

# New Data on the Occurrence of Longhorn Beetles (Coleoptera: Cerambycidae) in the Republic of Macedonia

*Radosław Plewa*<sup>1</sup>, *Dawid Marczak*<sup>2</sup>, *Jerzy Borowski*<sup>3</sup>, *Tomasz Mokrzycki*<sup>3</sup>, *Marcin Jakubowski*<sup>4</sup>,  
*Paweł Górski*<sup>5</sup>

<sup>1</sup> Forest Research Institute, Department of Forest Protection, 3 Braci Leśnej Street, Sękocin Stary, 05-090 Raszyn, Poland; E-mail: r.plewa@ibles.waw.pl

<sup>2</sup> University of Ecology and Management in Warsaw, Department of Ecology, 14 Wawelska Street, 02-061 Warsaw, Poland; Kampinos National Park, 38 Tetmajera Street, 05-080 Izabelin, Poland; E-mail: dawid.marczak@gmail.com

<sup>3</sup> Warsaw University of Life Sciences, Department of Forest Protection and Ecology, 159 Nowoursynowska Street, 02-776 Warsaw, Poland; E-mail: jerzy\_borowski@sggw.pl, tomasz\_mokrzycki@sggw.pl

<sup>4</sup> 3/90 Sąchocka Street, 02-116 Warsaw, Poland; E-mail: borman@autograf.pl

<sup>5</sup> Warsaw University of Life Sciences, Faculty of Veterinary Medicine, Department of Preclinical Sciences, Division of Parasitology, 8 Ciszewskiego Street, 02-786 Warsaw, Poland; E-mail: pawel\_gorski@sggw.pl

**Abstract:** In the course of the research carried out in 2010-2013, the occurrence of 83 species of longhorn beetles (46.01% of the fauna of the family Cerambycidae in the Republic of Macedonia) was ascertained, including eight species new to the fauna of this country: *Anoplodera (s. str.) rufipes rufipes* (Schal.), *Certallum ebulinum* (L.), *Purpuricenus globulicollis skypetarum* Rapuzzi & Sama, *Plagionotus arcuatus* (L.), *P. scalaris* (Brullé), *Parmena unifasciata* (Rossi), *Leiopus linnei* Wallin, Nylander & Kvamme, and *Calamobius filum* (Rossi). This paper also includes information on two species of Cerambycidae, which inhabit the Republic of Macedonia, but not mentioned in the Catalogue of Palaearctic Coleoptera, namely: *Phymatodes testaceus* (L.) and *Chlorophorus sartor* (Müll.). Currently, a total of 171 species of beetles of the longhorn beetle family are known from the Republic of Macedonia.

**Keywords:** Coleoptera, Cerambycidae, occurrence, new records, Republic of Macedonia

## Introduction

The Republic of Macedonia, despite its small size, remains a country with an insufficient level of knowledge on the fauna of longhorn beetles. The representatives of this family are mentioned by HEYROVSKÝ (1967), who recorded the occurrence of 121 species of Cerambycidae. Some papers and identification keys of longhorn beetles of the former Yugoslavia were prepared by MIKSIĆ (1963), MIKSIĆ, GEORGIJEVIĆ (1971, 1973), and MIKSIĆ, KORPIĆ (1985). Other scientific descriptions focused on individual species (FUCHS 1971, HOLZSCHUH 1974, 1984), subspecies (HOLZSCHUH 1986, PESARINI, SABBADINI 2007), or just the occurrence of individual representatives of the longhorn beetles (BENSE

1995, SLÁMA, SLÁMOVA 1996, ČURČIĆ *et al.* 2003). In the Catalogue of Palaearctic Coleoptera (CPC), a total of 161 species of the longhorn beetle family, including 48 species identified to the subspecies level, are listed from the Republic of Macedonia (LÖBL, SMETANA 2010).

The aim of this paper is provide additional new information on the occurrence of the longhorn beetles in the Republic of Macedonia.

## Material and Methods

The longhorn beetles from the Republic of Macedonia were collected in 2010-2013. The research covered

mostly the western, south-western (Lake Ohrid area) and central parts of the country.

Depending on their trophic relationships with various plant species, the longhorn beetles were most frequently collected from flowers, trees and the soil surface. These beetles were additionally collected by other methods of capturing such as sweep netting and the use of artificial light sources (UV).

