

## FIRST RECORD OF PHORESY OF PSEUDOSCORPION *LAMPROCHERNES CHYZERI* IN SLOVAKIA (PSEUDOSCORPIONES: CHERNETIDAE)

JANA CHRISTOPHORYOVÁ, EDUARD STLOUKAL & VIERA STLOUKALOVÁ

Department of Zoology, Faculty of Natural Sciences, Comenius University,  
Mlynská dolina B-1, 842 15 Bratislava, Slovakia [christophoryova@gmail.com]

**Abstract:** A phoresy of the pseudoscorpion, *Lamprochernes chyzeri* (Tömösváry, 1882), was observed on the locality Devínske jazero (garden estate in the vicinity of Bratislava) in Slovakia. One phoretic male was attached to the leg of the house fly *Musca domestica* Linnaeus, 1758.

**Key words:** pseudoscorpion, *Lamprochernes chyzeri*, Diptera, *Musca domestica*, phoresy, Slovakia.

### INTRODUCTION

Phoresy in pseudoscorpions represents a generally known and common phenomenon in certain pseudoscorpion groups (KAISILA 1949). It is a non-parasitic association between two animals of mostly different taxons due transportation, and may or may not be associated, at least in the early stages of its evolution, with the predatory behaviour of pseudoscorpions (LEGG & JONES 1988). In Europe, the phoresy is typical mainly for the families of Chernetidae and Cheliferidae, specimens of which do attach themselves to flies, harvestmen, beetles but also to moths or hymenopteran (for example BEIER 1932, 1948, 1963; LOHMANDER 1939a, 1939b; KAISILA 1949; RESSL & BEIER 1958; MINÁŘ 1966; LEGG & JONES 1988; MAŠÁN & KRIŠTOFÍK 1992; DUCHÁČ 1993; POINAR et al. 1998; GARDINI 2000; DROGLA & LIPPOLD 2004).

Furthermore the phoresy of *Neobisium sylvaticum* (C. L. Koch, 1835) from the family Neobisiidae on *Musca domestica* Linnaeus, 1758 was recorded in Europe (POINAR et al. 1998). Besides the mentioned families, phoretic pseudoscorpions were found also in families of Chthoniidae, Tridenchthoniidae,

Geogarypidae, Atemnidae, Cheiridiidae and Withiidae in Brazilian Amazonia (AGUIAR & BÜHRNHEIM 1998). Twenty-four species were recorded there in phoretic association with 56 insect species, belonging to five orders – Hemiptera, Neuroptera, Coleoptera, Lepidoptera and Diptera. POINAR et al. (1998) provided the direct evidence of ten pseudoscorpion families with at least 44 insect families and three arachnid families in the world. The evidence of pseudoscorpion phoresy on arthropods can be recorded through findings of pseudoscorpions attached to the appendages of carriers or pseudoscorpions riding on the bodies of large arthropods (BEIER 1948).

Two species, *Lamprochernes chyzeri* (Tömösváry, 1882) and *L. nodosus* (Schrank, 1803), are known from genus *Lamprochernes* Tömösváry, 1882 in Slovakia. *L. nodosus* is a species whose phoresy has been commonly observed in Europe (for example BEIER 1932, 1948; LOHMANDER 1939a; RESSL & BEIER 1958; HELVERSEN 1966; MINÁŘ 1966; RAFALSKI 1967; POINAR et al. 1998; DROGLA & LIPPOLD 2004). In Slovakia, only two specimens were found as phoretic on flies – one male on *Hydrotaea similis* Meade, 1887 and one male on *Lucilia caesar* (Linnaeus,

### Citation

CHRISTOPHORYOVÁ J, STLOUKAL E & STLOUKALOVÁ V, 2011: First record of phoresy of pseudoscorpion *Lamprochernes chyzeri* in Slovakia (Pseudoscorpiones: Chernetidae). *Folia faunistica Slovaca*, 16: 139–142.

