

**New records of *Eurydema fieberi* from the Czech Republic
with corrections to some previously published records of
Palearctic *Eurydema* species
(Hemiptera: Heteroptera: Pentatomidae)**

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KMENT P. & JINDRA Z. 2008: New records of *Eurydema fieberi* from the Czech Republic with corrections to some previously published records of Palearctic *Eurydema* species (Hemiptera: Heteroptera: Pentatomidae). *Acta Musei Moraviae, Scientiae biologicae* (Brno) **93**: 11–27. – The first recent records of *Eurydema* (*Horvatheurydema*) *fieberi* Fieber, 1837 from Bohemia, previously believed to be extinct in the Czech Republic, are presented. Further, some previously-published misidentifications of *E. (Eurydema) laticollis* Horváth, 1907, *E. (Horvatheurydema) rotundicollis* (Dohrn, 1860), *E. (Rubrodorsalium) maracandica* Oshanin, 1871, *E. (R.) mrugowskyi* Stichel, 1944, and *E. (?) pulchrigena* Kiritshenko, 1925 are corrected. The following species must be excluded from the faunal lists of their respective countries: *E. (H.) rotundicollis* from Slovakia, *E. (R.) mrugowskyi* from Turkey, and *E. (?) pulchrigena* from Afghanistan. We confirm the occurrence of *E. (R.) maracandica* from Afghanistan. *Eurydema (H.) fieberi* is recorded for the first time from Montenegro, and *E. (R.) blanda* Horváth, 1903 is a new species for Armenia, Azerbaijan, Georgia, and Iran.

Keywords. Heteroptera, Pentatomidae, Czech Republic, Bohemia, Moravia, Afghanistan, Armenia, Azerbaijan, Georgia, Iran, Montenegro, Slovakia, Turkey, faunistics, new record, red list

Introduction

Eurydema Laporte, 1833 is relatively species-rich genus distributed mostly in the Palearctic region. It is classified in the subfamily Pentatominae, tribe Strachiini (RIDER 2006, 2008). *Eurydema* species are usually vividly coloured with white/black to red/black warning colouration. Species of this genus are usually trophically bound to the plants of the family Brassicaceae, and some of them, especially *Eurydema (Eurydema) oleracea* (Linnaeus, 1758), are known to cause damage to cultivated crops.

In the last decade, one new species of *Eurydema*, *E. sea* Baena, Péricart & de la Rosa, 2004, has been described, and several new synonyms have been proposed (see BAENA *et al.* 2004, PÉRICART & RIBES 2003, PÉRICART 2004, KERZHNER 2005). Recently, RIDER (2006) catalogued 33 species of Palaearctic *Eurydema* classified into three subgenera (*Eurydema* s. str. – 13 species, *Horvatheurydema* Dupuis, 1951 – 4 species, and *Rubrodorsalium* Stichel, 1944 – 10 species; 6 species remain *incertae sedis*). DERJANSCHI & PÉRICART (2006) further provided a review and an illustrated key to western Palearctic *Eurydema* species, which enables us to revise some of the previously

identified specimens deposited in the collections of the National Museum in Prague and the Moravian Museum in Brno. This re-examination has revealed several published misidentifications as well as some persistent problems in *Eurydema* taxonomy, something that needs further detailed studies in the future.

Material and Methods

The specimens examined are deposited in the following collections:

JVPC	Jitka Vilímová Collection, Charles University, Prague, Czech Republic
HNHM	Hungarian Natural History Museum, Budapest, Hungary
MMBC	Moravian Museum, Brno, Czech Republic
PKPC	Petr Kment Collection, deposited in National Museum, Prague, Czech Republic
MMHC	Marion Mantič Collection, Hlučín, Czech Republic
MZHF	Zoological Museum, University of Helsinki, Finland
NMPC	National Museum, Prague, Czech Republic
ZJPC	Zdeněk Jindra Collection, Prague, Czech Republic;
ZMOC	Zdeněk Malinka Collection, Opava, Czech Republic

When citing label data from type specimens, a single slash (/) is used to indicate data on different rows of a single label, a double slash (//) is used to indicate data on different labels; authors' comments are given in square brackets ([]); the following abbreviations are used: hw = handwritten, p = printed. The material of *Eurydema fieberi* from Moravia and Slovakia previously published by STEHLÍK (1986) and STEHLÍK & VAVŘÍNOVÁ (1994) is not repeated. Unless stated otherwise, all specimens were identified or revised by Petr Kment. Map field codes of the central European mapping grid (EHRENDORFER & HAMANN 1965) of the Czech and Slovak localities follow PRUNER & MÍKA (1996) and NOVÁK (1989).

Results

Eurydema (Horvatheurydema) fieberi (Fieber, 1837)

(Figs 1–5)

Material examined. ARMENIA: Little Caucasus Mts., Kuybyshev env. (near Dilijan), 3.vi.1989, 2 ♀♀, Z. Jindra lgt. & det. (ZJPC); Gocht near Gechar, 35 km SE of Yerevan, Azat river valley, 15.vi.1988, 1 ♀, Z. Jindra lgt. & det. (ZJPC); Gocht near Gechar, 35 km SE of Yerevan, Azat river valley, ca. 1600 m a.s.l., 28.–30.v.1989, 1 ♂, Z. Jindra lgt. & det. (ZJPC). **AZERBAIJAN: Nakhichevan:** Ordubadskiy rayon, 21.vii.1960, 1 ♀, Bulyginskaya lgt. (NMPC). **BULGARIA:** Lyulin il., 2.iv.1945, 1 ♀, no collector, L. Hoberlandt 1950 det. as *E. fieberi* f. *armeniaca* (NMPC); Petraxal pass, 21.v.1989, 3 ♀♀, I. Kovář lgt. (NMPC); (SE), Yakoruda, 22.vii.1971, 1 ♂ 6 ♀♀, P. Lauterer, Kroupa & Ditrich lgt., J. L. Stehlík 1975 det. as *E. rugulosa* (MMBC). **CROATIA:** Dalmatia, without date, 1 specimen (abdomen missing), Stejskal lgt., J. L. Stehlík 1975 det. (MMBC). **CZECH REPUBLIC: Bohemia:** Schwaden a. E. (= Ústí nad Labem – Svádov) (5350), without date, 2 ♂♂ 6 ♀♀, E. Pawlik lgt. (NMPC); Velemin near Lovosice (5449), vi.1981, 1 ♂, F. Kocourek lgt., Z. Jindra det. (ZJPC); Lovosice (5450), Lobosch (= Lovoš hill), 9.vi.1935, 1 ♀, ex coll. Dr. Sterneček, Z. Jindra det. (ZJPC); Raná u Loun (5548), 27.iv.1980, 1 ♀, R. Pucholt lgt., Z. Jindra det. (ZJPC); Sýkořice near Zbečno (5949), 6.vi.1893, 1 ♀, coll. Nickerl (NMPC); Prag – Pelz (= Praha – Pelc) (5852), 22.vi.1888, 1 ♀, coll.