The collected material was identified and verified by the first author. The remaining authors contributed to the collecting of the material and identification of some species. The collected beetles were preserved in the private collections of the authors. The following abbreviations of the names of people who collected longhorn beetles are used in the paper: Dawid Marczak [DM], Danuta Peplowska-Marczak [DPM], Jerzy Borowski [JB], Marcin Jakubowski [MJ], Paweł Górski [PG] and Tomasz Mokrzycki [TM].

The names of the species and their order follow the Catalogue of Palaearctic Coleoptera (CPC) (LÖBL, SMETANA 2010) and DANILEVSKY (2014), who has introduced several corrections after the publication of CPC.

## Results

During the four years of research, a total of 83 species of the longhorn beetles were recorded, which belonged to four subfamilies: Prioninae (1 species), Lepturinae (30), Cerambycinae (24) and Lamiinae (28). Eight species new to the fauna of the Republic of Macedonia were found in the collected material.

### Subfamily Prioninae

*Aegosoma scabricorne* (Scopoli, 1763) – Ljubaništa, 17-19.07.2011, 1 ex., in the night, on the trunk of a felled *Populus* sp., leg. DM et DPM.

### Subfamily Lepturinae

*Rhagium (Megarhagium) mordax* (DeGeer, 1775) – Mavrovo, 2-3.06.2010, 1 ex., leg. MJ.

*R. (M.) sycophanta* (Schrank, 1781) – Trebeništa, 12.05.2012, 1 ex., leg. JB.

*Stenocorus (Anisorus) quercus quercus* (Götz, 1783) – Leskoec, 1.06.2010, 1 ex., on the fly, leg. MJ.

*Carilia virginea virginea* (Linnaeus, 1758) – Mavrovo, 2-3.06.2010, 2 ex., leg. MJ.

*Cortodera humeralis humeralis* (Schaller, 1783) – Leskoec, 1.06.2010, 1 ex., leg. MJ; Vevčani ad Struga, 11.05.2012, 2 ex., leg. TM.

*C. flavimana* (Waltl, 1838) – Kališta ad Struga, 9-10.05.2012, 37 ex., on flowers of *Ranunculus* sp., leg. JB; Vevčani ad Struga, 11.05.2012, 5 ex., leg. TM.

*Grammoptera (s. str.) ustulata ustulata*

(Schaller, 1763) – Kališta ad Struga, 9-10.05.2012, 1 ex., leg. JB.

*G. (s. str.) abdominalis* (Stephens, 1831) – Kališta ad Struga, 9-10.05.2012, 2 ex., in a sweep-net, on flowers of *Crataegus* sp., leg. JB.

*Alosterna tabacicolor tabacicolor* (DeGeer, 1775) – Mavrovo, 2-3.06.2010, 1 ex., leg. MJ.

*Vadonia unipunctata ohridensis* Holzschuh, 1989 – Galičica National Park, Mt. Tomoros, 21.07.2011, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*V. moesiaca* (K. Daniel et J. Daniel, 1891) – Ljubaništa, 17-19.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Galičica National Park, Mt. Tomoros, 21.07.2011, 1 ex., leg. DM et DPM.

*V. dojranensis dojranensis* Holzschuh, 1984 – Kožlar ad Veles: 27.05.2012, 5 ex., leg. PG; 27.05.2012, 5 ex., leg. MJ.

*Pseudovadonia livida livida* (Fabricius, 1777) – Mavrovo National Park, Mavrovo, 14-15.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 27.07.2013, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Nistrovo, 4.08.2013, 2 ex., leg. DM et DPM.

*Anoplodera (s. str.) sexguttata* (Fabricius, 1775) – Leskoec, 1.06.2010, 1 ex., leg. MJ.

*A. (s. str.) rufipes rufipes* (Schaller, 1783) – Mešeišta ad Struga, 13.05.2012, 1 ex., leg. TM. This nominotypical subspecies occurs in the western and central European countries and the Caucasus Mountains. It is rarer in southern Europe. It develops in the wood of several species of deciduous trees: *Quercus* spp., *Carpinus* sp., *Fagus* spp. and *Betula* spp. (DEMELT 1966, SAMA 2002). During the study, the species was collected on sweep-netting herbaceous plants. This is the first record of this species for the fauna of the Republic of Macedonia.