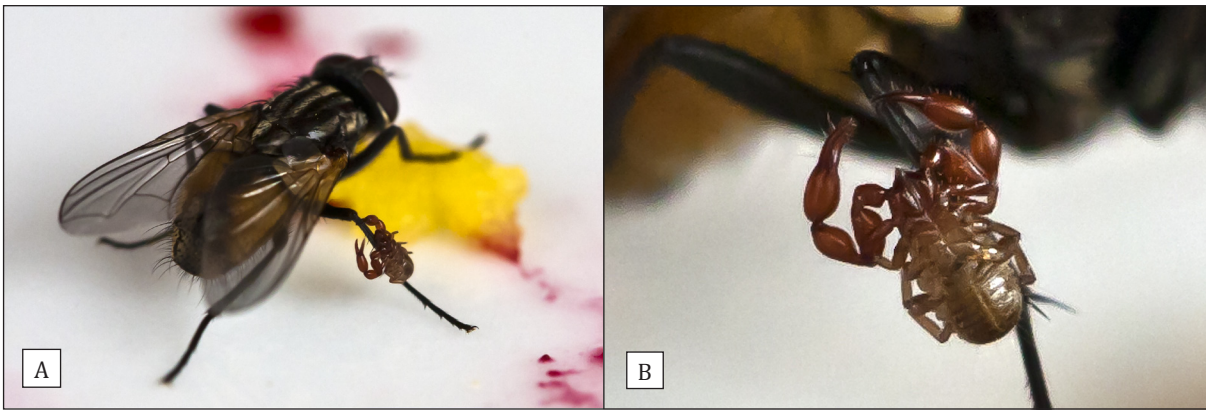
Received 17 October 2011

~

Accepted 21 October 2011

~

Published 24 October 2011



**Figure 1. A** – *Lamprochernes chyzeri* attached to the leg of the house fly *Musca domestica*. **B** – Detail of attached *Lamprochernes chyzeri*.

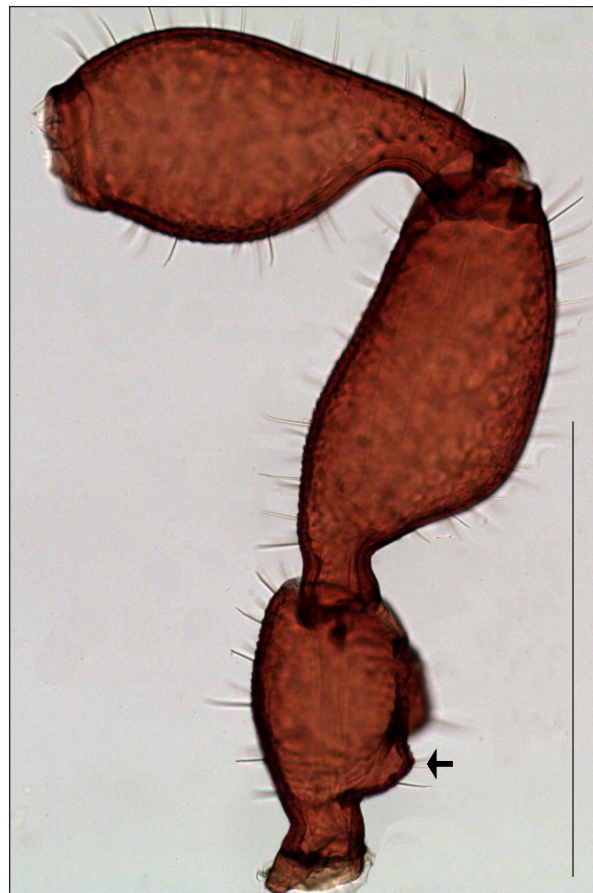
1758) (MAŠÁN & KRIŠTOFÍK 1992). Cases of phoresy of *L. chyzeri* have been rarely recorded in Europe (VACHON 1954; MEINERTZ 1964; LEGG & JONES 1988; DROGLA & LIPPOLD 2004). Our finding represents the first record of phoresy of *L. chyzeri* in Slovakia.

