV (1986).

Distribution. Armenia (BALLION 1890, LABOISSIÈRE 1913), Azerbaijan (SAMEDOV & MIRZOEVA 1981, 1982; WARCHALOWSKI 1998; MIRZOEVA 2001; present paper), Bulgaria (TOMOV 1971, 1979; present paper), Georgia (SCHNEIDER & LEDER 1879, present paper), Israel (SAHLBERG 1913, LOPATIN et al. 2003), Libanon (present paper), Moldavia (MEDVEDEV & SHAPIRO 1957), Russia (BALLION 1890, OGLOBLIN 1936, present paper), Syria (present paper), Turkey (KRAATZ 1866, WEISE 1886, GRUEV & TOMOV 1979, ASLAN 1998, WARCHALOWSKI 1998, ASLAN et al. 2000, GÖK & DURAN 2004, present paper), Ukraine (OGLOBLIN 1936, BROVDIJ 1973).

Differential diagnosis. See the differential diagnosis under *P. malinka* sp. nov. and the key.

Phyllobrotica frontalis Weise, 1886

(Figs. 5, 11–13, 16–17, 24)

Phyllobrotica frontalis Weise, 1886: 587.

Phyllobrotica frontalis: WEISE (1902), LABOISSIÈRE (1913), WEISE (1924) (catalogue), WINKLER (1930) (catalogue), OGLOBLIN (1936), WILCOX (1973) (catalogue), LOPATIN (1985), TOMOV (1984), WARCHALOWSKI (1994) (key), LOPATIN & KONSTANTINOV (1995), LOPATIN & KONSTANTINOV (1996), WARCHALOWSKI (1998), WARCHALOWSKI (2003) (key), GÖK & DURAN (2004).

Phyllobrotica frontalis var. *conjuncta* Pic, 1904: 58.

Phyllobrotica frontalis ab. *conjuncta*: WEISE (1924) (catalogue), WINKLER (1930) (catalogue), OGLOBLIN (1936).

Phyllopertha [sic!] *humeralis* Kraatz, 1891b: 124.