Nickerl (NMPC); Praha (5952), without date, 2 ♂♂ 1 ♀, coll. Duda, L. Duda det. (NMPC); Praha (5952), without date, 1 ♂ 1 unsexed specimen, coll. Prach (NMPC); Praha – Chuchle (5952), 30.v.1891, 1 ♀, 26.v.1893, 2 ♂♂ 2 ♀♀, coll. Duda, L. Duda det. (NMPC); Praha – Malá Strana (5952), Petřín hill, without date, 1 ♂, coll. Duda, L. Duda det. (NMPC); Dobřichovice env. (6051), 28.iii.1993, 2 ♂♂, P. Švácha lgt. (JVPC, PKPC); Praha – Zbraslav (6052), Závist, without date, 2 ♀♀, coll. Duda, L. Duda det.; Praha – Zbraslav (6052), Závist, 3.v.1890, 1 ♂ 1 ♀, coll. Nickerl (NMPC); Vrané [nad Vltavou] (6052), 22.v.1883, 1 ♂, no collector (NMPC); Vrané [nad Vltavou] (6052), 28.iv.[without year], 1 ♀, Zeman lgt. (NMPC); Vrané nad Vltavou (6052), Homole hill, 300 m a.s.l., 11.iv.2004, 1 ♀, J. Strejček lgt. (ZJPC); Jílové u Prahy (6152), without date, 1 ♀, no collector, L. Hoberlandt det. (NMPC). **Moravia:** Mohelno (6863), 25.vi.1941, 1 ♂ 1 ♀, J. Kratochvíl lgt., L. Hoberlandt det. as *E. fieberi* f. *melanogastra* (NMPC); Pavlovské kopce hills (7165), 28.iv.1946, 9 ♂♂ 5 ♀♀, J. L. Stehlík lgt. & det. (NMPC) (Fig. 2). **GEORGIA:** Borzhomi, 1300 m a.s.l., 24.vi.1978, 1 ♀, J. Hladil lgt., J. L. Stehlík 1980 det. (MMBC); Tbilisi – Chanisi, 20.–25.vi.1957, 2 ♀♀, J. Dlabola lgt. (NMPC); Tbilisi – Lisie oz, saline conditions, 20.–25.vi.1957, 1 ♂ 1 ♀, J. Dlabola lgt. (NMPC). **GREECE:** **Crete:** Omalos env., vi.1991, 1 ♀, Sobota lgt. (ZJPC). **Macedonia:** Lake Doirani, 12.vii.1968, 2 ♀♀, Z. Pádr lgt., J. L. Stehlík 1975 det. (MMBC). **Peloponessos:** Kalavryta, iv.1936, 1 ♀, Mařan & Tábroský lgt. (NMPC). **Thessalia:** Pindos Mts., Katara pass, 1500 m a.s.l., 29.–30.v.2006, 1 ♀, Z. Malinka lgt. (ZMOC). **HUNGARY:** Budaörs env. (3 km W Budapest), 27.–28.iv.2002, 2 ♀♀, P. Janšta lgt. (NMPC); Cserépfalu, Hór-Völgy, forest steppe, 30.vi.2003, 1 ♀, M. Mantič lgt. (MMHC). **IRAN:** **Fars:** Shiraz, 24.iii.1965, 1 ♂, Safavi lgt., L. Hoberlandt 1987 det. as *E. gussakovskii* (NMPC); **Golestan:** Aliabad, 15.vi.1948, 1 ♀, Saharif lgt., L. Hoberlandt 1958 det. as *E. laticolle* (NMPC). **MONGOLIA** (C): Arbaj – Chere (Loc. 42), 15.–16.viii.1966, 1 ♀, J. Dlabola lgt., L. Hoberlandt 1974 det. (NMPC). **MONTENEGRO:** Žabljak – Podgor, 1300 m a.s.l., 30.vi.1958, 2 ♀♀, J. Mařan & L. Hoberlandt lgt. (NMPC). **RUSSIA** (S): Kdazori, vi.1957, 1 ♀, J. Dlabola lgt. (NMPC); Radogoshch, without date, 1 ♀, F. Hanuš lgt. (NMPC). **SLOVAKIA:** Bělské [= Belianské] Tatry Mts., Skalní vrata [= Skalné vráta] (6787), without date and collector, 1 ♂, J. L. Stehlík 1975 det. as *E. rotundicolle* (MMBC); Bělské [= Belianské] Tatry Mts., Protěž (6787), without date, 2 ♂♂ 1 ♀, B. Dobšík lgt., J. L. Stehlík 1975 det. as *E. rotundicolle* (MMBC); Belianské Tatry Mts., Bujačí [vrch Mt.], Vel.[ký] Ovčí komín (6787), 1450–1550 m a.s.l., 9.ix.1967, 4 ♂♂ 10 ♀♀, P. Lauterer lgt., J. L. Stehlík 1975 det. as *E. rotundicolle* (MMBC) (Fig. 3); Velká Fatra Mts., 23.iv.1975, 1 ♀, M. Valeník lgt. (coll. Dobšík, MMBC); Podbanské (6885), 17.vii.1991, 1 ♂, Urban lgt. (PKPC); Velká Fatra Mts., Bystrická dolina valley (7180), 18.vii.1977, 1 ♂ 1 ♀, J. Davidová lgt. (JVPC); Uhrovské Podhradie (7276), Mt. Rokoš env., sweeping, 26.v.2000, 1 ♂, P. Boža lgt. (PKPC); Lúka nad Váhom (7373), forest steppe, 12.vi.1999, 1 ♀, 6.v.2001, 2 ♀♀, 15.iii.2003, 1 ♀, 30.iii.2003, 1 ♂ 1 ♀, M. Mantič lgt. (MMHC); Turňa, Zadiel (7390), 25.vi.1951, 1 ♂ 8 ♀♀, Exc. M. N. Pragae lgt. (NMPC); Zadiel env. (7390), v.1950, 3 ♂♂ 1 ♀, J. Jindra lgt. (ZJPC); Zádielská dolina valley (7390), 17.vii.1953, 1 ♀, Exc. M. N. Pragae lgt. (NMPC); Plešivec (7488), 29.vi.1927, 1 ♂, B. Štich lgt. (NMPC); Kráľovský Chlmec (7597), 22.vi.1976, 1 ♂, M. Antuš lgt. (ZJPC); Medovarce (7780), 9.vii.1989, 3 ♂♂ 1 ♀, D. Všianský lgt. (coll. Raus, MMBC); Plášťovce env. (7879), Krupina hills, 6.vi.1987, 1 ♂ 1 ♀, Z. Jindra lgt. (ZJPC); Kamenica nad Hronom (8178), without date, 1 ♂, Kouřil lgt. (NMPC); Kamenica nad Hronom (8178), forest steppe, 21.iv.2000, 1 ♂ 1 ♀, 19.iv.2003, 1 ♂, M. Mantič lgt. (MMHC); Kamenica nad Hronom (8178), Kováčovské kopce – jih NNR, 17.iv.2003, 1 ♂ 1 ♀, P. Janšta lgt. (PKPC); Štúrovo (81–8278), without date, 1 ♀, Kouřil lgt., 1 ♀, Tesař lgt. (NMPC); Štúrovo, v.1951, 1 ♀, R. Strejčková lgt. (NMPC); Parkán (= Štúrovo) (81–8278), 5.v.1937, 1 ♀, J. Obenberger lgt. (NMPC); Parkán (81–8278), vi.1950, 1 ♂, A. Hoffer lgt. (ZJPC). **TAJIKISTAN:** Gissar Mts.: Khodzha Obi Garm env., 29.iv.1990, 1 ♂ 1 ♀, J. Dalihod lgt. (ZJPC); Kondara, 1100 m a.s.l., d. Varzoba, 24.vi.1939, 1 ♂ 1 ♀, Gussakovskiy lgt., L. Hoberlandt 1958 det. as *E. gussakovskii* (NMPC); Kwak ü. [= above] Kondara, 20.vi.1970, 4 ♀♀, M. Josifov lgt. & det. as *E. gussakovskii* (NMPC); Javroz (pr. Dushanbe), Hissar Mt., ca. 1000 m a.s.l., 19.iv.1978, 1 ♂, J. Strejček lgt. (ZJPC) & 1 ♀, S. Bílý lgt. (NMPC) (Fig. 4). **TURKEY (ASIAN PART):** **Adana province:** Pozantı env., 9.v.1991, 2 ♂♂, P. Kapitola lgt. (ZJPC). **Ankara province:** Angora [= Ankara], Sidžanköi [= Sican], without date, 1 ♀, A. M. Staněk lgt. (NMPC); Ankara – Baraj, 3.–4.vii.1947, 1 ♂ 2 ♀♀, Exp. N. Mus. ČSR lgt., L. Hoberlandt 1954 det. as *E. blanda* f. *albicans* (NMPC) (Fig. 5). **Antalya province:** 32 km W Antage – Selalik, 2.–4.v.1994, 1 ♂, J. Hubert lgt. (JVPC). **Erzincan province:** Çağlayan (39°36'N 39°42'E), grassy steppe on the southern slope of the valley above the waterfall, 24.vi.2002, 1 ♀, P. Kment lgt. (PKPC). **Nevşehir province:** Nevşehir, 11.–15.v.1994, 1 ♀, J. Hubert lgt. (PKPC). **Sivas province:** Çamlıbel geçidi pass, 1650 m a.s.l., 6.vi.1969, 2 ♂♂, Osella lgt. (NMPC); Celbıram geçidi pass, 6.vi.1969, 1 ♂, Osella lgt. (NMPC). **? province:** Camlıdere env., 70 km N of Tarsus, 12.v.1991, 1 ♂, P. Kapitola lgt. (ZJPC).

