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ADDITIONAL RECORDS OF *TROPIDOTHORAX LEUCOPTERUS* (GOEZE, 1778) (HEMIPTERA: HETEROPTERA: LYGAEIDAE) FOR SLOVAKIA

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V. Hemala, V. Franc, M. Fašanga: Doplňujúce nálezy behavky obilnej *Tropidothorax leucopterus* (Goeze, 1778) (Hemiptera: Heteroptera: Lygaeidae) na Slovensku

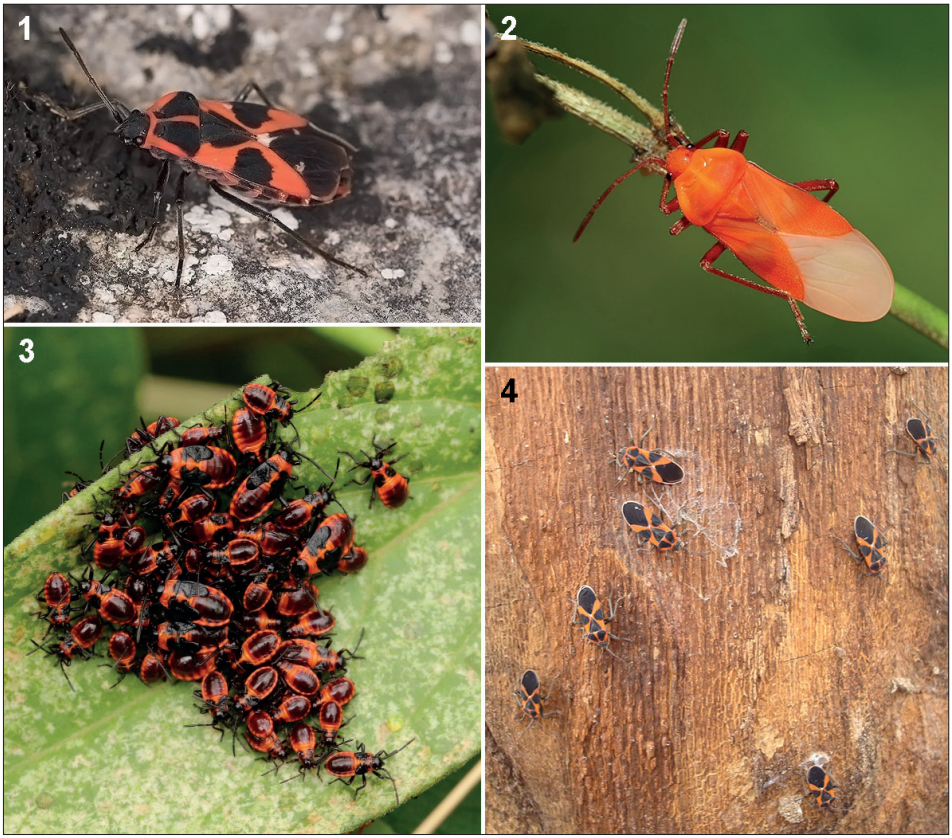
Abstrakt: Behavka obilná (*Tropidothorax leucopterus*) je aposematicky sfarbený druh bzdochy vyvíjajúci sa na rastlinách z podčeľade glejovkovité (Asclepiadoideae) čeľade zimozeleňovité (Apocynaceae); v našich podmienkach najmä na luskáči lekárskom (*Vincetoxicum hirundinaria*), ale aj na inváznej glejovke americkej (*Asclepias syriaca*). Doteraz bolo publikovaných iba niekoľko nálezov druhu z východného a južného Slovenska. V našej práci uvádzame niekoľko ďalších nálezov aj zo západnej, strednej a severnej časti krajiny. Tieto nálezy ukazujú, že behavka obilná je v súčasnosti na území Slovenska pravdepodobne oveľa rozšírenejšia než odpovedá doteraz publikovaným údajom. Niekoľko oblastí (Spiš, Slovenský Kras) pravdepodobne hrá úlohu refúgií s historicky nepretržitým výskytom behavky obilnej, z ktorých je možné šírenie druhu do ďalších lokalít. V súčasnosti zaznamenané šírenie druhu na nové lokality navyše môže súvisieť s klimatickými zmenami v posledných desaťročiach. Veľmi podobná je situácia druhu aj v susednej Českej republike, kde ešte donedávna bol druh považovaný za kriticky ohrozený. Vzhľadom na súčasný trend šírenia i znovuobjavovania sa po dlhom čase na historických lokalitách, a so zreteľom na prítomnosť inváznej glejovky americkej v slovenskej flóre, možno konštatovať, že behavka obilná v súčasnosti na území Slovenska nie je ohrozená.