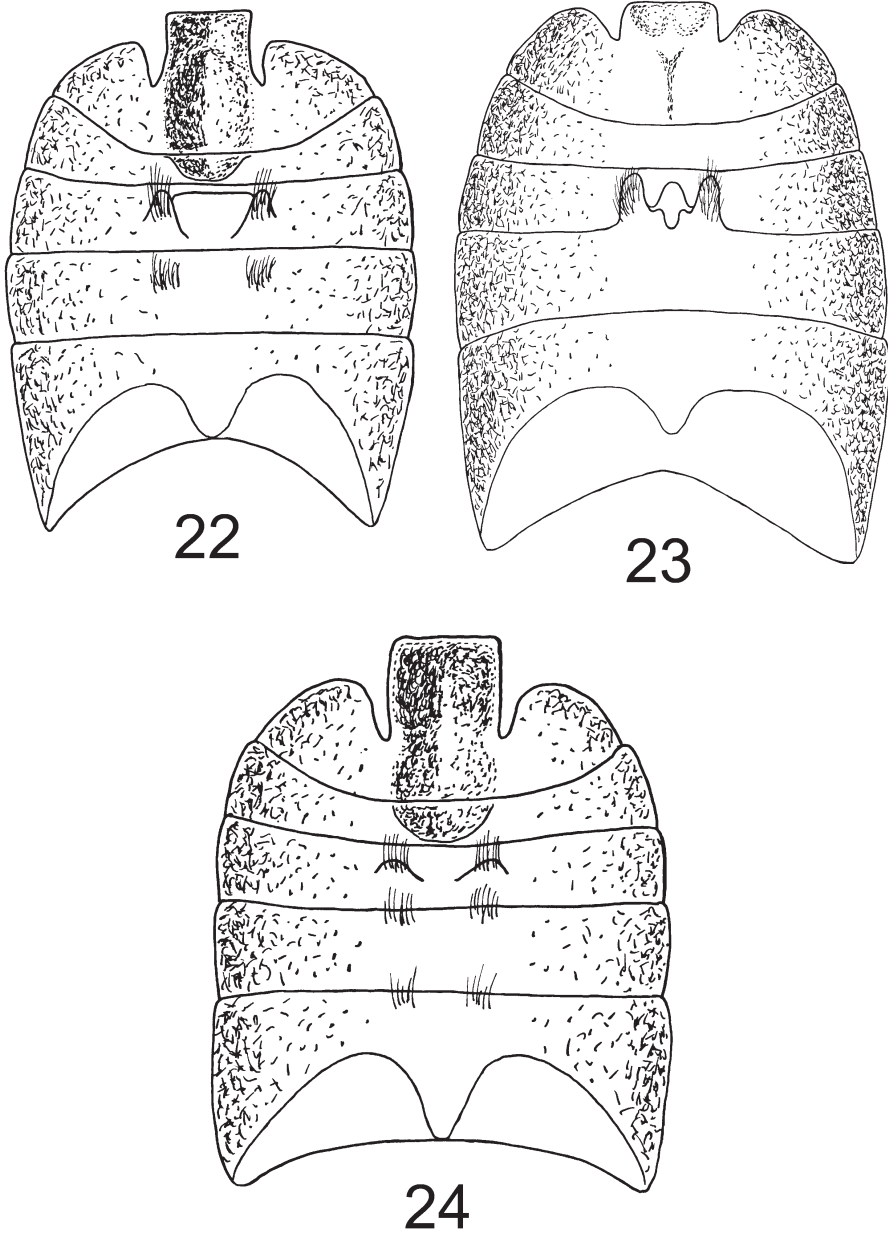
Phyllobrotica humeralis: REITTER (1891), WEISE (1924) (catalogue), WINKLER (1930) (catalogue), OGLOBLIN (1936), WILCOX (1973) (catalogue), WARCHALOWSKI (1994) (key), WARCHALOWSKI (1998) (= *frontalis* Weise, 1886).

Type localities. *Phyllobrotica frontalis*: ‘Asia minor, Amasia’ [= Amasya, Turkey]. *Phyllobrotica frontalis* var. *conjuncta*: ‘Anatolie’ [= Asian Turkey]. *Phyllopertha humeralis*: ‘Kleinasien’ [= Asian Turkey].

Type material. *Phyllobrotica frontalis*: SYNTYPES: 1 ♀, ‘Asia minor / Amasia [w, p] // *Phyllobrotica* / *frontalis* m. [w, h] // SYNTYPUS / *Phyllobrotica* / *frontalis* Weise, 1886 / labelled by MNHUB 2009 [red label, p]’ (ZMHB); 1 ♀, ‘SYNTYPUS / *Phyllobrotica* / *frontalis* Weise, 1886 / labelled by MNHUB 2009 [red label, p]’ (ZMHB).

Phyllobrotica humeralis: HOLOTYPE: 1 ♀, ‘[blank small red label] // Asia min. / Krieghoff [w, h] // 34 [w, h] // *humeralis* / Kraatz [yellow label, h] // Krtz. vid. / orig.! [w, h] // Holotypus [red label, p] // DEI coll. / von Heyden [w, p]’ (DEI).

The type material of *Phyllobrotica frontalis* var. *conjuncta* is probably deposited in the Muséum national d’Histoire naturelle in Paris where the Chrysomelidae collection is currently unavailable for visitors.



Figs. 22–24. Male abdomen. 22 – *Phyllobrotica malinka* sp. nov.; 23 – *P. elegans* Kraatz, 1866; 24 – *P. frontalis* Weise, 1886.