Remark. RIDER (2006) listed *Eurydema fieberi* from the following countries: Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Macedonia, Poland, Portugal, Romania, Russia (South European Territory), Slovakia, Slovenia, Spain, Switzerland, Ukraine, Yugoslavia; Algeria, Morocco; Armenia, Azerbaijan, China (Northwestern Territory), Iran, Iraq, Israel, Kazakhstan (Asian part), Mongolia, Syria, Tajikistan, Turkey (Asian part), Uzbekistan; India. The records from Yugoslavia may more precisely be described as Serbia and Kosovo (PROTIĆ 2001). It is also known from Albania, Georgia, and Afghanistan (DERJANSCHI & PÉRICART 2006). The first record from Montenegro also appears here. The specimens of *E. blanda* var. *albicans* Horváth, 1903 from Ankara – Baraj (Turkey) (Fig. 5) published by HOBERLANDT (1956) also belong to *E. fieberi*.

The species was described by FIEBER (1837) without a precise locality, but with the following characteristic: “This species lives in rocky places and on stony hillocks on *Alyssum saxatile* and *Erysimum durum*”, but Fieber’s material most probably came from Bohemia. The species was first listed from Bohemia by DUDA (1892) again, however, without giving a precise locality. Later, NICKERL (1905) recorded it from Prag – Pelz (= Prague – Pelc, 5852) on *Isatis tinctoria*, Jarow – Homole (Prague – Jarov, Homole hill, 5952), on leaves of *Alyssum saxatile*, and Neuhütten bei Zbečno (= Nová Huť u Nižboru, 6049) on rocky slopes on *Alyssum saxatile*. SCHOLTZ (1930) only repeated NICKERL’s (1905) records from “Prag und Neuhütten”. It has never been recorded from Bohemia since; however, our current records document its continuous occurrence in the environs of Prague and the České Středohoří Mts. In Moravia, it was recorded for the first time by SPITZNER (1892) from Plumlov (6568), Milkov (6367), and Hrubá Voda (6370). Later, HOBERLANDT (1944) presented a record from Mohelno (6863), and STEHLÍK (1955, 1986) from the Pavlovské kopce hills (7165), Milovice (7166), Pavlov (7165–66), and Mohelno. While in 1946 and 1950 this species was abundant in the Pavlovské kopce hills (last collected in 1952) it was never found again in Moravia. Its extinction goes back to the time when the application of DDT insecticides started, which may be one of the reasons for its disappearance (STEHLÍK 1986). KMENT & VILÍMOVÁ (2006) considered *E. fieberi* to be extinct in the Czech Republic; while this seems to be true for Moravia where it has not been found for more than fifty years, *E. fieberi* still survives in Bohemia limited, however, to several isolated localities and thus very probably critically endangered. For the distribution of *E. fieberi* in the Czech Republic see Fig. 1; its distribution in Slovakia was reviewed by STEHLÍK & VAVŘINOVÁ (1994).

Eurydema fieberi lives on various plants of the family Brassicaceae, e.g. on *Erysimum* spp., *Biscutella laevigata*, *Leucosinapis* (= *Sinapis*) *alba*, *Isatis tinctoria*, *Erophila* (= *Draba*) *verna*, *Aurinia* (= *Alyssum*) *saxatilis*, *Cardaria draba*, *Sisymbrium* spp., *Lepidium* spp., *Thlaspi* spp., and *Barbarea vulgaris* subsp. *arcuata* (STEHLÍK 1986, STEHLÍK & VAVŘINOVÁ 1994, DERJANSCHI & PÉRICART 2006, WACHMANN *et al.* 2008). It overwinters in the adult stage and has one generation per year (STEHLÍK 1986, DERJANSCHI & PÉRICART 2006). In the Alps (Carinthia, Switzerland), it lives up to submontane elevations (1900–2500 m.a.s.l.), in Slovakia it was collected between 120 and 1650 m.a.s.l., reaching its highest altitudes in the limestone Belianské Tatry Mts.

between 1350 and 1650 m a.s.l. (STEHLÍK 1973, STEHLÍK & VAVŘINOVÁ 1994). In Bohemia, Moravia, and lower altitudes in Slovakia, it is confined to rocky steppes situated on the slopes of river valleys and hills (250–570 m.a.s.l.) with limestone, serpentinite, conglomerate or volcanic substrata, always in undulating terrain. It is absent from the plains (STEHLÍK 1986, STEHLÍK & VAVŘINOVÁ 1994).

PÉRICART (2004) synonymized *E. gussakovskii* Kiritshenko, 1952, originally described from mountains of Tajikistan (KIRITSHENKO 1952), with *E. fieberi*, considering the differences in colouration and the structure of antennae to represent only variation within a single species. We studied several specimens of *E. 'gusakovskii'* from Tajikistan, which are distinctly darker in colouration than most of European specimens, but correspond well to *E. rotundicollis* from European mountains.

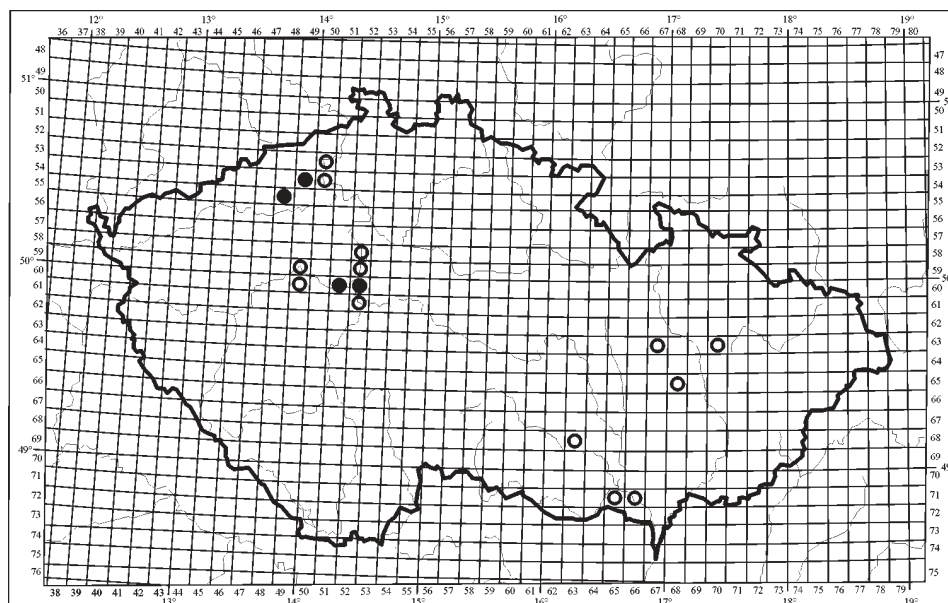


Fig. 1. Distribution map of *Eurydema fieberi* (Fieber, 1837) in the Czech Republic (open circles – old records, before 1952 only; full circles – recent records, from 1980 to 2004).

***Eurydema (Horvatheurydema) rotundicollis* (Dohrn, 1860)** (Fig. 6)

Material examined: **AUSTRIA:** Innsbruck, Höltinger Graben, Novolkette, 800–900 m a.s.l., 21.vi.1962, 1 ♂, Kappelier lgt., L. Hoberlandt 1956 det. (ZJPC). **FRANCE:** Alpes Maritimes, P.N. du Mercantour, 9.vi.2000, 1 ♀, P. Šmarda lgt. (PKPC); Pyrenees Mts., Lac d'Oredon env., 9.–10.viii.1992, 1 ♀, L. Horáková lgt., Z. Jindra det. (ZJPC). **GERMANY:** Bayerische Alpen, Oberstdorf, 17.viii.1935, 1 ♂ 1 ♀, K. Schmidt lgt. (NMPC); Reichenhall, 11.viii.1929, 1 ♀, K. Schmidt lgt. (NMPC). **GREECE:** Attica, Parnis, 1934, 1 ♀, no collector (NMPC). **SPAIN:** Escorial, 19.v.1959, 1 ♂, H. Freude lgt. (NMPC) (Fig. 6).

