

THE FIRST RECORD OF THE FAMILY OTOPHEIDOMENIDAE (ACARI, MESOSTIGMATA) IN SLOVAKIA

PETER FENĎA

Department of Zoology, Faculty of Natural Sciences, Comenius University,
Mlynská dolina B-1, 842 15 Bratislava, Slovakia [fenda@fns.uniba.sk]

Abstract: The occurrence of a *Hemipteroseius adleri* Costa, 1968 from Slovakia is reported for the first time.

Key words: Acari, Mesostigmata, Otopheidomenidae, *Hemipteroseius adleri*, Slovakia.

INTRODUCTION

Mites of the family Otopheidomenidae (Acari: Mesostigmata) are haemolymph-sucking ectoparasites of insects – members of the subfamily Otopheidomeninae are parasites of Lepidoptera; Treatiinae are parasites of Heteroptera, and Katydisiinae are parasites of Orthoptera, except for the genus *Eickwortius* Z.-Q. Zhang, 1995, found to be a parasite of termites (Isoptera) (ZHANG 1995, MENON et al. 2011). PRASAD (2011) summarised the classification of the family and the methods used for their study.

Hemipteroseius adleri Costa, 1968 was first described by COSTA (1968) on the basis of specimens found on the red firebug *Pyrrhocoris apterus* (Linnaeus, 1758) and another pyrrhocorid *Scantius aegyptius* (Linnaeus, 1758) collected in Israel in 1966. The first record of *H. adleri* in Europe published LEWANDOWSKI & SZAFRANEK (2005) from Poland (Warsaw). They collected and examined 1,462 adult individuals of *P. apterus* (from March to November 2002 and in winter 2003). Consequently, CHMIELEWSKI (2006a, b) reported *H. adleri* in another 7 regions in Poland (Puławy, Białowieża, Kazimierz Dolny, Krynica Morska, Sandomierz, Sejny, Siedlce – in November 2003, and March–May 2004) and in 3 sites in Lithuania (Kaunas, Kėdainiai, Vilnius) in August 2004. Finally, KONTSCHÁN & GYURIS (2010) found *H. adleri* in Hungary (Debrecen), two specimens collected in May 2010.

MATERIALS AND METHODS

The mites were collected under the hemielytrae of the red firebug, *Pyrrhocoris apterus* (Heteroptera, Pyrrhocoridae). The specimens were preserved in

75% alcohol and then processed to yield microslides using the chloralhydrate Swan's medium. Parasitological terminology is used in sense of MARGOLIS et al. (1982). Photographs were taken under a ZEISS Stemi 2000-C stereomicroscope.

RESULTS

Hemipteroseius adleri Costa, 1968

Material examined: W Slovakia, Myjavská pahorkatina Highlands; Stará Turá Town (N 48°45', E 17°41', altitude 290 m), 12.6.2011, old lime trees in the Catholic cemetery, under hemielytrae of *Pyrrhocoris apterus* (1 positive specimen) – 6 ♀♀, 3 protonymphs, 1 larva; loc. ibid, 12.6.2011, old lime trees in the railway station, under hemielytrae of *P. apterus* (9 positive specimens) – 63 ♀♀, 26 ♂♂, 87 deutonymphs, 52 protonymphs, 39 larvae, 12 eggs, all leg. et det. P. Fend'a. Material is deposited in the author's collection in Department of Zoology, Faculty of Natural Sciences, Comenius University, Bratislava.

DISCUSSION

Although there were published only 12 sites with occurrence of *Hemipteroseius adleri* in Europe, this species is probably distributed in all the regions where its host species occurs (KONTSCHÁN & GYURIS 2010). Short after description of species by COSTA (1968), SAMŠIŇÁK & DUSBÁBEK (1971) wrote about the family Otopheidomenidae in the identification key 'Klíč zvířeny ČSSR IV': "In Europe is so far found only one species *Hemipteroseius adleri* Costa, 1968, which constitute small colonies under the bases of hemielytrae of the red firebugs *Pyrrhocoris apterus*

L. This is parasite with evident relationship to the genus *Blattisocius* Keegan.” Unfortunately, there are no faunistic data about distribution of species in the book. Anyway, the first record of *H. adleri* in Europe was published right up until 21st century (LEWANDOWSKI & SZAFRANEK 2005).