Additional material examined (30 spec.). **ARMENIA/AZERBAIJAN:** Araxesthal [= Aras river valley], without the date of collecting, 1 ♀, Leder & Reitter leg. (NHMB – Frey coll.). **IRAN: FARS:** 11 km W of Dasht-e-Arzhan (W of Shiraz), 1.v.2002, 1 ♀, S. Kadlec leg. (JVCC); **KOHLUYEH AND BOYER-AHMAD:** près Yasudj, 30°34'N 51°39'E, 2000 m, 27.v.1974, 2 ♀♀, A. Senglet leg. (MDVI); **LORESTAN:** Kuh-e Osturan Mt., 2000 m, 22.v.2005, 1 ♀, D. Gianasso leg. (MDVI). **TURKEY:** 'As. min' [= Turkey], without additional data, 1 ♀, Holtz leg. (ZMHB); 'Asia min' [= Turkey], 1 ♂, without additional data (NHMB – Frey coll.); **ADANA:** Pasyagbasan env. (ca. 55 km N of Adana), 37°29'N 35°14'E, 840 m, 15.–16.vi.2003, 1 ♂, J. Hájek & J. Hotový leg. (JBBC); Pozanti, 20.–29.vi.1992, 1 ♀, D. Hauck leg. (RBCN); **ADIYAMAN:** Karadut distr., Nemrut Dağı Mts., 26.v.–6.vi.1997, 3 ♂♂ 2 ♀♀, P. Viktora leg. (JVCC); Nemrut Dağı Mts., Karadut env., 13.vi.1998, 1 ♀, Z. Košťál & V. Biža leg. (JVCC); **BOLU:** Abant Mts., 1500 m, 8.vi.2002, 1 ♂, Skoupý leg. (JVCC); Abant Gölü, 21.–22.v.1996, 1 ♂, Farbiak leg. (JVCC); Abant Gölü, 1400–1600 m, 29.vi.–3.vii.1972, 2 ♀♀, M. Osella & G. Osella leg. (MSNV); **ÇORUM:** vi.1974, Sama leg. (MSNV); **İSPARTA:** Barla env., 26.v.1998, 1 ♀, Z. Košťál & V. Biža leg. (JVCC); **KAYSERİ:** Sultan Dağ Mts., Cankurtaran env., 1800 m, 26.v.1996, 3 ♂♂, I. Smatana leg. (2 ♂♂ in FKCC, 1 ♂ in JVCC); **KONYA:** Akşehir Baraköy, 900 m, 1 ♂, 27.v.1996, Farbiak leg. (JVCC); Ak-Chehir [= Akşehir], 1900, 1 ♂, Korb leg. (ZMHB); **MERSİN:** Camliyayla, 22.v.1989, 1 ♀, Kuff & Szallies leg. (RBCN); **SIVAS:** Kurbagalibeli Geçidi, Zara env., 1800 m, 9.vi.2001, 1 ♀, J. Voříšek & Z. Košťál leg. (JVCC). **SYRIA:** Ghab-Tal bei Ayn Slimo, 200 m, 10.iv.1980, 1 ♂, Heinz leg. (ZMHB); Syria, without additional data, 1 ♀ (ZMHB).

Distribution. Armenia (LOPATIN & KONSTANTINOV 1995, 1996; present paper), Iran (OGLOBLIN 1936, LOPATIN 1985, present paper), Syria (present paper), Turkey (WEISE 1886, 1902, KRAATZ 1891b, OGLOBLIN 1936, TOMOV 1984, WARCHAŁOWSKI 1998, GÖK & DURAN 2004, present paper).

Phyllobrotica frontalis was reported from Syria (Akbes) by LABOISSIÈRE (1913) and, based probably on this same record, also by LOPATIN (1985) and LOPATIN & KONSTANTINOV (1995, 1996). The locality Akbes is, however, situated in today's Turkey near the city of İskenderun. The material from Syria examined in this paper therefore represents the first reliable records from this country.

Differential diagnosis. See the differential diagnosis under *P. malinka* sp. nov. and the key.