Remark. DERJANSCHI & PÉRICART (2006) classified this species within the subgenus *Eurydema* s. str. without giving any further comments, while RIDER (2006) listed it within *Horvatheurydema*. According to RIDER (2006), DERJANSCHI & PÉRICART (2006) and PROTIĆ (2001), it is distributed in Austria, France, Germany, Greece, Hungary, Italy, Montenegro, Poland, Portugal, Slovakia, Slovenia, Spain, and Switzerland. It is an alpine species (1200–2800 m a.s.l.), living on Brassicaceae (*Aurinia* (= *Alyssum*) *saxatile*, *Biscutella laevigata*, *Iberis* spp.) (DERJANSCHI & PÉRICART 2006, WACHMANN *et al.* 2008), often in localities with limestone substrate (WACHMANN *et al.* 2008). However, LIS (1990) reported this species from Poland from medium altitudes (400–500 m a.s.l.) as well.

Eurydema rotundicollis (Dohrn, 1860) was synonymized with *E. fieberi* by FIEBER (1861), HORVÁTH (1911), and DUPUIS (1951; based on examination of male genitalia), but has been treated as a valid distinct species by many other authors (e.g., STICHEL 1961, WAGNER 1966, DERJANSCHI & PÉRICART 2006). WAGNER (1966) figured subtle differences in the structure of the pygophore and paramere of both species. According to a key by DERJANSCHI & PÉRICART (2006), *E. rotundicollis* differs from *E. fieberi* in having “Posterior and lateral margins of pronotum narrowly light coloured. Anterior margin red; one narrow longitudinal median red stripe, broadening a little posteriorly. Length: 7.5–8.5 mm.”, while *E. fieberi* has “Posterior and lateral margins of pronotum broadly light coloured; anterior margin light coloured. Length: 7.5–8.5 mm.” We re-examined all Slovak specimens of *E. rotundicollis* previously published by STEHLÍK (1973) and STEHLÍK & VAVŘINOVÁ (1994) with reference to this key and compared them with specimens of *E. fieberi*. In our opinion, all these specimens belong to *E. fieberi* (see Figs 2–3). According to D. Rédei (pers. comm. 2008), all Hungarian specimens published previously as *E. rotundicollis* belong to *E. fieberi* as well. Moreover, we have serious doubts about the validity of *E. rotundicollis*, which may well be only a darker mountain form of *E. fieberi* (see also comment on *E. fieberi* and *E. gussakovskii* above and Fig. 4). However, a detailed revision of both taxa based on examination of a wide range of material, with particular attention to the structures of the genitalia, is needed to answer this question.

***Eurydema (Eurydema) laticollis* Horváth, 1907** (Figs 7–10)

Material examined. **IRAN: Kermanshah:** Mehran, v.1948, 1 ♀, Sarkissian lgt., L. Hoberlandt 1958 det. as *E. laticolle* (NMPC) (Fig. 7); Mehran, v.1948, 1 ♂, Sarkissian lgt., L. Hoberlandt 1969 det. as *E. laticolle* (NMPC); **Kohgiluyeh & Boyerahmad:** 27 km S Yasuj, 2650 m a.s.l. (Loc. No. 244), 16.vi.1973, 2 ♂♂, Exp. Nat. Mus. Praha lgt., L. Hoberlandt 1987 det. as *E. laticolle* (NMPC). **Lorestan:** Dorus 52 km SE Borujerd,

2.–3.vi.2005, 1 ♀, F. Pavel lgt. (ZJPC). **Markazi:** Arak, Ab-bazik, xi.1949, 2 ♀♀, Nabigadeh lgt., L. Hoberlandt 1969 det. as *E. laticolle* (NMPC). **Qazvin:** 8 km NE Ziaran, 2400 m a.s.l. (Loc. No. 400), 10.–16.vii.1977, 1 ♀, 10.–16.vii.1977, Exped. Nat. Mus. Praha lgt., L. Hoberlandt 1987 det. as *E. laticolle* (NMPC) (Fig. 8); Hasan Sabbah castle (streamlet valley), 36°27.0'N 50°34.9'E, 2075 m a.s.l., 13.v.2006, 1 ♀, J. Hájek & P. Chvojka lgt. (NMPC) (Fig. 10). **TURKEY (ASIAN PART): Diyarbakir province:** Mermer, 20.v.1958, 1 ♂, E. S. Brown lgt., L. Hoberlandt 1958 det. as *E. laticolle* (NMPC); Şilbe, 10.vi.1958, 1 ♂ 1 ♀, E. S. Brown lgt., L. Hoberlandt 1958 det. as *E. laticolle* f. *hypoxanthum* (NMPC) (Fig. 9). **Muş province:** Buglan Dağları, 20 km E of Solhan, 3.vi.1992, 1 ♀, V. Biša & S. Košťál lgt. (ZJPC).

Remark. *Eurydema laticollis* was described (including forms *discors* and *hypoxanthum*) by HORVÁTH (1907) from the Baktyaris Mts. in Iran. It is known to occur in Iran (HORVÁTH 1907), the Asian part of Turkey (Diyarbakir province: Mermer) (WAGNER 1959) and the South European Territory of Russia (Sarepta) (DERJANSCHI & PÉRICART 2006) (see also RIDER (2006)). According to DERJANSCHI & PÉRICART (2006), this species is similar to *E. ornatum* (Linnaeus, 1758), from which it differs in its larger size (7.8–9.3 mm in *E. laticollis*, 7.0–8.0 (males) and 8.5–9.2 mm (females) in *E. ornatum*). Both HORVÁTH (1907) and DERJANSCHI & PÉRICART (2006) indicated colour of abdominal dorsum black. HOBERLANDT (1959, 1997) reported *E. laticollis* from several localities in Iran. However, our re-examination of the voucher specimens revealed that his “*E. laticollis*” material was a mixture of 3 or 4 species: *Eurydema ornata*, *E. putoni*, true *E. fieberi*, and the remainder of the specimens (see Material examined, above), which are very near to *E. fieberi* using the key by DERJANSCHI & PÉRICART (2006), with most of the abdominal dorsum red, but differing from it in having exocorium whitish or red with short, black median spot, which character is reminiscent of *E. ornata*. In our opinion, the species placement of these specimens, as well as the status of *E. laticollis*, will require further revision. LINNAVUORI (2008) gave additional records of *E. laticollis* from the Iranian province of Ardabil.

Eurydema (Eurydema) ornata (Linnaeus, 1758)

(Figs 11–12)

Material examined: AFGHANISTAN (NE): Badachschan, Bala Kuran, 3200 m a.s.l., 21.–26.vii.1961, 2 ♂♂, G. Ebert lgt., L. Hoberlandt 1979 det. as *E. pulchrigena* (NMPC) (Fig. 11). **IRAN: Ilam:** Ilam, 31.i.1925, Salvatian lgt., 1 ♀, L. Hoberlandt det. as *E. laticolle* (NMPC). **Khorasan:** Wildlf. Park, vicinity of Dasht, 650 m a.s.l. (Loc. No. 77), 27.–30.vii.1970, 1 ♂, Exp. Nat. Mus. Praha lgt., L. Hoberlandt 1980 det. as *E. maracandica* (NMPC). **Tehran:** Evin [= Ewin], 16.viii.1971, 1 ♀, Sabz. lgt., L. Hoberlandt 1988 det. as *E. pulchrigena* (NMPC); Tehran – Golhak [= Gholhak], 1400 m a.s.l., iii.–v.1961, 3 ♂♂ 2 ♀♀, J. Klapperich lgt., L. Hoberlandt 1987 det. as *E. laticolle* (HNHM, NMPC) (Fig. 12); Kandavan pass, S slope, 2700–2900 m a.s.l. (Loc. No. 395), 4.–9.vii.1977, 1 ♀, Exped. Nat. Mus. Praha lgt., L. Hoberlandt 1987 det. as *E. maracandica* (NMPC). **MADEIRA:** Levada dos Mouros, below Bitá da Cana, 4800 ft, without date, 2 ♂♂ 2 ♀♀, B. W. Classey lgt., L. Hoberlandt 1956 det. as *E. herbacea*.