*Stictoleptura (Aredolpona) rubra rubra* (Linnaeus, 1758) – Kožuf Mountains ad Michajlovo, 29.07.2012, 4 ex. (3♂ and 1♀), leg. DM et DPM; Kožuf Mountains ad Michajlovo, 27.07.2013, 1 ex., collected from the trunk of a felled pine tree *Pinus* sp., leg. DM et DPM.

*S. (s. str.) cordigera illyrica* (G. Müller, 1948) – Gradište ad Peštani, 17.07.2010, 4 ex., leg. DM et DPM; Galičica National Park, Mt. Tomoros, 21.07.2011, 1 ex., leg. DM et DPM; Trpejca: 18.07.2010, 1 ex.; 23-24.07.2012, 1 ex., leg. DM et DPM.

*S. (s. str.) rufa rufa* (Brullé, 1832) – Galičica National Park, Mt. Tomoros, 21.07.2011, 1 ex., on herbaceous plants, leg. DM et DPM.

*S. (s. str.) scutellata scutellata* (Fabricius, 1781)

– Mavrovo National Park, Mavrovo, 22.07.2010, 1 ex., on flowers of *Sambucus ebulus* L., leg. DM et DPM; Mavrovo National Park, Nikiforovo, 16.07.2011, 4 ex., on flowers of *S. ebulus*, leg. DM et DPM; Kožuf Mountains ad Konopište, 28.07.2012, 1 ex., on flowers of *S. ebulus*, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 29.07.2012, 1 ex., on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Trebište, 31.07.2013, 2 ex., on flowers, leg. DM et DPM; Mavrovo National Park, Tresonče, 5.08.2013, 1 ex., leg. DM et DPM.

*S. (s. str.) pallens* (Brullé, 1832) – Leskoec, 1.06.2010, 4 ex., leg. MJ; Kališta ad Struga, 9-10.05.2012, 1 ♂ and 1 ♀, in a sweep-net, in a meadow, leg. JB.

*S. (s. str.) fulva* (DeGeer, 1775) – Mavrovo National Park, Mavrovo: 22.07.2010, 1 ex.; 14-15.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Gradište ad Peštani, 17.07.2010, 1 ex., in a sweep-net, on flowers, leg. DM et DPM; Trpejca, 18.07.2010, 1 ex., in a sweep-net on flowers, leg. DM et DPM; Mavrovo National Park, Roztuša, 15.07.2011, 1 ex., in a sweep-net, on flowers, leg. DM et DPM; Ljubaništa, 17-19.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Konjsko, 20.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Star Dojran, 25.07.2011, 1 ex., leg. DM et DPM; Mavrovo National Park, Bistra Mountains, 19.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Tresonče, 21.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 27.07.2013, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park: Nistrovo, 4.08.2013, 2 ex.; DM et DPM; Tresonče, 5.08.2013, 1 ex., leg. DM et DPM.

*Anastrangalia dubia dubia* (Scopoli, 1763) – Mavrovo National Park, Mavrovo, 2-3.06.2010, 1 ex., leg. MJ; Bistra Mountains, 24.07.2010, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*Pedostrangalia (Neosphenalia) verticalis* (Germar, 1822) – Blace, 3.06.2010, 4 ex., leg. MJ; Kožlar ad Veles, 27.05.2012, 1 ex., leg. PG.

*Pachytodes cerambyciformis* (Schrank, 1781) – Mavrovo National Park, Mavrovo, 2-3.06.2010, 1 ex., leg. MJ, Mavrovo: 22.07.2010, 3 ex.; 14-15.07.2011, 1 ex., on flowers of *S. ebulus*, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 29.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*P. erraticus erraticus* (Dalman, 1817) – Pelister National Park ad Arvati, 15.07.2010, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM;

Mavrovo National Park, Mavrovo: 22.07.2010, 1 ex.; 14-15.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Galičica National Park, Mt. Tomoros, 21.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Pelister National Park ad Brajčino, 23.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Tresonče, 5.08.2013, 2 ex., leg. DM et DPM.

*Strangalia attenuata* (Linnaeus, 1758) – Pelister National Park ad Brajčino, 23.07.2011, 1 ex., on flowers, leg. DM et DPM.

