

On the occurrence of the stink bug *Eysarcoris ventralis* (Hemiptera: Heteroptera: Pentatomidae) in Slovakia, with notes on its distribution in neighbouring countries**O rozšírení bzdochy *Eysarcoris ventralis* (Hemiptera: Heteroptera: Pentatomidae) na Slovensku, s poznámkami k rozšíreniu v susedných krajinách**Vladimír HEMALA¹⁾, Jozef CUNEV²⁾ & Valerián FRANČ³⁾

¹⁾ Department of Botany and Zoology, Faculty of Science, Masaryk University, Kotlářská 2, CZ-611 37 Brno, Czech Republic; e-mail: vladimir.hemala@gmail.com

²⁾ Piešťanská 14, SK-949 01 Nitra, Slovakia; e-mail: dodocunev@stonline.sk

³⁾ Department of Biology and Ecology, Faculty of Natural Sciences, Matej Bel University, Tajovského 40, SK-974 01 Banská Bystrica, Slovakia; e-mail: valerian.franc@umb.sk

Hemiptera, Heteroptera, Pentatomidae, *Eysarcoris ventralis*, faunistics, Slovakia

Abstract: *Eysarcoris ventralis* (Westwood, 1837) (Hemiptera: Heteroptera: Pentatomidae: Pentatominae: Eysarcorini) is a rare species of true bug in Slovakia, where according to available literature, it has only been recorded on ten occasions. Here we add one old unpublished record, and 18 new records from 14 localities in Slovakia. All records are reviewed and mapped, and the distribution of *E. ventralis* in Slovakia and neighbouring countries is discussed. Records of *E. ventralis* from the Czech Republic are shown to be erroneous, and the species is removed from the list of the Czech fauna.

INTRODUCTION

Eysarcoris ventralis (Westwood, 1837) (Hemiptera: Heteroptera: Pentatomidae: Pentatominae: Eysarcorini; Figs 1–2) is a widespread species in tropical and subtropical regions of Africa, Asia, and Europe (see e.g. Linnavuori 1982, Rider 2006). The northern distribution limit of the species extends to France (Brittany), Germany (Thuringia), Austria, Slovakia, Poland, Belarus, Ukraine, South European Russia, Central Asia (Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan), Northern and North-western China, Korea and Japan (Rider 2006). Beardsley (1979) recorded *E. ventralis* as a new introduced species and potential pest in Hawaii (discovered in 1972). It was also listed from Hawaii by Rider (2006) without further comments. The presence of *E. ventralis* in Hawaii is most probably a result of human introduction. The species may be harmful to cultivated plants (wheat, rice, cotton) in subtropical and tropical areas (Wachmann et al. 2008). Rabitsch (2007) mentioned that this species can be regularly transported with these plants into various countries. The likelihood of artificial transport of this species is shown by Macan (1937), who reported *E. ventralis* (as *E. inconspicuus*) on board a ship in Karachi harbour. However, a report of *E. ventralis* among the food of nestlings of the pallid swift *Apus pallidus* (Shelley, 1870), an insectivorous bird which feeds exclusively on flying insects (Simov & Antonov 2006), confirms that it is an excellent flier, and thus able to travel considerable distances without human intervention.

Eysarcoris ventralis hibernates as an adult in tufts of grass or under fallen leaves, in the Transcarpathian Ukraine preferring forest and submontane habitats up to 1 000 m a.s.l.



Figs 1–2. Habitus of *Eysarcoris ventralis* (Westwood, 1837). 1 – Košice, Námestie Sv. Alžbety square, ♂; 2 – Banská Bystrica, Kollárova street, ♀. (Photo: L. Dembický).

Obr. 1–2. Bzdochá *Eysarcoris ventralis* (Westwood, 1837). 1 – Košice, Námestie Sv. Alžbety, ♂; 2 – Banská Bystrica, Kollárova ulica, ♀. (Foto: L. Dembický).

(Roshko 1953, Putshkov 1961), in Africa cultivated biotopes and meadows (Linnavuori 1982). According to Putshkov (1961) the species can be characterised as eurytopic in Ukraine. In Crimea, copulation and oviposition starts at the end of May; the new generation of adults has been observed in the middle of July (Putshkov 1961, Derjanschi & Péricart 2005). Adults live especially on *Poa bulbosa* and *Glyceria aquatica* (both Poaceae) but also on Brassicaceae and other plants, e.g. *Trifolium* spp., *Medicago* spp. (both Fabaceae), *Scirpus holoschoenus* (Cyperaceae), *Oenanthe* spp. (Apiaceae), *Calendula persica* (Asteraceae) and *Juncus acutus* (Juncaceae) (Stichel 1955–1962, Putshkov 1961, Derjanschi & Péricart 2005). In the Mediterranean region, it is found on Poaceae and Cyperaceae (Wachmann et al. 2008). In Central Europe the species also hibernates in the adult stage, and active adults can be found very soon after hibernation (in March) (Putshkov 1961, Stehlík & Vavřínová 1994, Derjanschi & Péricart 2005). Unfortunately there is no information on the bionomics of the species in Slovakia so far (Stehlík & Vavřínová 1994).

