

Mecoptera and Dermaptera from Sarnena Gora Mts

LIBOR DVOŘÁK*, DILIAN GEORGIEV**, ALEXI POPOV***

**Trži Sekery 21, CZ-353 01 Mariánské Lázně, Czech Republic; e-mail: lib.dvorak@seznam.cz*

***Department of Ecology and Environmental Conservation, University of Plovdiv, Tzar Assen Str. 24, BG-4000 Plovdiv, Bulgaria; e-mail: diliangeorgiev@abv.bg*

****National Museum of Natural History, Bulgarian Academy of Sciences, Tsar Osvoboditel Blvd 1, BG-1000 Sofia, Bulgaria; e-mail: alpopov@nmnhs.com*

Abstract. Four species of Mecoptera and four species of Dermaptera were collected from Sarnena Gora Mts. Second record of *Panorpa vulgaris* in Bulgaria is reported.

Key words: Insecta, Mecoptera, Dermaptera, Bulgaria.

Introduction

There are only two published records of Mecoptera from Sarnena Gora Mts (Dvořák & Georgiev 2017). Order Dermaptera was not reported so far from this mountain. Here we summarize all published data and present some new records of the species from these insect orders.

Material and Methods

The material was collected by hand, sweep netting or using beer traps by D. Georgiev. Identifications were made by L. Dvořák. Materials were deposited at private collection of L. Dvořák, Czech Republic and the the Municipal Museum Mariánské Lázně. L. Dvořák prepared the text on Mecoptera; A. Popov, the text on Dermaptera.

Results

Order Mecoptera

***Panorpa germanica germanica* Linnaeus, 1758**

Sarnena Gora Mts: 6–10.9.2016, near Kolena Dam, N42°29'10.8" E25°41'22.7", 315 m a.s.l., 1♀, beer trap on tree brunch; Sarnena Gora Mts, 6–10.9.2016, near a river above Kolena Dam, N42°29'06.0" E25°41'29.3", 301 m a.s.l., 1♂, beer trap on tree brunch; 16.5.2017, Sarnena Gora Mts, N of Stara Zagora City, along Bedechka River, flood forest, N42°27'06.9" E25°37'54.8", 227 m a.s.l., collected by sweep netting; 23.5.2017, Sarnena Gora Mts, N of Kolena Village, broadleaf forest, N42°29'11.35" E 25°43'20.18", 270 m a.s.l., 1♂, found dead on a grass and hand collected.

A common subspecies occurring in most of Europe south to Central Italy and northernmost part of Greece, also widely distributed and very common in Bulgaria.

***Panorpa communis* Linnaeus, 1758**

Sarnena Gora Mts: 23.5.2017, N of Kolena Village, broadleaf forest, N42°29'11.35" E 25°43'20.18", 270 m a.s.l., 3♀, found dead on a grass and hand collected.

This species is known from almost whole Europe, south to the northernmost part of Greece, east to Siberia, also widely distributed and very common in Bulgaria.

***Panorpa hybrida* McLachlan, 1882**

Published by Dvořák & Georgiev (2017): 16.5.2017, N of Stara Zagora City, along Bedechka River, flood forest, among *Petasites*, N42°27'06.9", E25°37'54.8", 227 m a.s.l., 1♂.

In Bulgaria, *Panorpa hybrida* is known only from Rila Mts, Rila Monastery (Zelený 1971) and Stara Zagora (Dvořák & Georgiev 2017). This species inhabits central and eastern parts of Europe, north to the southernmost parts of Scandinavia and south to Yugoslavia and Bulgaria; exact distribution is unclear due to often misidentification with untypical specimens of *P. vulgaris* and *P. germanica*.

***Panorpa vulgaris* Imhoff & Labram, 1845**

Published by Dvořák & Georgiev (2017): 16.5.2017, N of Stara Zagora City, along Bedechka River, flood forest, among *Petasites*, N42°27'06.9", E25°37'54.8", 227 m a.s.l., 1♀.