Remark. Common and widely distributed Palaearctic species distributed from western Europe and north Africa up to the Russian Far East, Mongolia, China, Pakistan, and India (RIDER 2006). Some of the previously published records (see Material examined above) of *E. pulchrigena* from Afghanistan (HOBERLANDT 1984) and Iran (HOBERLANDT 1997), *E. maracandica* and *E. laticollis* from Iran (HOBERLANDT 1997), and *E. herbacea* from Madeira (HOBERLANDT 1967) in fact relate to this species.

***Eurydema (Eurydema) putoni* (Jakovlev, 1877)**

(Figs 16–19)

Type material examined. Paralectotype: ♀, 'Persia / borealis [hw]' // 'Spec. typ. / Jakovleff. [p]' // 'Mus. Zool. H:fors / Spec. typ. No [p] 9436 / Eurydema / Putoni Jak. [hw]' // 'Mus. Hels. / N:o [p] 4 [hw; orange label]' (MZHF) (Fig. 17).

Additional material examined. IRAN: Kerman: Ferdows-e Esfāndaqeh (Loc. No. 340), 21.v.1977, 1 ♀, Exped. Nat. Mus. Praha lgt., L. Hoberlandt det. as *E. laticolle* (NMPC) (Fig. 19).

Remark. PÉRICART (2004) synonymized *E. formosa* Puton, 1895 (Fig. 16) with *E. putoni*, a species that currently includes several very distinctive colour forms (see Figs 16–19). *Eurydema putoni* is distributed in the South European Territory of Russia, Armenia, Azerbaijan, the Asian part of Turkey, Israel, Syria, Iraq, Iran, and Afghanistan (RIDER 2006). The female of *E. laticollis* from Ferdows-e Esfāndaqeh (Iran) (Fig. 19) published by HOBERLANDT (1997) also belongs to *E. putoni*.

LINDBERG (1938) described *E. persica* (with two forms, *typica* and *adfluens*) based on material from Karadj near Tehran in northern Iran, and compared it to *E. formosa*, both species differing in the colouration of pronotum and abdominal venter, and structure of the genital segments. DERJANSCHI & PÉRICART (2006) did not include *E. persica* in their monograph. HOBERLANDT (1997) reported two specimens (1 ♀ from Tehran: Ewin (Fig. 15), 1 ♂ from Fars: Shiraz (Fig. 14)) which he compared with types from MZHF; trying to identify these two specimens by means of the key by DERJANSCHI & PÉRICART (2006), the specimen from Shiraz should be (with some reserve) identified as *E. fieberi*, while the Ewin one seems most appropriate to *E. putoni* (forma *formosa*). The status of *E. persica* is also worthy of re-examination.

***Eurydema (Rubrodorsalium) blanda* Horváth, 1903**

(Fig. 13)

Material examined. ARMENIA: Little Caucasus Mts., Cachkadzor env., 2300 m a.s.l., 8.–11.vi.1988, 1 ♂ 1 ♀, Z. Jindra lgt. (ZJPC); Little Caucasus Mts., Gocht near Gechard, 35 km SE of Yerevan, Azat river valley, 12.vi.1988, 1 ♂ 1 ♀, Z. Jindra lgt. (ZJPC); Parpi, 1600 m a.s.l., 31.v.1973, 1 ♀, K. Pospíšil lgt. (ZJPC). **AZERBAIJAN:** Chagachuk-Chay (Baku), 18.v.1975, 1 ♂ 1 ♀, K. Pospíšil lgt. (ZJPC). **GEORGIA:** Dzhvari (Tbilisi), 22.v.1975, 1 ♂ 2 ♀♀, K. Pospíšil lgt. (ZJPC). **IRAN: Mazandaran:** 15 km SW Chalus, 490 m a.s.l. (Loc. No. 394), 4.vii.1977, 3 ♂♂ 2 ♀♀, Exped. Nat. Mus. Praha lgt., L. Hoberlandt 1988 det. as *E. pulchrigena* (NMPC) (Fig. 13). **Tehran:** Kandavan pass, S slope, 2700–2900 m a.s.l. (Loc. No. 395), 4.–9.vii.1977, 2 ♂♂ 1 ♀, Exped. Nat. Mus. Praha lgt., L. Hoberlandt 1988 det. as *E. pulchrigena* (NMPC). **West Azerbaijan:** Maku (Loc. No. 24), 19.–20.vi.1970, 1 ♀, Exp. Nat. Mus. Praha lgt., L. Hoberlandt 1988 det. as *E. pulchrigena* (NMPC).

Remark. *Eurydema blanda* is an endemic species known so far only from the Asian part of Turkey (DERJANSCHI & PÉRICART 2006, RIDER 2006). The specimens from Iran (above), originally published as *E. pulchrigena* by HOBERLANDT (1997), belong to this species. However, the diagnostic characters (especially the ratio of antennomeres 2 and 3) are more variable than stated by DERJANSCHI & PÉRICART (2006), and some of the Iranian specimens (e.g., Fig. 13) seem to be intermediate between *E. blanda* and *E. ventralis* Kolenati, 1846. The species status of *E. blanda* is in need of critical re-examination as well. The specimens of *E. blanda* var. *albicans* Horváth, 1903 from Ankara – Baraj (Turkey) (Fig. 5) published by HOBERLANDT (1956) belong to *E. fieberi*. New species for Armenia, Azerbaijan, Georgia, and Iran.

***Eurydema (Rubrodorsalium) maracandica* Stichel, 1944**

Material examined: AFGHANISTAN: Bamian, ix.1957, 1 ♀, K. Lindberg lgt., L. Hoberlandt 1979 det. as *E. pulchrigena* (NMPC).

Remark. A Central Asian species known from the South European Territory of Russia, Azerbaijan, Iran, Turkmenistan, Uzbekistan, Asian part of Kazakhstan, Mongolia, and China (Northern Territory, Northwestern Territory, Western Plateau) (RIDER 2006). Moreover, HOBERLANDT (1984) reported this species from Afghanistan based on one male from Herat (identification confirmed). A female from Bamian published by HOBERLANDT (1984) as *E. pulchrigena* also belongs to this species. The Iranian records from Dasht and the Kandavan pass published by HOBERLANDT (1997) are based on misidentified specimens of *E. ornata*.

***Eurydema (Rubrodorsalium) mrugowskyi* Stichel, 1944**

Remark. This species was described by STICHEL (1944) from Afghanistan. RIDER (2006) also listed it from the Asian part of Turkey and Pakistan. HOBERLANDT (1956) recorded the species from the Asian part of Turkey (Abaçılar in Adana province), but re-examination of the voucher specimens in NMPC revealed that they are misidentified *E. spectabilis* Horváth, 1882 (Fig. 20). As this seems to be the only record of *E. mrugowskyi* from Turkey (see ÖNDER *et al.* 2006), this species may be excluded from the list of Turkish fauna.

***Eurydema (Rubrodorsalium) spectabilis* Horváth, 1882** (Fig. 20)

Material examined. TURKEY (ASIAN PART): Adana province: Abaçılar, 7.viii.1947, 3 ♂♂ 4 ♀♀, Exp. N. Mus. ČSR lgt., L. Hoberlandt 1954 det. as *E. mrugowskyi* (NMPC) (Fig. 20).

Remark. *Eurydema spectabilis* is a Pontic species distributed in maritime areas of Albania, Greece, Bulgaria, Romania, Ukraine, the South European Territory of Russia, Georgia, the Asian part of Turkey, Syria and Israel (RIDER 2006, DERJANSCHI & PÉRICART 2006). However, the records from Israel and Syria are based on a list by BODENHEIMER (1937) and need further confirmation (see DERJANSCHI & PÉRICART 2006). The specimens of *E. mrugowskyi* from Turkey published by HOBERLANDT (1956) belong to this species as well (Fig. 20).