Kľúčové slová: bzdochy, Heteroptera, behavkovité, Lygaeidae, behavka obilná, *Tropidothorax leucopterus*, Slovensko, faunistika

INTRODUCTION

Tropidothorax leucopterus (Goeze, 1778) is an aposematic species living on toxic plants from the subfamily Asclepiadoideae (family Apocynaceae *sensu lato*) (Péricart 1999; Wachmann et al. 2007; Endress & Bruyns 2000); in western and central Europe the species occurs on the native *Vincetoxicum hirundinaria* or alien *Asclepias syriaca* (see Kment et al. 2009). Development of large populations of *T. leucopterus* was observed also on *Clematis recta* (Ranunculaceae) in Ukraine (Putshkov 1969). Some adults were observed also feeding on some species from the families Lamiaceae, Gentianaceae and Rosaceae, but their development on these plants is improbable (see Kment et al. 2009). Detailed information about biology, host plants, ecology and distribution of *T. leucopterus* was reviewed by Péricart (1999) and Kment et al. (2009). A synonymy of the species was listed by Péricart (2001). The distribution *of T. leucopterus* in Slovakia was recently reviewed by Kment et al.

(2009) being known only from several localities in eastern and southern Slovakia (Zádiel, Spišské Vlachy, Dreveník hill near Spišské Podhradie, Spišský hrad castle, Čenkovská lesostep National Nature Reserve and Štúrovo). In this paper we provide and discuss some additional distributional records also from western, central and northern parts of Slovakia based on photographs as well as on collected specimens.



Figs 1–4. *Tropidothorax leucopterus* (Goeze, 1778). 1 – adult specimen from the eastern edge of Plešivecká planina plateau above Slavec village in Slovak Karst (Photo Martin Suvák). 2 – freshly moulted adult from the locality Častkov (Photo Pavel Vojtek). 3 – group of larvae from the locality Cerovina near Koválovec village (Photo Rudolf Cáfal). 4 – group of adults overwintering under the bark on the oak trunk near Veľký vrch Nature Reserve (Photo Michal Fašanga).

MATERIAL EXAMINED

The records are arranged chronologically. Codes of Central European mapping grid (Ehrendorfer & Hamann 1965) follow Novák (1989). The map showing these records see in Fig. 5. Photographs of some of the recorded specimens are shown on Figs 1–4. The following abbreviations are used below: ditto – at the same locality; spec. – unsexed adult; NR – Nature Reserve.