In Bulgaria, *Panorpa vulgaris* is known except from this single record from Stara Zagora also from Central Stara Planina Range Dermenka Chalet, N42°43'50.7", E24°40'54.7", grazing beech forest, 1500 m a.s.l., 1♂, M. Boukal leg.). This species occurs in Western, Central, and Northern Europe; Devetak (1988) reported *P. vulgaris* from Slovenia. As Dvořák & Georgiev (2017) wrote, the record from Stara Zagora represents the first records of *P. vulgaris* from Bulgaria and from the Balkan Peninsula except its northernmost hook in Slovenia.

Order Dermaptera***Labia minor* (Linnaeus, 1758)**

Sarnena Gora Mts: 20.6.2018, yard in Hrishteni Village, near compost pit, N42°27'13.37" E25°42'18.66", 231 m a.s.l., 1♀; 31.8.2018, same locality, under light during night, 1♀ and 1♂.

Most likely, *Labia minor* is widely distributed and common species in Bulgaria, but its records are few because of the small size of the insect and the poor study of the order in this country. The known localities in Bulgaria are Svishtov and Sofia (Nedelkov 1908), German Monastery in Lozen Mts (Buresch 1939), Kyustendil (Nedelkov 1908), NW-Rila Mts (Hubenov *et al.* 2000) and Pazardzhik (Nedelkov 1909). This species is almost cosmopolitan in distribution. It originates from Europe and Western Asia, and as nonindigenous occurs also in all other continents.

***Forficula auricularia* Linnaeus, 1758**

Sarnena Gora Mts: 23.5.2017, yard in Hrishteni Village, on *Vicia faba*, N42°27'13.37" E25°42'18.66", 231 m a.s.l., 1♀.

A widely distributed and very common species in Bulgaria (Popov 2007). *Forficula auricularia* is a native species in the Western Palaearctic with secondary cosmopolitan distribution.

***Forficula smyrnensis* Serville, 1839**

Sarnena Gora Mts: 29.8.–5.9.2016, Hrishteni Village, yard, N42°27'12.7" E25°42'18.9", 231 m a.s.l., 1♀, beer trap on tree brunch; 6–10.9.2016, near Kolena Village, *Pinus nigra* forest, N42°28'45.6" E25°42'28.8", 292 m a.s.l., 1♂, beer trap on a pine tree brunch; 6–10.9.2016, near Kolena Dam, N42°29'10.8" E25°41'22.7", 315 m a.s.l., 1♀, beer trap on tree brunch; 23–25.5.2017, S of Kolena Village, Medven Hill, broadleaf forest (*Carpinus orientalis*, *Quercus* spp.), N42°27'23.6" E25°44'00.6", 215 m a.s.l., 1♀.

In Bulgaria, this species has been found north of Varna (Buresch 1939, Drensky 1942, Matzke 2000), in Ograzhden Mts (Harz 1985), Staro Zhelezare in Thracian Lowland

(Popov 1970), Kamchia Valley (Buresch 1939), Kosti and Gramatikovo in Strandzha Mts (Buresch 1939, Harz 1985). *Forficula smyrnensis* is distributed on the Balkan Peninsula and adjacent parts of Hungary and Romania, as well as in Crimea, Anatolia, Cyprus, Syria, Lebanon, Iraq, Transcaucasia and Iran. Information about the occurrence of the species in Corsica seems doubtful.

***Forficula aetolica* Brunner von Wattenwyl, 1882**

Sarnena Gora Mts: 22.9.2016, yard in Hrishteni Village, under dead wood, N42°27'13.37" E25°42'18.66", 231 m a.s.l., 1♂.

Distribution of *Forficula aetolica* in Bulgaria is restricted only in the southern part of the country. So far, the species is known from Svilengrad (4 km NW of the town), N41°47'35.2" E26°08'06", 57 m a.s.l., 26.10.2012, leg. G. Hristov and D. Chobanov, 1♀, (http://www.boldsystems.org/index.php/Taxbrowser_Taxonpage?taxon=Forficula%20aetolica) and from Veselie in Strandzha Mts (Murányi 2013).