***Eurydema (?) pulchrigena* Kiritschenko, 1925** (Fig. 21)

Material examined. 1 ♂, 'Isfara / Kokandsk. u. / 12.VI.920. / Nikitskiy [hw, transcribed from cyrillic]' // 'Mus. Zool. H:fors / Spec. typ. No. [p] 3933 / Eurydema / pulchrigena Kir. [hw]' // 'Eurydema / pulchrigena Kir. / cotype [hw in red] / Kiritschenko det. [hw]' (MZHF) (Fig. 21); 1 ♂, 'Isfara, Kokan- / skago u. 28.IV.20 / Arkhangelskiy [hw, transcribed from cyrillic]' // 'k. Kirichenko [p, transcribed from cyrillic]' // 'Eurydema / pulchrigena Kir. ♂ [hw] / Det. L. Hoberlandt, 195[p]8[hw]' (NMPC).

Note. The locality and the collection date of the specimen from MZHF are quite appropriate to the original description, but the collector is different; in the specimen from NMPC the locality and the collector fit the original description well, but the date is slightly different (see KIRITSHENKO 1925). Moreover, the labels of both these specimens differ from the labels of lectotype and two paralectotypes designated by DERZHANSKY *et al.* (2002) and the number and sex of the syntypes given in the original description (2 ♂♂ 1 ♀) corresponds exactly with the material listed by DERZHANSKY *et al.* (2002). Thus, we cannot regard the above-mentioned topotypic specimens as paralectotypes.

Remark. *Eurydema pulchrigena* (Fig. 21) was described by KIRITSHENKO (1925) from Tajikistan and Uzbekistan; additional data about this species and its habitus figure were provided by KIRITSHENKO (1952). RIDER (2006) also listed it from Afghanistan and Iran. The records from Afghanistan originated from HOBERLANDT (1984), however, they are based on misidentified specimens of *E. ornata* (2 ♂♂ from Bale Kuran) and *E. maracandica* (1 ♀ from Bamian), and *E. pulchrigena* must thus be removed from the list of the fauna of Afghanistan. The Iranian records by HOBERLANDT (1997) are also based on misidentification, belonging to *E. ornata*, *E. blanda* (Fig. 13) or *E. maracandica* (see above). However, LINNAVUORI (2008) published records of *E. pulchrigena* from the Iranian provinces of Gilan and Tehran.