Eysarcoris ventralis is a rare species in Slovakia (Stehlík & Vavřínová 1994). The oldest known record of this species was published under the name *Eusarcoris helferi* Fieber, 1861 by Horváth (1870) from the locality Torna (= Turňa nad Bodvou), based on a single female found under dry leaves in a vineyard. Halászfy (1958) reported one fifth instar larva as *Stollia inconspicuus* (Herrich-Schaeffer, 1844) from the locality Nagymihály (= Michalovce) in 1874

collected by G. Horváth. Sabransky (1891) listed this species, as *Eusarcoris pusillus* A. Costa, 1847 (non Herrich-Schaeffer), from the area of Pressburg (= Bratislava). Ortway (1902) listed this species under the same synonym, considering it as southern species with a scattered distribution in the former Greater Hungary. Horváth (1897) cited *Eusarcoris inconspicuus* (Herrich-Schaeffer, 1844) from the former Greater Hungary, without any exact record but with the note 'per totum regnum haud rarus' [= throughout the entire kingdom, not rare]. Balthasar (1937) merely repeated the record of Sabransky (1891) and Horváth's (1897) statement, admitting that he himself did not know of any other specimen from Slovakia. Štepanovičová-Hentzová (1956) reported this species as *Stollia (Eusarcoris) inconspicuus* Herrich-Schaeffer, 1844 from the locality Bajč (near Nové Zámky) in very weed-infested part of a tobacco field and she assumed that it lives on weed and occurs on tobacco plants only occasionally. Stehlík & Vavřínová (1994) have already used the name *Eysarcoris ventralis* and included six Slovak localities, which are reviewed below. In this paper new records of this species from Slovakia are presented and discussed. A detailed synonymy of *E. ventralis* was provided by Rider (2006).

REVIEW OF THE RECORDS FROM SLOVAKIA

All the available records of *Eysarcoris ventralis* are reviewed below. For a map of the distribution see Fig. 3.

- 1) Torna (= Turňa nad Bodvou) (7391–7491), under dry leaves in a vineyard, 17.iii.[no year], 1 ♀ (Horváth 1870, as *Eusarcoris helferi*).
- 2) Nagymihály (= Michalovce) (7297), 26.ix.1874, 1 larva (instar 5), G. Horváth lgt. (Halászfy 1958, as *Stollia inconspicuus*).
- 3) Pressburg (= Bratislava) (7768, 7868–7869, 7968), area of the town (Sabransky 1891, as *Eusarcoris pusillus*).
- 4) Trenčín (7074–7174), no more details, 1 ♀, Čepelák lgt., P. Kment det. (coll. National Museum, Prague) (unpubl.). [Rudolf Čepelák senior (1886–1972) was a teacher in Lutovce near Bánovce nad Bebravou (1918–1923) and Zlatovce near Trenčín (1923–1939) to which period the record probably dates back (Koleška 1979)].
- 5) Košice (7293–7393), 200–300 m a.s.l., 1.vi.1952, 3 ♀♀, M. Kocourek lgt. (coll. J. L. Stehlík, Moravian Museum, Brno) (Stehlík & Vavřínová 1994).
- 6) Bajč (8075), in very weed-infested part of tobacco field, 28.viii.1955 and 19.ix.1955 (Štepanovičová-Hentzová 1956, as *Stollia (Eusarcoris) inconspicuus*).
- 7) Strážske (7196–7197), 130–140 m a.s.l., 1.iii.1959, 1 ♀, V. Krejčí lgt. (coll. J. L. Stehlík, Moravian Museum, Brno) (Stehlík & Vavřínová 1994).
- 8) Chľaba (8178), 120–200 m a.s.l., 11.v.1960, 1 ♀, O. Štepanovičová lgt. (coll. J. L. Stehlík, Moravian Museum, Brno) (Stehlík & Vavřínová 1994).
- 9) Borša (7696), 200 m a.s.l., 23.iv.1961, 1 ♀, V. Krejčí lgt. (coll. J. L. Stehlík, Moravian Museum, Brno) (Stehlík & Vavřínová 1994).
- 10) Tešmák, „Vysoká“ (7979), 200–283 m a.s.l., 23.v.1961, 1 ♀, M. Kocourek lgt. (coll. J. L. Stehlík, Moravian Museum, Brno) (Stehlík & Vavřínová 1994).
- 11) Kamenica nad Hronom (8178), 120–313 m a.s.l., 11.iv.1962, 1 ♂, K. Poláček lgt. (coll. J. L. Stehlík, Moravian Museum, Brno) (Stehlík & Vavřínová 1994).
- 12) Koliňany, Koliňanský vrch hill (48°21'53.47"N, 18°10'51.42"E, 7675), 289 m a.s.l., 10.iv.2008, 1 ♀, 22.v.2010, 1 ♂ 2 ♀♀, 19.viii.2011, 1 ♀, all J. Cunev lgt. et det. (coll. J. Cunev, Nitra).