All juvenile bugs were free of mites, and they are not counted. The mites (all developmental stages including eggs) were located on the abdomen of adults under the wings. The localization of mites near the wing base and on anterior abdominal tergites CHMIELEWSKI (2006b) called a kind of “acarinarium”. LEWANDOWSKI & SZAFRANEK (2005) found mites also on the ventral side of the thorax (in the course of changing the host). On heavy infested red firebugs were evident excrement spots (Figure 1). These bugs had abdomens dorsally depressed in comparison with bugs without mites. Also, the majority of mites had reddish-coloured intestines as a result of the red-coloured cerointegument of red firebugs. Very similar observations are known from Israel and Poland (COSTA 1968, CHMIELEWSKI 2006b). Various aspects of *Hemipteroseius adleri* under the hemielytrae of the red firebug *Pyrrhocoris apterus* are in Figure 2.

Prevalence (i.e. percentage of insects infested with mites) was different on my study sites – 6.2% (cemetery) and 60% (railway station). In Poland, LEWANDOWSKI & SZAFRANEK (2005) recorded 100% prevalence in early summer and then rapidly decrease in late June. CHMIELEWSKI (2006b) in spring months recorded 3.8–21.4% prevalence in Poland, and in August in Lithuania 2.8%. In Israel, the prevalence did not exceed 5% in *P. apterus*, but a prevalence over 50% was found in another pyrrhocorid, *Scantius aegyptius* (COSTA 1968).

In Slovakia, number of mites on one bug varied from one specimen up to 45. LEWANDOWSKI & SZAFRANEK (2005) recorded the maximum number of mites on one insect 124 individuals and 54 eggs, and CHMIELEWSKI (2006b) recorded 56 individuals as maximum. The abundance of parasites in Slovakia ranged from 0.6 (cemetery) to 18.6 individuals per host (railway station). In Poland, LEWANDOWSKI & SZAFRANEK (2005) recorded maximum in July (over eight individuals per host). CHMIELEWSKI (2006b) recorded range of parasite abundance between 3.8 and 5.5 mites per host. In Slovakia, the mean intensity was observed from 10 (cemetery) to 29.6 mites per insect, excluding eggs (railway station). In Poland, LEWANDOWSKI & SZAFRANEK (2005) observed the highest mean intensity in late August and early September (16 mites per insect, excluding eggs).

ACKNOWLEDGEMENTS

The study was supported by the Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Academy of Sciences [VEGA Grant No. 2/0012/11].

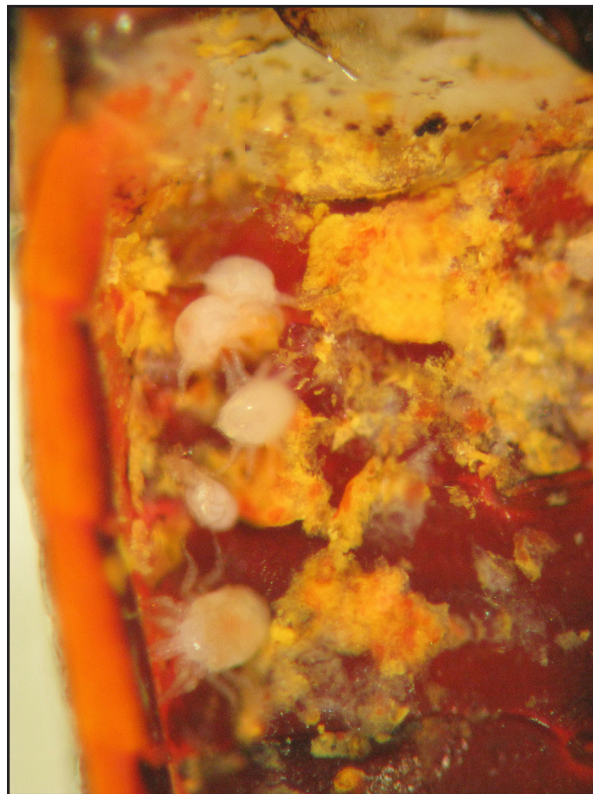


Figure 1. Mites *Hemipteroseius adleri* and their excrement spots under the hemielytrae of *Pyrrhocoris apterus*.