Acknowledgements

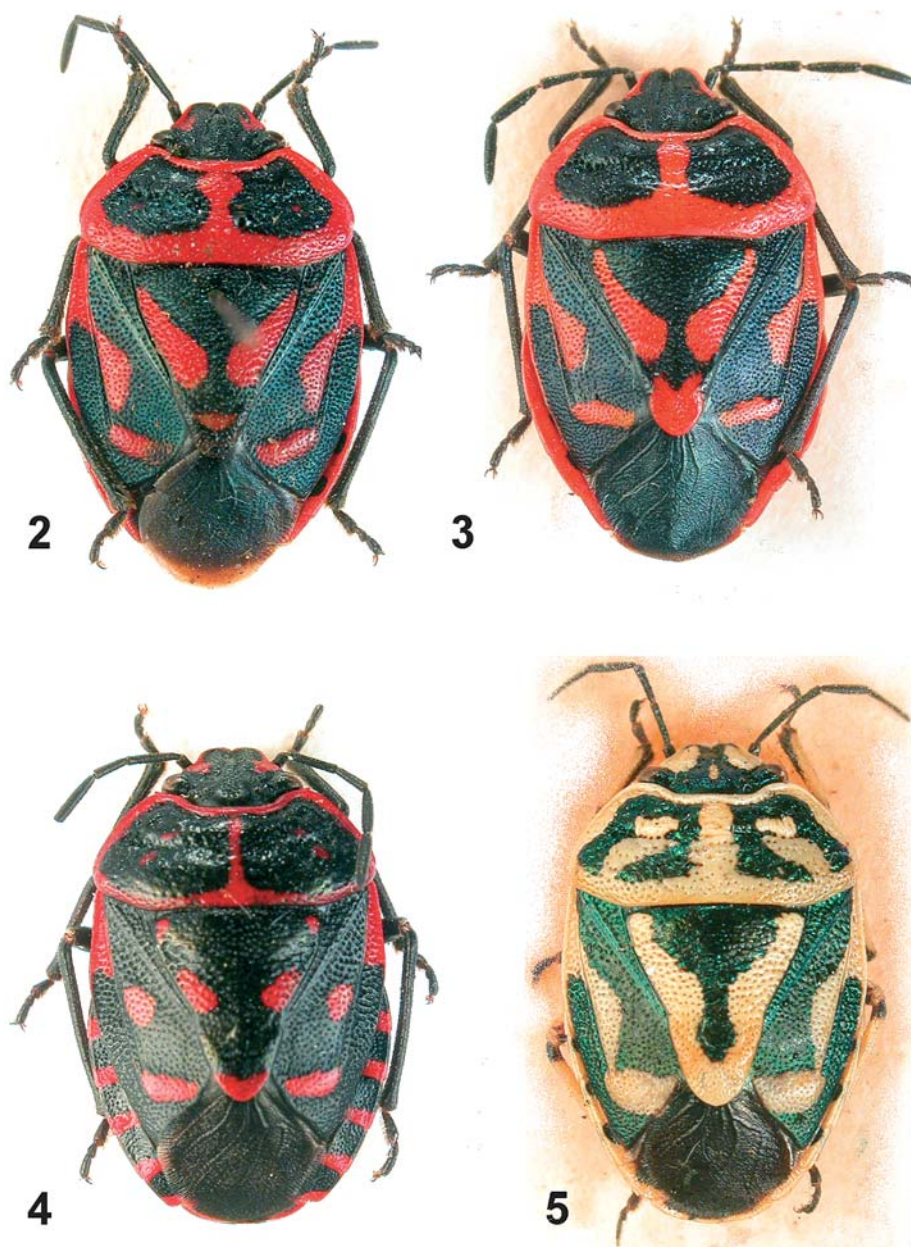
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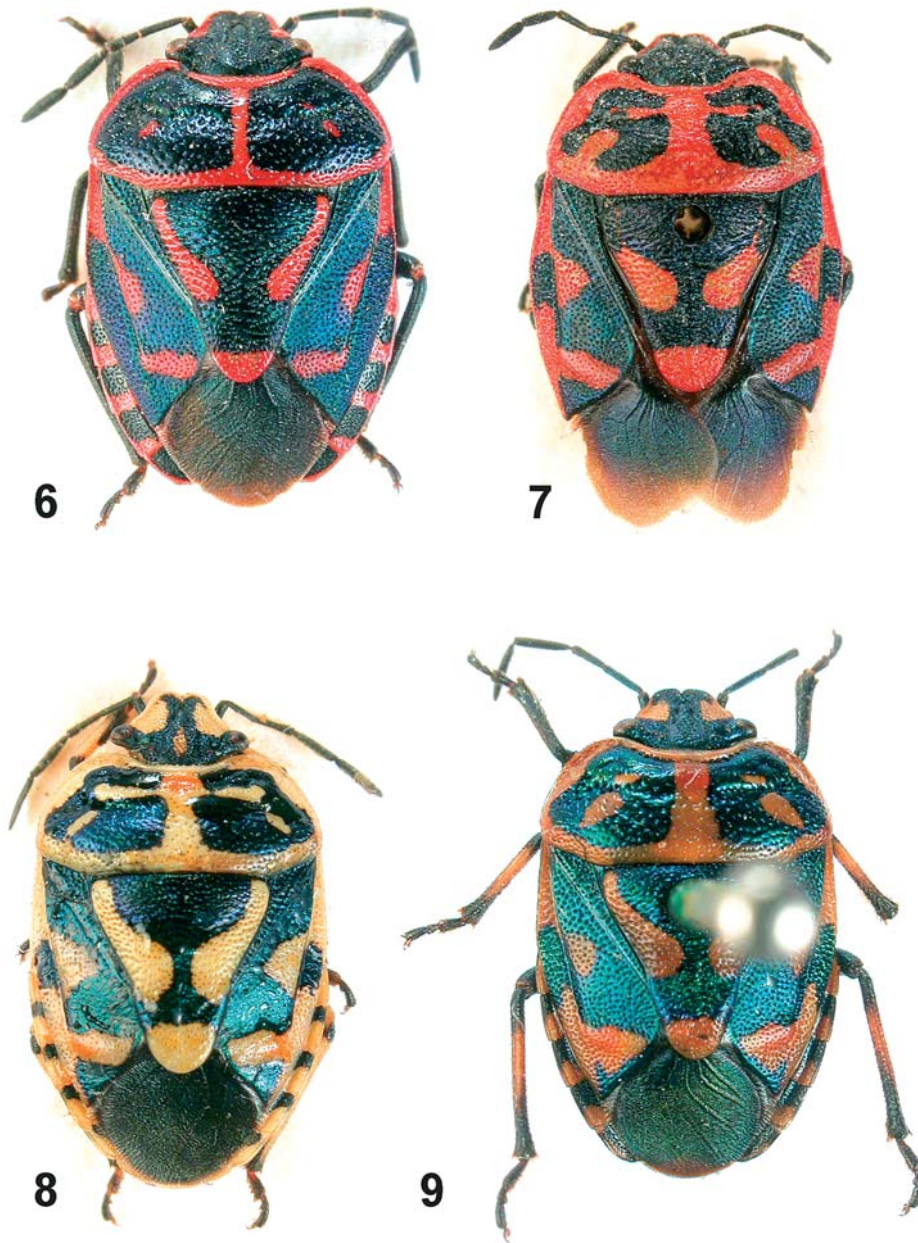
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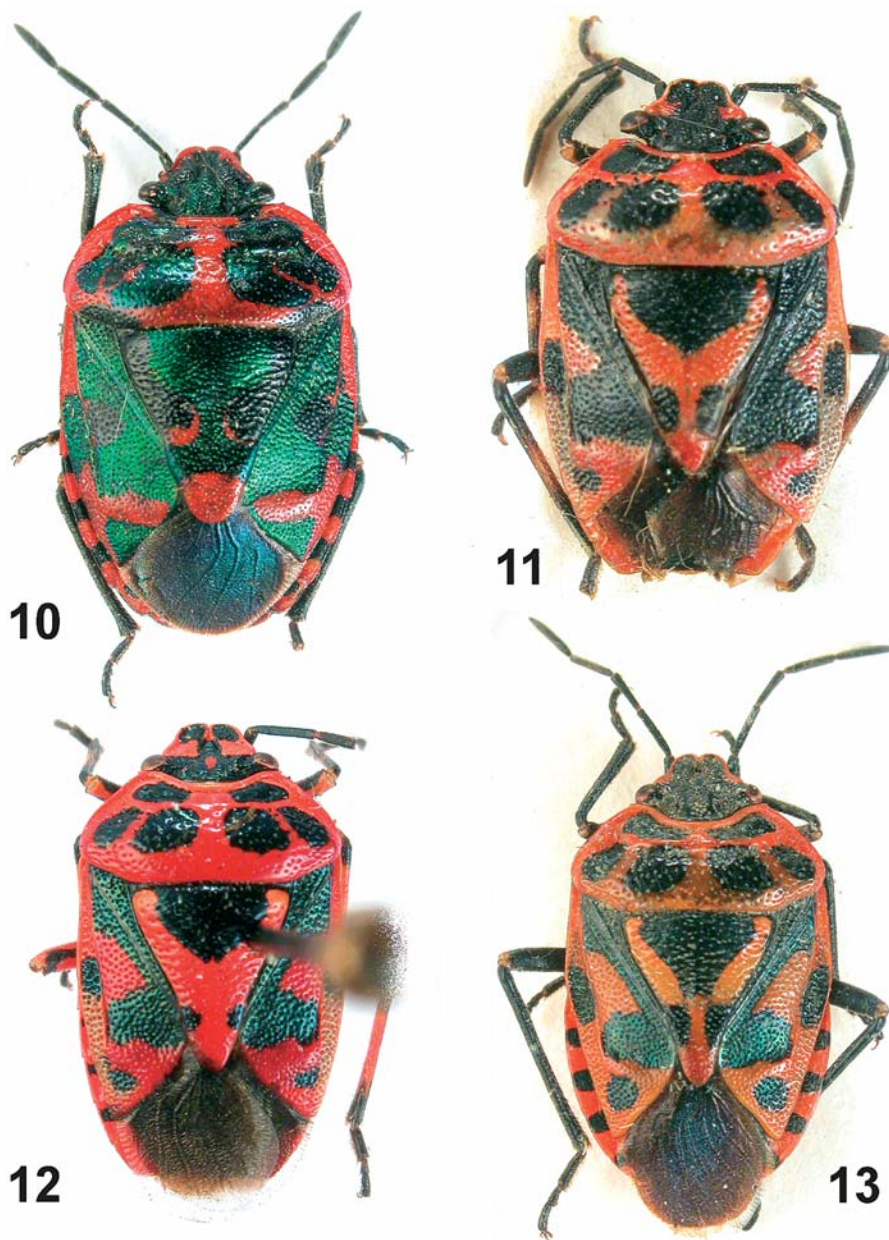
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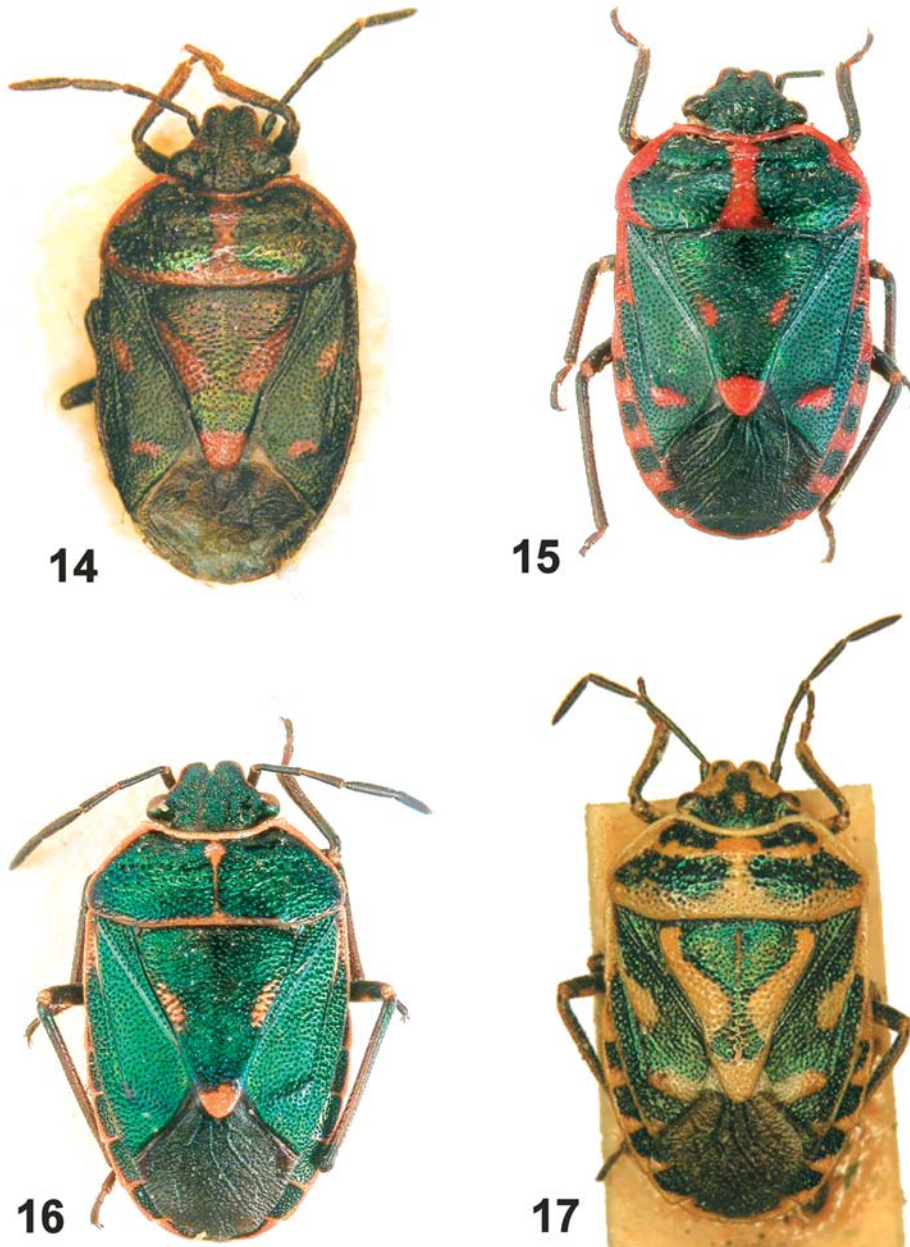
Figs 2–5. Habitus of *Eurydema fieberi* (Fieber, 1837). 2 – ♀ from Moravia: Pavlovské kopce hills (J. L. Stehlík det., NMPC; 7.7 mm); 3 – ♀ from Slovakia: Belianské Tatry: Bujačí (J. L. Stehlík det. as *E. rotundicollis*, MMBC; 8.3 mm); 4 – ♀ of the form *E. gussakovskii* Kiritshenko, 1952 from Tajikistan: Javroz (NMPC; 8.0 mm); 5 – ♀ from Turkey: Ankara – Baraj (L. Hoberlandt det. as *E. blanda* f. *albicans*, NMPC; 7.6 mm). Photo: L. Dembický.