- 13) Uhrovské Podhradie, surroundings (48°45'42.07"N, 18°23'05.91"E, 7276a), 353 m a.s.l., 8.v.2008, 1 ♂, J. Cunev lgt. et det., P. Kment revid. (coll. J. Cunev, Nitra).
- 14) Štúrovo, Modrý vrch hill (47°49'49.70"N, 18°38'12.12"E, 8278), 199 m a.s.l., 30.viii.2008, 1 ♂, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 15) Alekšince, ponds (48°22'09.05"N, 17°57'10.82"E, 7673), 29.ix.2008, 1 ♂, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 16) Horné Lefantovce, surroundings (48°25'35.09"N, 18°10'03.46"E, 7574), 248 m a.s.l., 11.x.2008, 1 ♂, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 17) Cabaj-Čápor, surroundings (48°15'33.51"N, 18°01'59.88"E, 7774), 206 m a.s.l., 25.iv.2010, 1 ♀, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 18) Nitra-Dražovce, surroundings (48°21'20.79"N, 18°03'22.86"E, 7674), 185 m a.s.l., 12.v.2011, 1 ♀, 6.vi.2013, 1 ♂, 8.x.2013, 1 ♀, all J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 19) Štitáre, surroundings (48°21'16.35"N, 18°09'59.61"E, 7674), 291 m a.s.l., 23.v.2011, 1 ♂, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 20) Košice, Námestie Sv. Alžbety square (48°43'23.23"N, 21°15'23.32"E, 7293), on the wall of town house, 15.x.2012, 1 ♂, V. Hemala lgt. et det. (coll. V. Hemala, Jalovec).
- 21) Nitra-Borina (48°08'16.55"N, 18°04'11.90"E, 7674), 178 m a.s.l., 25.iv.2013, 1 ♂, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 22) Nitra-Dražovce, Lupka National Nature Reserve (48°20'19.15"N, 18°04'34.57"E, 7674), 239 m a.s.l., 29.iv.2013, 1 ♂, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 23) Ábelová, Bánov laz (48°25'56.31"N, 19°23'05.91"E, 7582), 664 m a.s.l., 2 ♀♀, 21.ix.2013. J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 24) Ladice, surroundings (48°24'07.36"N, 18°15'10.84"E, 7575), 235 m a.s.l., 30.ix.2013, 1 ♂, J. Cunev lgt. et det. (coll. J. Cunev, Nitra).
- 25) Banská Bystrica, Kollárova street (48°44'22.36"N, 19°8'58.67"E, 7280), on the wall, 15.x.2013, 1 ♀, V. Franc & V. Hemala lgt., V. Hemala det., P. Kment revid. (coll. V. Hemala, Jalovec).

DISCUSSION

To consider the northern distributional limit of the species in Europe, in Germany it is known only from Thuringia based on a pre-1950 record (see Hoffmann & Melber 2003). In Austria the species is known from Burgenland, Lower Austria, Styria and Tirol (Rabitsch 2003, 2007, Frieß & Brandner 2014), the nearest known locality to Slovakia being Schranawand bei Ebreichsdorf (Lower Austria) (Rabitsch 2003). The species is widespread though not frequent in Hungary (Kondorosy & Harmat 1997), being found e.g. in the Bükk Mountains near the Slovak border (Földessy 1998, 1999). In Poland, Lis (1987) presented the first record of *E. ventralis* from Bytom in Upper Silesia based on a single specimen collected on 25.x.1937, but he mentioned that it was probably introduced from southern countries with grapes (see also Lis 1990). However, Taszakowski (2012) presented the first Polish record of *E. ventralis* from a natural habitat, found on 25.viii.2011 in Blechnarka (East Beskids, South-eastern Poland, about 600 m a.s.l.) 74 years after the previous one. In Ukraine, the nearest known locality of *E. ventralis* to Slovakia is Uzhgorod in the Transcarpathian Ukraine (Roshko 1953). Halászfy (1958) also reported this species from locality Gát (= Gat'), situated in the Transcarpathian Ukraine near the Hungarian border, on 20.vii.1930. *Eysarcoris ventralis* is