#### MATERIAL AND METHODS

We recorded one male of *Lamprochernes chyzeri* from Slovakia, the Borská nížina Lowland, on locality the Devínske jazero (suburban area of Bratislava; the cadastre of the Záhorská Bystrica Borough) (48°15'44"N, 16°57'52"E, altitude 140 m; 7.8.2011, leg. V. Stloukalová, E. Stloukal). The male was attached to the leg of the house fly *Musca domestica* (Diptera, Muscidae) (Figs 1A, 1B). The specimen of *Lamprochernes chyzeri* was identified using the identification key of CHRISTOPHORYOVÁ et al. (2011b). It was studied as temporary slide mount, photographed using a Leica DM1000 compound microscope with ICC50 Camera Module (LAS EZ application, 1.8.0). The material is deposited in the first author collection in the Comenius University, Bratislava. Live macrophotographs were taken by the camera Canon EOS 5D with macrolenses Canon EF 100mm f/2,8 Macro USM and the flash Canon Macro Twin Lite MT-24EX.

#### NOTES ON THE PHORESY OF LAMPROCHERNES CHYZERI

The pseudoscorpion *Lamprochernes chyzeri* is known mainly from Europe (Austria, Bulgaria, Croatia, Czech Republic, Denmark, Finland, Germany, Hungary, Italy, Latvia, Norway, Poland, Romania, Slovakia, Sweden, Switzerland, former Yugoslavia, and United Kingdom) and also from Georgia, Kazakhstan and Turkey (HARVEY 2009). TÖMÖSVÁRY (1882) recorded the species for the first time and among type localities he mentioned Malé Ozorovce Village, Trakany Village, Sninský kameň Mt., Nitra Town and the Turňa nad Bodvou Village in Slovakia.



**Figure 2.** Palpal trochanter, femur and patella of *Lamprochernes chyzeri*. Arrow points to the conical and pointed protuberance on palpal trochanter. Scale: 0.5 mm.

*L. chyzeri* occurs beneath the bark of old and decaying trees (LOHMANDER 1939a; KAISILA 1949; BEIER 1963; RAFALSKI 1967; JĘDRYCKOWSKI 1987; LEGG & JONES 1988; DROGLA & LIPPOLD 2004; PETROV 2004; KRUMPÁL & CHRISTOPHORYOVÁ 2007) and in compost heaps (LOHMANDER 1939a; HELVERSEN 1966; LEGG & JONES 1988; DROGLA & LIPPOLD 2004; CHRISTOPHORYOVÁ 2009). There have been records from bird nests (KRUMPÁL & CYPRICH 1988; CHRISTOPHORYOVÁ 2010; CHRISTOPHORYOVÁ et al. 2011a), formicaries of *Formica fusca* Linnaeus, 1758 (Beier 1948), from greenhouse (KRUMPÁL et al. 1997) or

in moss (PALMGREN 1973). In Denmark the species is characterized as synanthropic (MEINERTZ 1964).

Several authors stated that the paucity of records of the species has probably been a result of confusing it with *Lamprochernes nodosus* (LEGG & JONES 1988; DROGLA & LIPPOLD 2004; CHRISTOPHORYOVÁ et al. 2011b). Both species do occur in similar habitats and they can be easily confused because their identification is based on many overlapping morphometric and morphological characters. According to LEGG & JONES (1988) females differ in chaetotaxy of genital operculum: anterior part of the operculum bears more than 20 setae in *L. nodosus* and 9–11 setae in *L. chyzeri*. CHRISTOPHORYOVÁ et al. (2011b) has found out that some specimens of *L. nodosus* have anterior genital operculum with less than 20 setae. A more reliable determination character is the shape of palpal trochanter (CHRISTOPHORYOVÁ et al. 2011b). In *L. nodosus* the protuberance on palpal trochanter is blunt and rounded and in *L. chyzeri* the protuberance on palpal trochanter is conical and pointed (Fig. 2). After that the pseudoscorpions of both species from Slovakia were revised. The misidentifications are mentioned in the actual checklist of Slovak and Czech pseudoscorpions (CHRISTOPHORYOVÁ et al. 2011c).