1) Slovak Karst, eastern edge of Plešivecká planina plateau above Slavec village (7488), ca. 600 m a.s.l., 1.vi.2004, 1 spec. photographed by M. Suvák (M. Suvák, pers. comm.); ditto, 7.vi.2005, 1 spec. photographed by M. Suvák (M. Suvák, pers. comm.); ditto, 15.vii.2005, several larvae photographed by M. Suvák, H. Günther det. (M. Suvák, pers. comm.); all V. Hemala revid.
2) Smižany – Maša (48°56′55.07″N 20°30′11.90″E, 7089), 1.ix.2009, 1 spec. photographed by B. Endel (B. Endel, pers. comm.); ditto, 25.viii.2010, group of adults photographed by B. Endel (B. Endel, pers. comm.); all V. Hemala revid.
3) Častkov (7270), 20.ix.2009, 1 ♀; ditto, 4.x.2009, 1 spec.; ditto, 22.viii.2010, 3 unsexed adults and several larvae; ditto, 22.viii.2010, 1 freshly moulted adult; ditto, 7.vi.2014, 1 spec.; ditto, 16.vii.2016, group of larvae; all photographed by P. Vojtek (P. Vojtek, pers. comm.); all V. Hemala revid.
4) Radošovce, environs (7269), 25.viii.2010, 1 unsexed adult and 11 larvae photographed by R. Cáfal (R. Cáfal, pers. comm.), V. Hemala revid.
5) Bytča – part „Kaplnka“, near Hričovský channel (Váh river) (6777), 1.ix.2011, 1 spec. photographed by M. Jánoš (M. Jánoš, pers. comm.), V. Hemala revid.
6) Tríbeč Mts., Klátova Nová Ves, small meadow near the way from Kozlica to Javorový vrch hill (48°31′17″N 18°17′57″E, 7475), 400–440 m a.s.l., 8.v.2013, 1 spec. photographed by T. Vrána, J. Máca det. (T. Vrána, pers. comm.), V. Hemala revid.
7) Abandoned quarry on the west side of Ostrá hora hill, between Spišský hrad castle and Dreveník hill (7090), 10.x.2014, 1 spec. on the flower of *Cyanus triumfettii* photographed by J. Droppa (J. Droppa, pers. comm.), V. Hemala revid.
8) Vicinity of Veľký vrch NR, surroundings of Oslany and Malé Krsteňany villages (48°38′54.93″N 18°26′46.30″E, 7376), 390 m a.s.l., 28.iii.2015, 3 ♂♂ 7 ♀♀, V. Franc & M. Fašanga lgt., V. Hemala det. (coll. V. Hemala); ditto, 24.iv.2016, 10 specimens on the oak trunk after overwintering photographed by M. Fašanga; ditto, 7.viii.2016, group of adults photographed by M. Fašanga; all V. Hemala revid.
9) Koválovec, Cerovina (48°47′58.01″N 17°19′36.29″E, 7269), 1.viii.2016, group of larvae photographed by R. Cáfal (R. Cáfal, pers. comm.); ditto, 4.viii.2016, large group of larvae, photographed by R. Cáfal (R. Cáfal, pers. comm.); all V. Hemala revid.

DISCUSSION

Horváth (1897) listed *Tropidothorax leucopterus* from the locality Szádellő [= Zádiel], which is the village situated in Slovak Karst. Pavel Štys reported that the species has never been collected again in Zádiel during his frequent visits in 1960s and 1970s (see Kment et al. 2009). Therefore, Martin Suvák's photography of *T. leucopterus* from the eastern edge of Plešivecká planina plateau above Slavec village (see Fig. 1) represents the confirmed occurrence of the species in Slovak Karst after more than 100 years. Kment et al. (2009) reviewed also other published localities in eastern Slovakia: Spišské Vlachy (Horváth 1897), Dreveník limestone hill near

Spišské Podhradie town (Stehlík 1955; Stehlík & Vavřínová 1996; Kment et al. 2009) and western slope of Spišský hrad castle hill (Kment et al. 2009); all localities are situated in Spiš region. Records of the species from localities Smižany-Maša and Ostrá hora hill (this paper) show that *T. leucopterus* could be more widespread in Spiš region and confirm the occurrence of the species in this region. The situation in Spiš region is similar as in Slovak Karst: one old record before 1897 from Spišské Vlachy and rediscovery after more than 50 years in several further localities in Spiš region. These records confirm the probable continuous spread in this both areas. Kment et al. (2009) mean that Spiš region can be one of the refugia with an important role as a sources of specimens for further spreading due to the climatic changes. It seems that Slovak Karst is probably also such refugium.

Remaining localities presented in Kment et al. (2003, 2009) are situated only in southern Slovakia near the Hungarian border and only with a relatively recent dating: Čenkovská lesostep National Nature Reserve near Mužla-Čenkov village from years 1972, 1974, 1983, 2001 and 2003 (Kment et al. 2009) and Štúrovo from year 2000 (Kment et al. 2003). Records from these localities are not surprisingly because of distribution of *T. leucopterus* over whole territory of Hungary (Horváth 1875, 1897; Soós 1973; Kondorosy 1999, 2011; Bákonyi et al. 2002; Harmat et al. 2007), where the several refugia for spreading of the species theoretically can be situated. Nevertheless, the species is considered rare in Hungary (Harmat et al. 2007; Dávid Rédei pers. comm. in Kment et al. 2009).

In these paper we presented some remarkable records of *T. leucopterus* from western (Častkov, Radošovce surroundings, Cerovina near Koválovec), central (vicinity of Veľký vrch Nature Reserve near Malé Krsteňany village, Klátova Nová Ves in Tríbeč Mts.) and northern Slovakia (Bytča town) as the first records of the species from these parts of Slovakia (see Fig. 5). These records show that the species is distributed in Slovakia more widely than suggested by the published data, which is probably a result of recent expansion and we expect findings the species also on further localities over the whole Slovakia in future.