The range of this species covers Greece, including Thrace, Central Greece, Peloponnesus and the islands of Rhodes, Karpathos, Crete and other Aegean islands (Reichardt 1978, Ingrisch & Pavićević 1985, Murányi 2013), Southern Bulgaria (see above), European Turkey (Ebner 1919), the whole Anatolia (Anlaş & Kočárek 2012, Özgen *et al.* 2016), Cyprus (Anlaş & Kočárek 2012), Lebanon (Steinmann 1993, according to Anlaş & Kočárek 2012), Crimea (Semenov-Tian-Shansky 1908, Stsherbakov 1913), Caucasus (Burr 1911) and Iran (Sakenin *et al.* 2010).

Because data on the ecology of *Forficula aetolica* are scarce and scattered throughout the literature, we summarize knowledge of the habitats of the species. In Bulgaria, it inhabits leaf litter of *Salix* sp. (http://www.boldsystems.org/index.php/Taxbrowser_Taxonpage?taxon=Forficula%20aetolica), and in Anatolia, *Quercus ithaburensis* and *Quercus infectoria*; meadows with shrubs of *Juniperus oxycedrus* and among the herbaceous vegetation with *Euphorbia anacampseros*; orchards of *Olea europaea*; orchards of *Malus domestica* (Anlaş *et al.* 2010); orchards of *Prunus armeniaca* (Özgen *et al.* 2016). *Forficula aetolica* is observed on folded leaves of *Prunus*, *Ficus* and *Pyrus*, and in dried fruits of *Colutea arborescens* in Crimea (Kusnezov 1903); in flower buds of *Cynara scolymus* in European Turkey (Ebner 1919); on the stems of *Euphorbia venata* in Greece (Le Restif 1987).



Fig. 1. The male of *Forficula aetolica* found in a yard in Hrishteni Village.

Acknowledgements. Authors thank Milan Boukal (Pardubice, Czech Republic) for sending his specimen of *Panorpa vulgaris*.