Key to identification of West Palaearctic *Phyllobrotica* species

- 1 Head entirely yellow. Each elytron with a large black spot in the apical half. 2
- Head at least partly black. 3
- 2 Scutellum, antennae and legs entirely orange. Body length 4.90–5.60 mm. NE Turkey and Armenia. *P. binotata* Ogloblin, 1936
- Scutellum, apical antennomeres, all femora and mid and hind tibiae black. Body length 5.20–6.90 mm. Central, southern and eastern Europe. *P. adusta* (Creutzer, 1799)
- 3 Head black. Elytra orange with a large triangular black spot around scutellum and each elytron with a large black spot in the apical third. Dark forms with the black pattern connected. Body length 5.00–5.90 mm. Caucasian countries and countries around the Black Sea. *P. elegans* Kraatz, 1866
- Head bicoloured. 4
- 4 Head with anterior part and frontal tubercles orange, posterior part behind frontal tubercles completely black. Elytra with a black pattern in the basal half. 5
- Head with a black spot on vertex variable in size and shape, but always at least partly orange behind frontal tubercles. Elytra either without a black pattern in the basal half (specimens

- from Turkey) or with two black spots: one very small between scutellum and humeral callus and another large, elongate, slightly produced anteriorly along the suture (specimens from Iran). Body length 6.05–7.35 mm. Turkey and Iran. *P. malinka* sp. nov.
- 5 Scutellum orange. Each elytron with two black spots: the smaller one between scutellum and humeral callus, and the larger one in the apical third of elytron. Body length 5.40–7.00 mm. Europe, eastwards to the Ural Mts. *P. quadrimaculata* (Linnaeus, 1758)
- Scutellum black. Elytra with variable black pattern. Paler specimens with two black spots on each elytron (one between scutellum and humeral callus, another, larger, in the apical third of elytron). Dark specimens with the elytral spots broadly connected. Body length 5.15–7.50 mm. Turkey, Armenia, Iran, Syria. *P. frontalis* Weise, 1886

Acknowledgements

I would like to express my thanks to Luboš Dembický (Moravian Museum, Brno, Czech Republic) who kindly took the colour photographs by Nikon Coolpix 4500 and to Gianfranco Sama (Cesena, Italy) who donated one specimen of the new species to my collection. My special thanks are due to all curators and colleagues who enabled me to study the specimens in their collections.

This study was supported by the Research plan No. MSM6215648905 ‘Biological and technological aspects of sustainability of controlled ecosystems and their adaptability to climate change’, which is financed by the Ministry of Education, Youth and Sports of the Czech Republic.

References

- ASLAN I. 1998: Erzurum İli Galerucinae altfamilyasi (Coleoptera: Chrysomelidae) türleri üzerinde faunistik ve sistematik bir çalışma. (Faunistic and systematic studies on the subfamily Galerucinae (Coleoptera: Chrysomelidae) in Erzurum province). *Türkiye Entomoloji Dergisi* **22**: 285–298 (in Turkish, English summary).
- ASLAN I., WARCHAŁOWSKI A. & ÖZBEK H. 2000: A preliminary review of the subfamily Galerucinae (Coleoptera, Chrysomelidae) in Turkey. *Journal of the Entomological Research Society* **2**: 27–42.
- BALLION E. 1890: Einiges aus meinen Notizblättern. *Societas Entomologica* **5**: 33.
- BEENEN R. 2010: Galerucinae. Pp. 443–491. In: LÖBL I. & SMETANA A. (eds.): *Catalogue of Palaearctic Coleoptera. Vol. 6*. Apollo Books, Stenstrup, 924 pp.
- BEZDĚK J. 2002: Phyllobrotica aslani Warchałowski, 1998, a new synonym of *P. binotata* Ogloblin, 1936 (Coleoptera: Chrysomelidae: Galerucinae). *Genus* **13**: 351–352.
- BIENKOVSKI A. O. 1999: *Opredelitel' zhukov-listoedov (Coleoptera Chrysomelidae) Evropeyskoy chasti Rossii I Evropeyskikh stran blizhnego zarubezhya. (Guide to the identification of leaf-beetles (Coleoptera Chrysomelidae) of the Eastern Europe)*. Techpoligrafcentr, Moskva, 204 pp (in Russian, English title).
- BIENKOVSKI A. O. 2004: *Leaf-beetles (Coleoptera: Chrysomelidae) of the Eastern Europe. New key to subfamilies, genera, and species*. Mikron-print, Moskva, 278 pp.
- BROVDIJ V. M. 1973: *Zhuki-listoidi Galerucini. [Leaf-beetles Galerucinae]. Fauna Ukraini, Tom 19, Vypusk 17*. Naukova Dumka, Kiev, 194 pp (in Ukrainian).
- DEJEAN P. F. A. M. 1836: Livraison 5. Pp. 361–442. In: *Catalogue des coléoptères de la collection de le M. le Comte Dejean. Deuxième édition [1833–1836]*. Méquignon–Marvis Pères et Fils, Paris, 442 pp.
- DEJEAN P. F. A. M. 1837: *Catalogue des coléoptères de la collection de le M. le Comte Dejean. Troisième édition, revue, corrigée et augmentée*. Méquignon–Marvis père et fils, Paris, 503 pp.
- GÖK A. & DURAN E. 2004: A survey of the subfamily Galerucinae (Coleoptera: Chrysomelidae) of Isparta Province (Turkey), with two new records. *Journal of the Entomological Research Society* **6**: 15–24.