In the Czech Republic, the situation is relatively similar. Only one old record from Brno in 1890's was known (Spitzner 1892) and *T. leucopterus* was considered extinct by Stehlík & Vavřínová (1997). However, the species has been rediscovered in southern Moravia since 1992 (Kment et al. 2003, 2009; Kment 2008; Malenovský et al. 2011; Kment & Baňař 2012). The re-appearance of the species in Moravia and its first records in central Bohemia seems to be results of the recent northward shift in its distribution range due to the climatic changes of the past decades (see Kment et al. 2009). Similar trends are also recorded in Germany in the Rhine Valley (Rieger 2000; Günther 2007; Rietschel 2007; Renker 2007a, b; Göttlinger & Hoffmann 2014), in Austria (see Eckelt et al. 2016) and recently also in Slovakia (this paper).

Despite of relatively rare occurrence of the species in Slovakia in the past, *T. leucopterus* was not included in the Red List of Slovak Heteroptera (see Štepanovičová & Bianchi 2001). Conversely, in the Czech Republic the species was

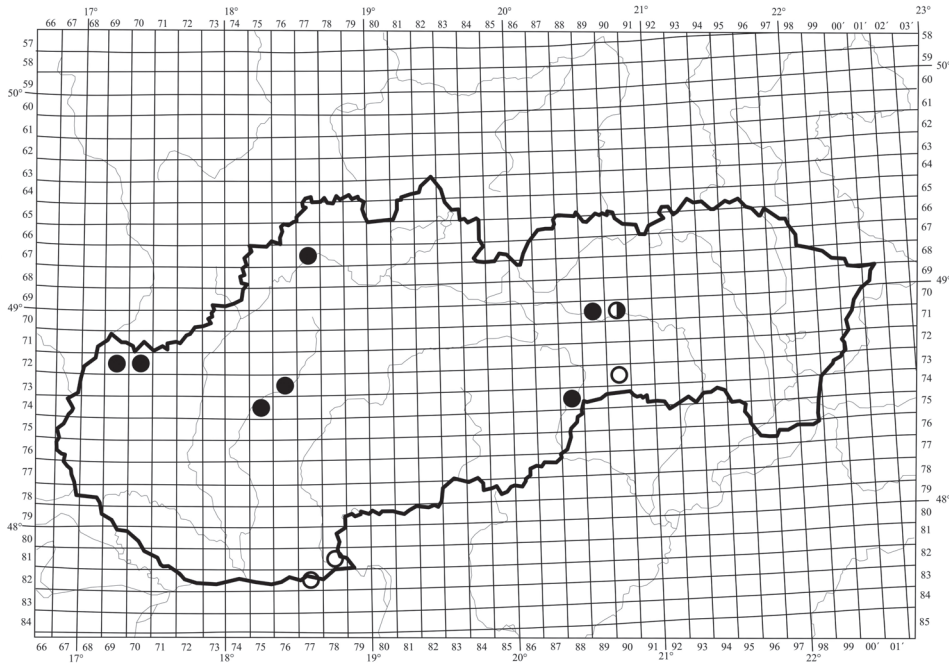


Fig. 5. Distribution of *Tropidothorax leucopterus* (Goeze, 1778) in Slovakia. Empty circles – records published in Horváth (1897), Stehlík (1955), Stehlík & Vavřínová (1996) and Kment et al. (2003, 2009); filled circles – new records listed in this paper. The half-filled circle refers to new record situated in the same faunistical square as the published record.

classified as critically endangered in the last edition of the Red List of Heteroptera of the Czech Republic (Kment & Vilímová 2006), but in its actualized edition *T. leucopterus* is excluded from the list (Kment et al. in prep.). The reasons for such decision are its quick re-appearance depending on warming of the climate and the occurrence of breeding population on ruderal habitats developing on an alien host plant *Asclepias syriaca* in southern Moravia (Kment et al. 2009; P. Kment, pers. comm.). Although we have no records of the species on *A. syriaca* in Slovakia, this invasive neophyte is also present in our country (see Medvecká et al. 2012) and development of *T. leucopterus* on it is probable. Our work shows that the situation of *T. leucopterus* in Slovakia is very similar as in the Czech Republic (new localities, re-appearance) and therefore there are no reasons for including the species in any future Red List of Slovakia.

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