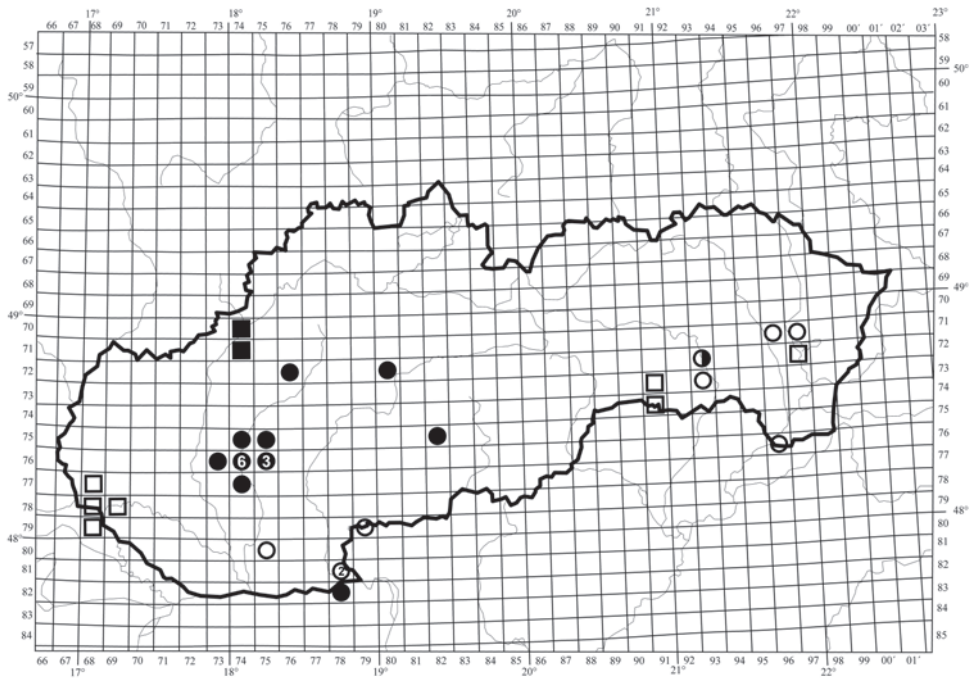


Fig. 3. Distribution of *Eysarcoris ventralis* (Westwood, 1837) in Slovakia. Empty squares – records before 1891, filled squares – old records without known date (only unpublished record from Trenčín probably from 1923–1939), empty circles – records from 1952–1962, filled circles – recent records from 2008–2013. The half-filled circle refers to two records in Košice – one from 1952 and one recent record from 2012. Numbers in empty and filled circles refer to number of records in the faunistic square; circles without numbers refer to single records.

Obr. 3. Rozšírenie *Eysarcoris ventralis* (Westwood, 1837) na Slovensku. Prázdne štvorce – údaje pred rokom 1891, plné štvorce – staré údaje bez známeho dátumu (nepublikovaný údaj z Trenčína pravdepodobne z rokov 1923–1939), prázdne krúžky – údaje z obdobia medzi rokmi 1952–1962, plné krúžky – súčasné údaje z rokov 2008–2013. Poloplnný krúžok označuje dva údaje z Košíc – jeden z roku 1952 a druhý súčasný z roku 2012. Číslice v prázdnych aj plných krúžkoch označujú počet údajov v danom faunistickom štvorci; krúžky bez číslice predstavujú len jediný údaj.

also known from other Ukrainian provinces: Bukovina, Khmelnytsky, Ternopol', Kirovograd, Kherson and Crimea (Putshkov & Putshkov 1996). There are also old records of this species from Belarus (see Lukashuk 1997 for a review), which represent the northernmost records of *E. ventralis* in Europe.