- GRUEV B. & TOMOV V. 1979: Zur Kenntnis einiger in der Türkei, Jugoslawien und Griechenland vorkommender Arten der Familie Chrysomelidae (Coleoptera) aus der Zoologischen Staatssammlung München. *Spixiana* **2**: 259–267.
- GRUEV B. & TOMOV V. 1986: *Fauna Bulgarica 16. Coleoptera, Chrysomelidae. Part II. Chrysomelinae, Galerucinae, Alticinae, Hispinae, Cassidinae*. Academia Scientiarum Bulgaricae, Sofia, 338 pp (in Bulgarian).
- GRUEV B. & TOMOV V. 1998: *Catalogue Faunae Bulgaricae. 3. Coleoptera: Chrysomelidae*. Pensoft, Sofia – Moscow, 160 pp.
- GRUEV B. & TOMOV V. 2007: *A distributional atlas and catalogue of the leaf beetles of Bulgaria (Coleoptera: Chrysomelidae)*. Zoocartographica Balcanica, Vol. 3. Pensoft, Sofia – Moscow, 350 pp.
- KRAATZ G. 1866: *Phyllobrotica elegans* nov. sp. *Berliner Entomologische Zeitschrift* **10**: 285–286.
- KRAATZ G. 1890: *Phyllobrotica trimaculata* Ballion *elegans* Kraatz. *Societas Entomologica* **5**: 45.
- KRAATZ G. 1891a: *Phyllobrotica trimaculata* Ball. eigene Art? *Societas Entomologica* **5** (1890): 162.
- KRAATZ G. 1891b: *Phyllopertha humeralis* n. sp. aus Kleinasien. *Deutsche Entomologische Zeitschrift* **1891**: 124.
- LABOISSIÈRE V. 1913: Revision des Galerucini d'Europe et pays limitrophes (Suite). *Annales de l'Association des Naturalistes de Levallois – Perret* **19**: 14–78.
- LOPATIN I. K. 1985: Zhuki-listoedy (Coleoptera, Chrysomelidae) Irana. Rezultaty chekhoslovatsko-iranskikh ekspeditsiy 1973–1977 gg. IV. [Leaf-beetles (Coleoptera, Chrysomelidae) of Iran. Results of the Czechoslovak-Iranian expeditions of the 1973–1977. IV]. *Entomologicheskoe Obozrenie* **64**: 760–772 (in Russian, English summary).
- LOPATIN I. K., ALEKSANDROVICH O. R. & KONSTANTINOV A. S. 2004: *Check list of leaf-beetles Chrysomelidae (Coleoptera) of the Eastern Europe and Northern Asia*. Mantis, Olsztyn, 343 pp.
- LOPATIN I. K. & KONSTANTINOV A. S. 1995: Materialy k faune i sistematike zhukov-listoedov Kavkaza (Coleoptera, Chrysomelidae). [Materials on the systematics of leaf beetles from the Caucasus (Coleoptera, Chrysomelidae)]. Pp. 180–200. In: LOPATIN I. K. (ed.): *Fauna i sistematika: Trudy Zoologicheskogo muzeya Belorusskogo universiteta. Vyp. 1. [Fauna and taxonomy: Proceedings of Zoological Museum of the Byelorussian University. Vol. 1]*. Navuka i tekhnika, Minsk, 328 pp.