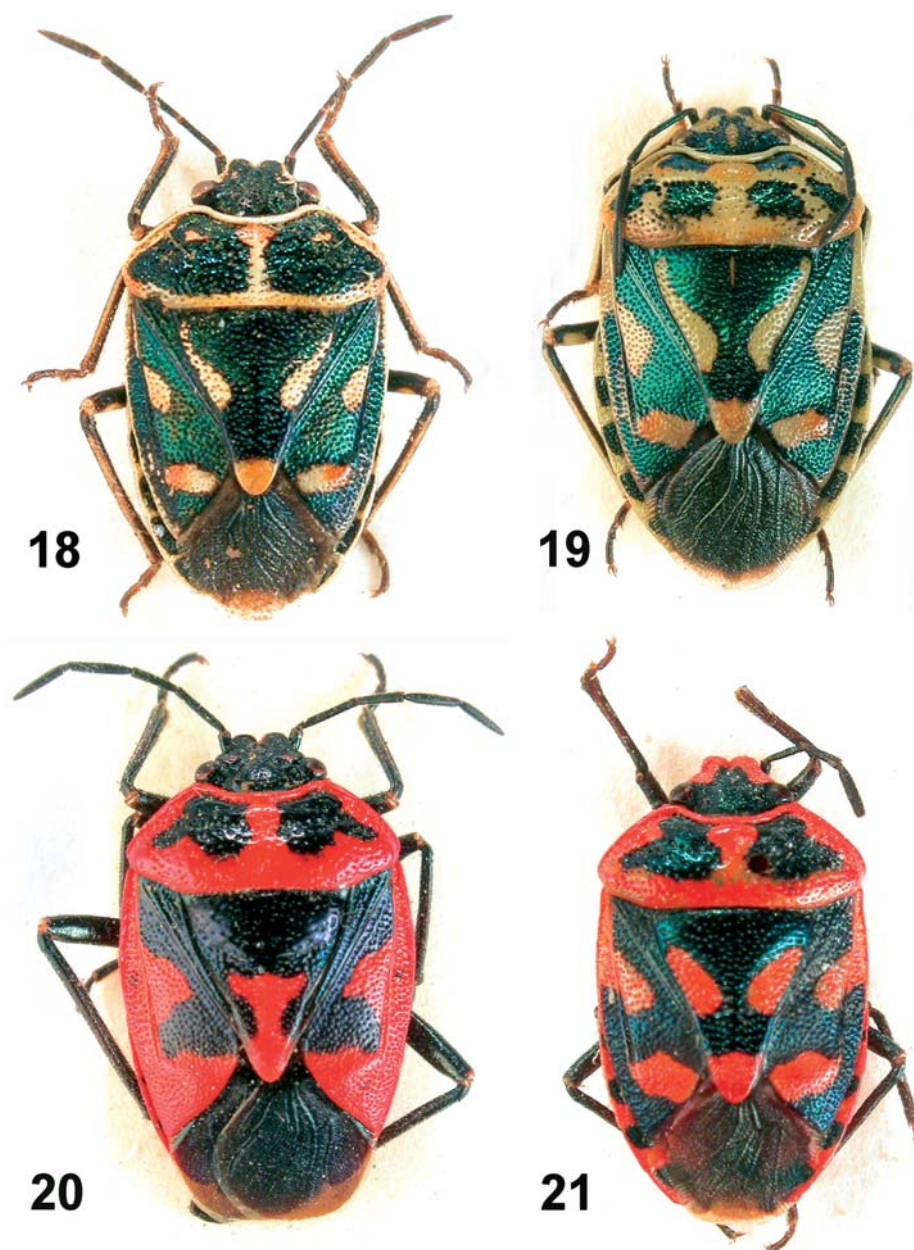
Figs 6–9. Habitus. 6 – *Eurydema rotundicollis* (Dohrn, 1860), ♂ from Spain: Escorial (NMPC; 7.4 mm). 7–9 – *E. laticollis* Horváth, 1907 *sensu* HOBERLANDT (1959, 1997): 7 – ♀ from Iran: Kermanshah: Mehran (L. Hoberlandt det., NMPC; 9.3 mm); 8 – ♀ from Iran: Qazvin: 8 km NE Ziaran (L. Hoberlandt det., NMPC; 8.5 mm); 9 – ♂ from Turkey: Diyarbakir province: Şilbe (L. Hoberlandt det. as *E. laticollis* var. *hypoxanthum*, NMPC; 7.6 mm). Photo: L. Dembický.



Figs 10–13. Habitus. 10 – *Eurydema* cf. *laticollis* Horváth, 1907, ♀ from Iran: Qazvin: Hasan Sabbah Castle (NMPC; 8.9 mm). 11–12 – *E. ornata* (Linnaeus, 1758): 11 – ♂ from Afghanistan: Bala Kuran (L. Hoberlandt det. as *E. pulchrigena*, NMPC; 7.2 mm); 12 – ♂ from Iran: Tehran: Gholhak (L. Hoberlandt det. as *E. laticollis*, NMPC; 7.8 mm). 13 – *E. blanda* Horváth, 1903, ♂ from Iran: Mazandaran: 15 km SW Chalus (L. Hoberlandt det. as *E. pulchrigena*, NMPC; 8.4 mm). Photo: L. Dembický.



Figs 14–17. Habitus. 14–15. *Eurydema persica* Lindberg, 1938: 14 – ♂ from Iran: Fars: Shiraz (L. Hoberlandt det., ‘cum typo comparavit’, NMPC; 6.7 mm); 15 – ♀ from Iran: Tehran: Evin (L. Hoberlandt det., ‘cum typo comparavit’, NMPC; 6.6 mm). 16–17 – *E. putoni* (Jakovlev, 1877): 16 – ♀ of the form *E. formosa* Puton, 1895 from Iran: Tehran: Kuhhayeh Tochal (L. Hoberlandt det. as *E. formosa*, NMPC; 6.5 mm); ♀ (paralectotype) of *E. putoni* from North Iran (MZHF; 6.6 mm). Photo: L. Dembický (15, 16) and P. Kment (14, 17).



Figs 18–21. Habitus. 18–19. *Eurydema putoni* (Jakovlev, 1877): 18 – ♂ from Iran: Khorasan: 20 km E Sabzevar (L. Hoberlandt det., NMPC; 5.6 mm); 19 – ♀ from Iran: Kerman: Ferdows-e Esfandaqeh (L. Hoberlandt det. as *E. laticollis*, NMPC; 7.9 mm). 20 – *E. spectabilis* Horváth, 1882, ♂ from Turkey: Abaçılar (L. Hoberlandt det. as *E. mrugowskyi*, NMPC; 9.0 mm). 21 – *E. pulchrigena* Kiritshenko, 1925, ♂ from Tajikistan: Isfara (A. N. Kiritshenko det., MZHF; 6.9 mm). Photo: L. Dembický.