Only 30 records of *E. ventralis* originating from 24 localities are known from Slovakia so far. These records are scattered through several parts of the country (see Fig. 3). The northernmost known localities of *E. ventralis* in Slovakia are: Trenčín for western part of Slovakia, Banská Bystrica for central part of Slovakia and Strážske for eastern part of Slovakia. Besides the ten previously published records from the period 1952–1962, the 18 new records from Slovakia collected in the years 2008–2013 are separated from the last record by a gap of 46 years. In Košice the species was recaptured 60 years after the last local record. Similarly, in Poland, this species is known from only two records with a 74-year gap (Lis 1987, Tazsakowski 2012). It

seems that the population of this species in Slovakia decreased to great extent or even became extinct after 1962, as it was not collected in spite of the intensive systematic investigations of Heteroptera in the following decades (see Stehlík & Vavřínová 1991). It seems that the population subsequently considerably increased, or the species returned to the Slovak fauna as a result of fluctuation of the northern boundary of its distributional range, moving north because of the current warmer period (see e.g. Peltanová et al. 2012), a phenomenon referred to as ‘mediterraneanization’ of the Central European fauna (Rabitsch 2008). Some similar examples of species returning to the Moravian fauna include for example: *Peirates hybridus* (Scopoli, 1763) (Reduviidae) rediscovered after 50 years (see Kment & Bryja 2001, Kment et al. 2013), *Tropidothorax leucopterus* (Goeze, 1778) (Lygaeidae) after a century (see Kment et al. 2003, Kment et al. 2009a), *Eurydema fieberi* Fieber, 1837 (Pentatomidae) after 61 years (see Kment et al. 2013) and *Pinthaeus sanguinipes* (Fabricius, 1781) (Pentatomidae) after 41 years (see Kment & Bryja 2001, Kment et al. 2009b). Similar examples in Slovakia include *Ancyrosoma leucogrammes* (Gmelin, 1789) (Pentatomidae) re-collected after 32 years (see Stehlík & Vavřínová 1993, Davidová-Vilímová 1996) and *Arocatus melanocephalus* (Fabricius, 1798) (Lygaeidae) after 53 years (see Štepanovičová 2003, Kment et al. 2013).

Derjanschi & Péricart (2005) and Rider (2006) listed *E. ventralis* from the Czech Republic. This is clearly a misinterpretation of Štys (1963) who listed it for the entire former Czechoslovakia. Štys (1963) presented the list of Pentatomidae from Czechoslovakia, but he does not give any record of *E. ventralis* from the Czech Republic. *Eysarcoris ventralis* was not mentioned from the Czech Republic by Hoberlandt (1977) or Stehlík (1985); Hoberlandt (1977) listed it only from Slovakia. *Eysarcoris ventralis* is not yet known from the Czech Republic, though in the case of its continued northward spread in Central Europe, it may be found there in the near future.

ACKNOWLEDGEMENTS. We would like to thank Petr Kment (National Museum, Prague) for providing literature and an unpublished record of *E. ventralis* from the collection in his care; to Petr Baňar (Moravian Museum, Brno) for possibility to study specimens of *E. ventralis* deposited in the Moravian Museum; to Luboš Dembický (Moravian Museum, Brno) for taking photographs of *E. ventralis*; to Ladislav Hamerlík (Faculty of Natural Sciences, Matej Bel University, Banská Bystrica) and Gabriel Pastorális (Komárno) for help with translations from Hungarian; and to Wolfgang Rabitsch (Wien, Austria) for critical review of the manuscript.

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SÚHRN

Eysarcoris ventralis (Westwood, 1837) (Hemiptera: Heteroptera: Pentatomidae: Pentatominae: Eysarcorini) predstavuje zácny druh bzdochy na území Slovenska. V dostupnej literatúre bolo dosiaľ publikovaných iba 10 nálezov z 10 lokalít. V článku uvádzame jeden starý dosiaľ nepublikovaný údaj a 18 nových nálezov zo 14 lokalít na území Slovenska, pričom tieto nové nálezy predstavujú potvrdenie výskytu druhu na území po 46 rokoch od posledného predtým známeho nálezu. Všetky publikované aj nepublikované údaje sú v článku uvedené, chronologicky zoradené a vyznačené na mape, pričom pripájame komentáre k rozšíreniu *E. ventralis* na Slovensku a v okolitých krajinách. V niektorej literatúre (Derjanschi & Péricart

2005, Rider 2006) uvádzaný výskyt *E. ventralis* v Českej republike je preukázateľne chybný; v zdrojoch, na ktoré sa spomenutí autori odvolávajú, sa žiadny údaj pre Českú republiku nenachádza a nie je známy ani žiadny iný dokladový exemplár, resp. nepublikovaný údaj; druh je preto odstránený zo zoznamu Českej fauny. Možnosť jeho nálezu v blízkej budúcnosti avšak nie je vylúčená.