- LOPATIN I. K. & KONSTANTINOV A. S. 1996: Materialy k faune i sistematike zhukov-listoedov Kavkaza (Coleoptera, Chrysomelidae). [Materials on the systematics of leaf beetles from the Caucasus (Coleoptera, Chrysomelidae)]. Pp. 31–50. In: ABDURAKHMANOV G. M. (ed.): *Nasekomye Kavkaza (fauna, sistematika, geograficheskoe rasprostranenie)*. [Insects of Caucasus (fauna, systematics, geographical distribution)]. Makhchkala [1991], 52 pp.
- LOPATIN I. K., CHIKATUNOV V. & PAVLÍČEK T. 2003: Catalogue of the beetles (Coleoptera) in Israel and adjacent areas: 3. Chrysomelidae (except Alticinae). *Zoology in the Middle East* **28**: 87–112.
- MEDVEDEV L. N. 1965: [Chrysomelidae, excluding Halticinae, Hispinae and Casidinae]. Pp. 419–451. In: MEDVEDEV L. N. & SHAPIRO D. S.: Chrysomelidae – Listoedy. Pp. 419–474. In: BEY-BIENKO G. Y. (ed.): *Opredelitel nasekomykh evropeyskoy chasti SSSR v pyati tomakh. II. Zhestkokrylye i veerokrylye*. [Key to Insects of the European Part of the USSR, Vol. II. Coleoptera and Strepsiptera]. Nauka, Moskva – Leningrad, 668 pp (in Russian).
- MEDVEDEV S. I. & SHAPIRO D. S. 1957: K poznaniyu fauny zhukov (Coleoptera) Moldavskoy SSR i sopedelnykh rayonov Ukrainy. [To the knowledge of the beetles (Coleoptera) of Moldavia and adjacent regions of the Ukraine]. *Trudy Nauchno-Issledovatel'skogo Instituta Biologii i Biologicheskogo Fakulteta* (Kharkov) **30**: 173–206 (in Russian).
- MIRZOEVA N. 2001: A study of the ecofaunal complexes of the leaf-eating beetles (Coleoptera, Chrysomelidae) in Azerbaijan. *Turkish Journal of Zoology* **25**: 41–52.
- PIC M. 1894a: Quelques notes en passant sur plusieurs coléoptères de la collection Henri Tournier. *L'Échange, Revue Linnéenne* **10**: 71–72.
- PIC M. 1894b: Corrigenda. *L'Échange, Revue Linnéenne* **10**: 128.
- PIC M. 1904: Diagnoses de divers coléoptères d'Europe et Turquie d'Asie. *L'Échange, Revue Linnéenne* **20**: 57–58.
- OGLOBLIN D. A. 1936: *Chrysomelidae, Galerucinae. Faune de l'URSS, Insectes Coléoptères, n. s. 8, 26(1)*. Academie des Sciences de l'URSS, Moskva – Leningrad, xiv + 455 pp (in Russian and French).