The phoresy of *Lamprochernes chyzeri* was observed for the first time in Slovakia and it is only the second known case of pseudoscorpion phoresy in the country [first one published by MAŠÁN & KRIŠTOFÍK (1992)]. In other countries *L. chyzeri* was recorded as phoretic only for few times. VACHON (1954) found the species attached to a moth *Graphiphora augur* (Fabricius, 1775) and MEINERTZ (1964) on *Musca domestica*. LEGG & JONES (1988) mentioned that the species is phoretic on flies. DROGLA & LIPPOLD (2004) collected seven specimens from flies; in one case they collected both species *L. chyzeri* and *L. nodosus* on one fly.

## ACKNOWLEDGEMENTS

The study was partially supported by the project VEGA 1/0176/09. Equipment for the life macrophotography was acquired with support of the ATBI Gemer project (research activity within the EDIT network of excellence – European Distributed Institute of Taxonomy).

## REFERENCES

- AGUIAR NO & BÜHRNHEIM PF, 1998: Phoretic pseudoscorpions associated with flying insects in Brazilian Amazonia. *Journal of Arachnology*, 26: 452–459.
- BEIER M, 1932: Pseudoscorpionidea II. Subord. C. Cheliferinea. *Tierreich*, 58: i–xxi, 1–294.
- BEIER M, 1948: Phoresie und Phagophilie bei Pseudoscorpionen. *Österreichische Zoologische Zeitschrift*, 1: 441–497.
- BEIER M, 1963: Ordnung Pseudoscorpionidea (Afterskorpione). Bestimmungsbücher zur Bodenfauna Europas. Lieferung 1. *Akademie-Verlag, Berlin*, 313 pp.
- CHRISTOPHORYOVÁ J, 2009: Štúriky – Pseudoscorpiones, pp. 125–135. In: MAŠÁN P & MIHÁL I (eds), Pavúkovec Cerovej vrchoviny (Arachnida: Araneae, Pseudoscorpiones, Opiliones, Acari). *Štátna ochrana prírody SR Banská Bystrica, Správa CHKO Cerová vrchovina Rimavská Sobota, Ústav zoológie SAV Bratislava, Ústav ekológie lesa SAV Zvolen*.
- CHRISTOPHORYOVÁ J, 2010: Štúriky (Pseudoscorpiones) pod kôrou stromov, v dutinách a v hniezdach na Slovensku. *Folia faunistica Slovaca*, 15(1): 1–12.
- CHRISTOPHORYOVÁ J, KRUMPÁLOVÁ Z, KRIŠTOFÍK J & ORSÁGHOVÁ Z, 2011a: Association of pseudoscorpions with different types of bird nests. *Biologia*, 66/4: 669–677.
- CHRISTOPHORYOVÁ J, ŠŤÁHLAVSKÝ F & FEDOR P, 2011b: An updated identification key to the pseudoscorpions (Arachnida: Pseudoscorpiones) of the Czech Republic and Slovakia. *Zootaxa*, 2876: 35–48.
- CHRISTOPHORYOVÁ J, ŠŤÁHLAVSKÝ F, KRUMPÁL M & FEDOR P, 2011c: Pseudoscorpions of the Czech Republic and Slovakia: An annotated and revised checklist (Arachnida: Pseudoscorpiones). *North-Western Journal of Zoology*, (in press).
- DROGLA R & LIPPOLD K, 2004: Zur Kenntnis der Pseudoskorpion-Fauna von Ostdeutschland (Arachnida, Pseudoscorpiones). *Arachnologische Mitteilungen*, 27/28: 1–54.
- DUCHÁČ V, 1993: Zwei neue Afterskorpion-Arten aus der Tschechischen Republik. *Arachnologische Mitteilungen*, 5: 36–38.
- GARDINI G, 2000: Catalogo degli Pseudoscorpioni d'Italia (Arachnida). *Fragmenta Entomologica*, 32: 1–181.
- HARVEY MS, 2009: Pseudoscorpions of the World. Version 1.2. Western Australian Museum, Perth. Internet: <http://www.museum.wa.gov.au/research/databases/pseudoscorpions> (accessed 12 October 2011).
- HELVERSEN O. VON, 1966: Pseudoskorpione aus dem Rhein-Main-Gebiet. *Senckenbergiana biologica*, 47: 131–150.
- JĘDRYCKOWSKI WB, 1987: Zaleszczotki (Pseudoscorpiones) Bieszczadów. *Fragmenta Faunistica Musei Zoologici Polonici*, 30: 341–349.
- KAISILA J, 1949: A revision of the pseudoscorpion fauna of eastern Fennoscandia. *Annales Entomologici Fennici*, 15: 72–92.
- KRUMPÁL M, CHRISTOPHORYOVÁ J, 2007: Štúriky (Pseudoscorpiones) PR Ostrov Kopáč, pp. 95–100. In: MAJZLAN O. (ed.), *Príroda ostrova Kopáč. Fytoterapia OZ, Bratislava*.
- KRUMPÁL M & CYPRICH D, 1988: O výskyte štúrikov (Pseudoscorpiones) v hniezdach vtákov (Aves) v podmienkach Slovenska. *Zborník Slovenského národného múzea, Prírodné vedy*, 34: 41–48.
- KRUMPÁL M, KRUMPÁLOVÁ Z & CYPRICH D, 1997: Bezstavovce (Evertabrata) skleníkov Bratislavy (Slovensko). *Entomofauna carpathica*, 9: 102–106.
- LEGG G & JONES RE, 1988: Pseudoscorpions (Arthropoda; Arachnida). Keys and notes for the identification of the species, pp. 1–159. In: KERMACK DM & BARNES RSK (eds), Synopses of the British Fauna (New Series), No. 40. *The Linnean Society of London and the Estuarine and Brackish-Water Sciences Association, Leiden – New York – København – Köln*.