REFERENCES

- CHMIELEWSKI W, 2006a: New places to occurrence of *Hemipteroseius adleri* parasitic on *Pyrrhocoris apterus* in Europe. In: BRUIN, J (ed): Abstract Book. 12th International Congress of Acarology. 21–26 August 2006, Amsterdam, The Netherlands, p. 43.
- CHMIELEWSKI W, 2006b: Occurrence of *Hemipteroseius adleri* (Acari: Mesostigmata: Otopheidomenidae) infesting *Pyrrhocoris apterus* (Insecta: Heteroptera: Pyrrhocoridae) in Puławy and other localities in Poland and Lithuania. *Biological Letters*, 43 (2): 157–161.
- COSTA M, 1968: Notes on the genus *Hemipteroseius* Evans (Acari: Mesostigmata) with description of a new species from Israel. *Journal of Natural History*, 2: 1–15.
- KONTSCHÁN J & GYURIS E, 2010: *Hemipteroseius adleri* Costa, 1968 collected on red firebug: the first record of the family Otopheidomenidae Treat, 1955 (Acari: Mesostigmata) in Hungary. *Opuscula Zoologica Budapestinensis*, 41 (2): 241–243.
- LEWANDOWSKI M & SZAFRANEK P, 2005: Ectoparasitic mite *Hemipteroseius adleri* (Acari: Otopheidomenidae) on firebug *Pyrrhocoris apterus* (Heteroptera: Pyrrhocoridae). *Experimental & Applied Acarology*, 35 (3): 251–257.
- MARGOLIS L, ESCH GW, HOLMES JC, KURIS AM & SCHAD GA 1982: The use of ecological terms in parasitology (report of an ad hoc committee of the American Society of Parasitologists). *Journal of Parasitology*, 68 (1): 131–133.
- MENON P, JOSHI S, HUSSAIN M & RAMAMURTHY VV, 2011: A new species of *Hemipteroseius* (Acari: Otopheidome-