- REITTER E. 1891: Coleopterologische Notizen. *Wiener Entomologische Zeitung* **10**: 256–257.
- RILEY E. G., CLARK S. M. & SEENO T. N. 2003: *Catalogue of the leaf beetles of America north of Mexico*. Coleopterists Society, Special publication No. 1, Sacramento, 290 pp.
- SAHLBERG J. R. 1913: Coleoptera mediterranea orientalia, quae in Aegypto, Palaestina, Syria, Caramania atque in Anatolia occidentali anno 1904 collegerunt John Sahlberg et Unio Saalas. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar* **55A(19)** (1912–1913): 1–282.
- SAMEDOV N. G. & MIRZOEVA N. B. 1981: Zhuki-listoedy (Coleoptera, Chrysomelidae) Bol'shogo Kavkaza v Azerbaidzhane. [Leaf-beetles (Coleoptera, Chrysomelidae) of the Caucasus Major in Azerbaijan]. *Entomologicheskoe Obozrenie* **60**: 103–109 (in Russian, English summary).
- SAMEDOV N. G. & MIRZOEVA N. B. 1982: Ekologo-faunisticheskie i zoogeograficheskie gruppировки zhukov-listoedov (Coleoptera, Chrysomelidae) Malogo Kavkaza v Azerbaidzhane. [Ecologic-faunistical and zoogeographical groupings of the leaf-beetles (Coleoptera, Chrysomelidae) of the Lesser Caucasus in Azerbaijan]. *Entomologicheskoe Obozrenie* **61**: 795–800 (in Russian, English title).
- SCHNEIDER O. & LEDER H. 1879: Beiträge zur Kenntniss der kaukasischen Käferfauna. *Verhandlungen des Naturforschenden Vereines in Brünn* **17** (1878): 3–103.
- TOMOV V. 1971: Vrkhú vidovete ot rod Phyllobrotica Redt. (Coleoptera, Chrysomelidae) v B'lgariya. [On the species of the genus Phyllobrotica Redt. (Coleoptera, Chrysomelidae) in Bulgaria]. *Travaux Scientifiques, Ecole Normale Supérieure "Paissi Hilendarski" (Plovdiv)* **9(1-Biologie)**: 141–144 (in Bulgarian).
- TOMOV V. 1979: Bulgarian leaf beetles (Col. Chrysomelidae) in the Moravian Museum of Natural History in Brno. *Travaux Scientifiques, Université de Plovdiv "Paissi Hilendarski" (Plovdiv)* **11(4-Biologie)**: 175–180.
- TOMOV V. 1984: Cryptocephalinae and Galerucinae from Turkey (Coleoptera, Chrysomelidae). *Fragmenta Entomologica* **17**: 373–378.
- WARCHAŁOWSKI A. 1998: Die westpaläarktischen Arten der Gattung Phyllobrotica Chevrolat, 1837 (Coleoptera, Chrysomelidae, Galerucinae). *Annales Zoologici (Warszawa)* **48**: 91–98.
- WARCHAŁOWSKI A. 1994: *Chrysomelidae – Stonkowate (Insecta: Coleoptera) IV. Fauna Polski 16*. MiZ PAN, Warszawa, 301 pp (in Polish).
- WARCHAŁOWSKI A. 2003: *Chrysomelidae. The leaf-beetles of Europe and the Mediterranean area*. Natura Optima Dux Foundation, Warszawa, 600 pp.
- WEISE J. 1886: Lieferung 4. Pp. 569–768. In: *Naturgeschichte der Insekten Deutschlands. Erste Abteilung Coleoptera. Sechster Band.* (1881–1893). Nicolaische Verlags-Buchhandlung, Berlin, xiv + 1161 pp.
- WEISE J. 1902: Nachtrag zum Verzeichnisse kleinasiatischer Coleopteren von E. v. Bodemeyer, Freiburg i. Br. 1900. *Deutsche Entomologische Zeitschrift* **1901**: 203–204.
- WEISE J. 1924: Chrysomelidae: 13. Galerucinae. In: JUNK W. & SCHENKLING S. (eds.): *Coleopterorum Catalogus, Pars 78*. W. Junk, Berlin, 225 pp.
- WILCOX J. A. 1973: Chrysomelidae: Galerucinae (Luperini: Luperina). In: WILCOX J. A. (ed.): *Coleopterorum Catalogus Supplementa. Pars 78(3)*. Second edition. W. Junk, 's-Gravenhage, pp. 433–664.
- WINKLER A. 1930: *Catalogus Coleopterorum regionis palaearticae. Pars 11*. A. Winkler, Wien, pp. 1265–1392.