References

- Anlaş, S., Haas, F. & Tezcan, S. (2010) Dermaptera (Insecta) fauna of Bozdağlar Mountain, Western Turkey. *Linzer biologische Beiträge*, 42 (1): 389–399.
- Anlaş, S. & Kočárek, P. (2012) Current status of Dermaptera (Insecta) fauna of Turkey and Cyprus. *Turkish Journal of Entomology*, 36 (1): 43–58.
- Buresch, I. (1939) Referate und Mitteilungen. *Mitteilungen der Bulgarischen Entomologischen Gesellschaft in Sofia*, 10 [1938]: 140–156 (in Bulgarian).
- Burr, M. (1911) Dermaptera. In: Wytzman, P., *Genera Insectorum. Fascicule 122*. V. Verteneuil & L. Dusmet, Bruxelles, 112 pp.
- Devetak, D. (1988) The distribution of scorpionflies (Mecoptera, Insecta) in Slovenia. *Biološki Vestnik*, 36 (2): 1–11.
- Drensky, P. (1942) Über die Insektenfauna des Küstengebietes nördlich von Warna. *Mitteilungen der Bulgarischen Entomologischen Gesellschaft in Sofia*, 12: 15–44 (in Bulgarian, German Summary).
- Dvořák, L. & Georgiev, D. (2017) New and interesting records of scorpion flies of the genus *Panorpa* (Mecoptera: Panorpidae) from Bulgaria with a country checklist. *Ecologica Montenegrina*, 15: 22–25.
- Ebner, R. (1919) Ergebnisse einer mit Unterstützung der Kais. Akademie der Wissenschaften in Wien ausgeführten zoologischen Forschungsreise nach Kleinasien (Amanus-Gebirge). VI. Orthopteren aus Kleinasien. *Archiv für Naturgeschichte, Abteilung A*, 85 (8): 148–176.
- Harz, K. (1985) Dermaptera in Bulgarien. *Articulata*, 2 (7): 205–206.
- Hubenov, Z., Beschovski, V., Josifov, M., Popov, A., Kumanski, K., Sakalian, V., Abadjiev, S., Vidinova, Ya. & Lyubomirov, T. (2000) Entomofaunistic diversity of the Rila National Park. In: Sakalian, M. (Ed.), *Biological diversity of the Rila National Park*. Pensoft, Sofia, pp. 285–331, 429–464, 525–619.
- Ingrisch, S. & Pavičević, D. (1985) Zur Faunistik, Systematik und ökologischen Valenz der Orthopteren von Nordost-Griechenland. *Mitteilungen der Münchner Entomologischen Gesellschaft*, 75: 45–77.
- Kusnezov, N. (1903) Excursions d'été, en 1902, sur la côte sud de la Crimée. *Revue Russe d'Entomologie*, 3 (1): 5–7 (in Russian).
- Le Restif, A. (1987) Cerambycidae et Cleridae (Col.) récoltés dans *Euphorbia venata* près de Corinthe (Grèce). *L'Entomologiste*, 43 (2): 87–88.
- Matzke, D. (2000) Entomologische Beobachtungen während eines Urlaubs in Bulgarien. *Maturna*, 10: 11–13.
- Murányi, D. (2013) Data to three insect orders (Embiidina, Dermaptera, Isoptera) from the Balkans. *Opuscula Zoologica* (Budapest), 44 (suppl. 1): 167–186.
- Nedelkov, N. (1908) Vtor pri nos kam entomologichnata fauna na Bulgaria (Second contribution to the entomological fauna of Bulgaria). *Periodichesko spisanie na Balgarskoto knizhovno druzhestvo v Sofia* (Periodical Journal of the Bulgarian Literary Society in Sofia), 68/19 [1907] (5–6): 411–436 (in Bulgarian).
- Nedelkov, N. (1909) Nashata entomologichna fauna (Our entomological fauna). *Arhiv na Ministerstvoto na narodnoto prosveshchenie. Ofitsialno izdanie* (Archives of the Ministry of Education. Official Edition), 1 (3): 83–135 (in Bulgarian).
- Özgen, İ., Ayaz, T. & Kıtır, N. (2016) Dermaptera species in apricot orchards and its pest status in Malatya and Elazığ provinces of Eastern Anatolia, Turkey. *Biharean Biologist*, 10 (1): 58–59.

MECOPTERA AND DERMAPTERA

- Popov, A. (1970) Kam izuchavaneto na kozhokrilite nasekomi v Bulgaria (On the study of earwigs in Bulgaria). *Priroda* (Sofia), 19 (1): 78–82 (in Bulgarian).
- Popov, A. (2007) Fauna and Zoogeography of the Orthopterid Insects (Embioptera, Dermaptera, Mantodea, Blattodea, Isoptera, and Orthoptera) in Bulgaria. In: Fet, V. & Popov, A. (Eds.), *Biogeography and Ecology of Bulgaria*, Springer, Dordrecht, The Netherlands, pp. 233–295.
- Reichardt, G.-H. (1978) Ohrwürmer Griechenlands und angrenzender Gebiete (Insecta: Dermaptera). *Senckenbergiana biologica*, 58 [1977] (3–4): 211–244.
- Sakenin, H., Samin, N., Imani, S. & Rastegari, J. (2010) A contribution to the Gryllidae (Orthoptera) and Dermaptera from some regions of Iran. *Linzer biologische Beiträge*, 42 (2): 1413–1419.
- Semenov-Tian-Shansky, A. (1908) Dermatoptera nova aut minus cognita. III. *Revue Russe d'Entomologie*, 8 (2): 159–173.
- Stsherbakov, Th. (1913) Notices sur la faune des Dermatoptères, des Thysanoptères et des Neuroptères de la Russie. *Revue Russe d'Entomologie*, 13 (3–4): 461–466 (in Russian).
- Zelený, J. (1971) Neuroptera, Megaloptera und Mecoptera aus Bulgarien. *Acta faunistica entomologica Musei Nationalis Pragae*, 14 (166): 153–163.