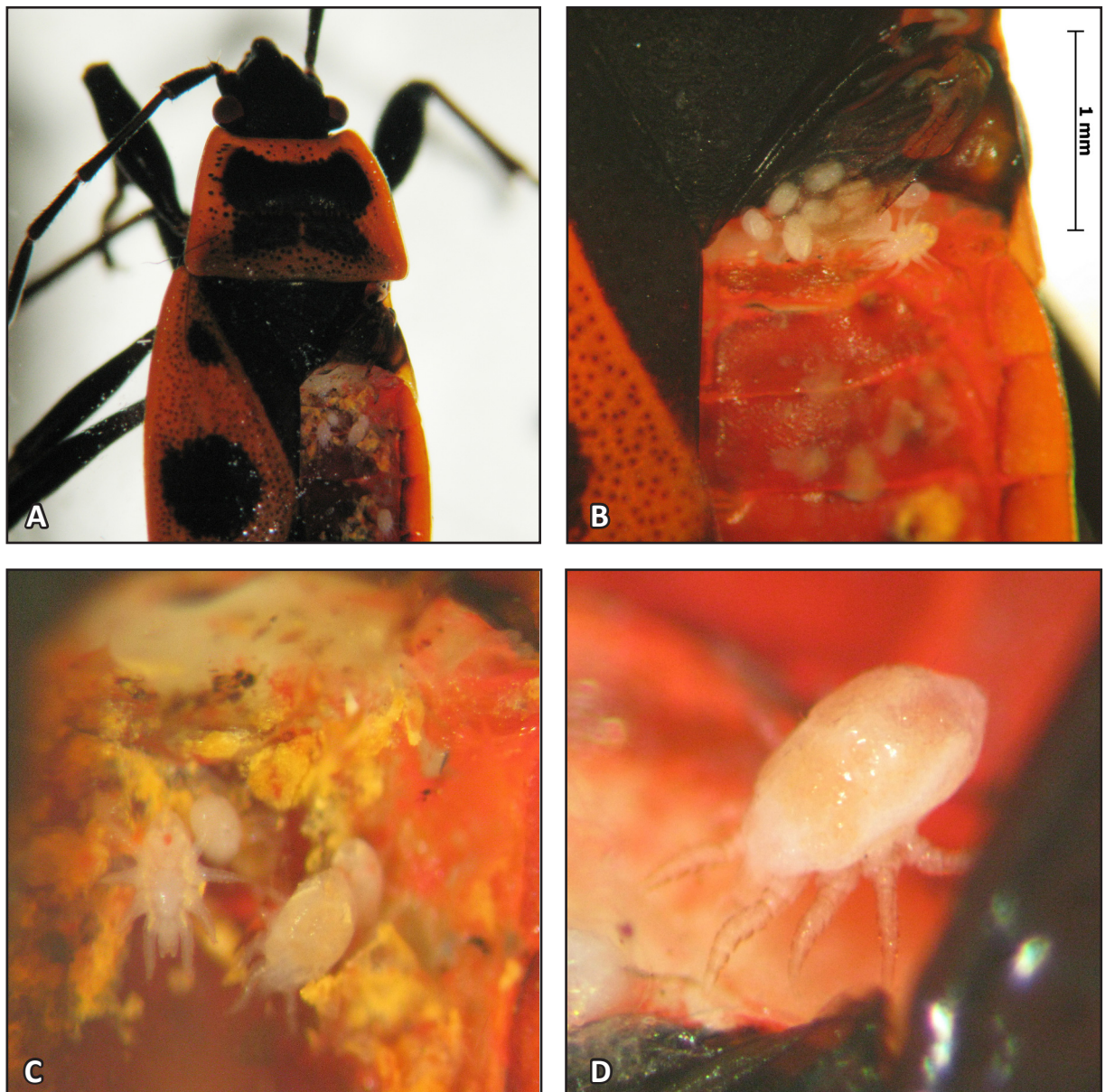


Figure 2. *Hemipteroseius adleri* under the hemelytrae of the red firebug *Pyrrhocoris apterus*: A – heavy infested host specimen (right hemelytra is removed), B – the wing base and anterior abdominal tergites (markedly dorsally depressed) of firebug reminiscent to “acarinarium”, C – colony of mites and their excrement spots, D – adult mite with reddish-coloured intestine as a result of the red-coloured cerointegument of the host.

nidae) parasitic on *Dysdercus* (Hemiptera: Pyrrhocoridae) in India. *Zootaxa*, 2800: 53–63.
 PRASAD V, 2011: Phytoseiidae and Otopheidomenidae (Acari: Mesostigmata) of the World: a Self Study Guide. *Indira Publishing House, West Bloomfield, Michigan*, 208 pp.
 SAMŠIŇÁK K & DUSBÁBEK F, 1971: Podřád čmelíkovci – Mesostigmata. In: DANIEL M & ČERNÝ V (eds): Klíč

zvířeny ČSSR IV. Želvušky, jazyčnatky, klepátkatci: štírci, sekáči, pavouci, roztoči. *Academia, nakladatelství Československé akademie věd, Praha*, pp. 313–352.
 ZHANG Z-Q, 1995: Review of the systematics and biology of the Otopheidomenidae (Acari: Mesostigmata) with a description of *Eickwortius* gen. n. from termite (Isoptera: Termitidae). *Systematic Entomology*, 20 (3): 239–246.

Submitted: 6.10.2011
 Accepted: 10.10.2011
 Published online: 17.10.2011