- LOHMANDER H, 1939a: Zur Kenntnis der Pseudoscorpionfauna Schwedens. *Entomologisk Tidskrift*, 60: 279–323.
- LOHMANDER H, 1939b: Zwei neue Chernetiden der nordwesteuropäischen Fauna. *Göteborgs Kungliga Vetenskaps- och Vitterhetssamhälles Handlingar*, 6(11): 1–11.
- MAŠÁN P & KRIŠTOFÍK J, 1992: Phoresy of some arachnids (Acarina and Pseudoscorpionidea) on synanthropic flies (Diptera) in the south Slovakia. *Biologia*, 47(2): 87–96.
- MEINERTZ T, 1964: Beiträge zur Verbreitung der Pseudoscorpioniden in Dänemark. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i København*, 126: 387–402.
- MINÁŘ J, 1966: Phoresia of *Damalinia* (C.) *meyeri* (Mallophaga) and *Lamprochernes nodosus* (Pseudoscorpionidea) on mosquitoes *Aedes sticticus* (Culicidae). *Folia Parasitologica*, 13: 270–273.
- PALMGREN P, 1973: Über die Biotopverteilung waldbodenlebender Pseudoscorpionidea (Arachnoidea) in Finnland und Österreich. *Commentationes Biologicae*, 61: 1–11.
- PETROV BP, 2004: The false scorpions (Arachnida: Pseudoscorpiones) of the Eastern Rhodopes (Bulgaria and Greece), pp. 153–166. In: BERON P & POPOV A (eds), Biodiversity of Bulgaria. 2. Biodiversity of Eastern Rhodopes (Bulgaria and Greece). *Pensoft and National Museum of Natural History, Sofia*.
- POINAR GO JR, ČURČIĆ BPM & COKENDOLPHER JC, 1998: Arthropod phoresy involving pseudoscorpions in the past and present. *Acta Arachnologica*, 47: 79–96.
- RAFALSKI J, 1967: Zaleszczotki. Pseudoscorpionidea. In: Katalog Fauny Polski, vol. 32 (1): 1–34. *Polska Akademia Nauk, Warszawa*.
- RESSL F & BEIER M, 1958: Zur Ökologie, Biologie und Phänologie der heimischen Pseudoskorpione. *Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere*, 86: 1–26.
- TÖMÖSVÁRY O, 1882: Pseudoscorpiones Faunae Hungaricae. A Magyar fauna álskorpíói. *Magyar Tudományos Akadémia Matematikai és Természettudományi Közlemények*, 18: 135–256.
- VACHON M, 1954: Nouvelles captures de Pseudoscorpions (Arachnides) transportés par des insectes. *Bulletin du Muséum National d'Histoire Naturelle, Paris*, 26: 590–592.