*Ruptela maculata maculata* (Poda, 1761) – Leskoec, 1.06.2010, 1 ex., leg. MJ; Pelister National Park ad Arvati, 15.07.2010, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Nikiforovo, 16.07.2011, 7 ex., in a sweep-net, on flowers, leg. DM et DPM; Kalishta ad Struga, 9-10.05.2012, 1 ex., in a sweep-net, on flowers, leg. JB; Mavrovo National Park, Bistra Mountains, 19.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*Stenurella melanura* (Linnaeus, 1758) – Mavrovo National Park, Mavrovo: 14-15.07.2011, 2 ex.; 18.07.2012, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Tresonče, 21.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Kožuf Mountains ad Konopište, 28.07.2012, 1 ex., on flowers, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 29.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 27.07.2013, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Nistrovo, 4.08.2013, 2 ex., leg. DM et DPM; Mavrovo National Park, Tresonče, 5.08.2013, 1 ex., leg. DM et DPM.

*S. bifasciata intermedia* Holzschuh, 2006 – Pelister National Park ad Arvati, 15.07.2010, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Kožuf Mountains ad Konopište, 28.07.2012, 2 ex., on flowers, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 27.07.2013, 5 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*S. septempunctata septempunctata* (Fabricius, 1793) – Pelister National Park ad Arvati, 15.07.2010, 4 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Mavrovo: 22.07.2010, 4 ex.; 14-15.07.2011, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Roztuša, 23.07.2010, 1 ex., in a sweep-net, on flowers, leg. DM et DPM; Matka Canyon ad Skopje, 27-28.07.2010, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM;

Star Dojran, 25.07.2011, 1 ex., leg. DM et DPM; Mavrovo National Park, Tresonče, 21.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Trpejca, 23-24.07.2012, 1 ex., in a sweep-net, on flowers, leg. DM et DPM; Mavrovo National Park, Nistrovo, 4.08.2013, 1 ex., leg. DM et DPM; Mavrovo National Park, Trebište, 6.08.2013, 1 ex., leg. DM et DPM.

#### Subfamily Cerambycinae

*Callallium ebulinum* (Linnaeus, 1767) – Kališta ad Struga, 9-10.05.2012, 1 ex., leg. JB. The species is found in southern Europe, northern Africa, the Caucasus Mountains and the Middle East. It develops in the living roots and stems of various plants from the families Lamiaceae Lindl. and Cruciferae Juss. (SAMA 2002). Specimens were collected on sweep-netting *Crataegus* sp. flowers. This is the first record of this species for the fauna of the Republic of Macedonia.

*Stenopterus flavicornis* Küster, 1846 – Mavrovo National Park, Tresonče, 21.07.2012, 1 ex., on flowers of Umbelliferae Juss., leg. DM et DPM.

*S. rufus geniculatus* Kraatz, 1863 – Mavrovo National Park, Roztuša: 23.07.2010, 3 ex.; 15.07.2011, 2 ex., on flowers of Umbelliferae, leg. DM et DPM; Pelister National Park ad Brajčino, 23.07.2011, 1 ex., on flowers of Umbelliferae, leg. DM et DPM; Kožlar ad Veles, 27.05.2012, 1 ex., leg. PG; Mavrovo National Park, Mavrovo, 18.07.2012, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Galičnik, 21.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Trpejca, 23-24.07.2012, 1 ex., in a sweep-net, on flowers, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 27.07.2013, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*Callimus* (*s. str.*) *angulatus angulatus* (Schrank, 1789) – Leskoec, 1.06.2010, 2 ex., leg. MJ; Mešešta ad Struga, 13.05.2012, 1 ex., leg. TM.

*Callimoxys gracilis* (Brullé, 1832) – Leskoec, 1.06.2010, 2 ex., leg. MJ; Kališta ad Struga, 9-10.05.2012, 3 ex., in a sweep-net, on flowers of *Crataegus* sp., leg. JB; Korošišta ad Struga, 12.05.2012, 1 ex., leg. TM.

*Glaphyra* (*s. str.*) *umbellatarum* (Schreber, 1759) – Leskoec, 1.06.2010, 1 ex., leg. MJ.

*Cerambyx* (*s. str.*) *dux* (Faldermann, 1837) – Ohrid, 19.07.2011, 1 ex., in a park, on the ground, leg. DM et DPM.

*C. (Microcerambyx) scopolii scopolii* Fuessly, 1775 – Leskoec, 1.06.2010, 2 ex., leg. MJ; Pelister National Park, ad Arvati, 15.07.2010, 1 ex., on flowers of *Sambucus ebulus*, leg. DM et DPM; Konjsko, 20.07.2011, 1 ex., on flowers of *S. ebu-*

*lus*, leg. DM et DPM; Galičica National Park, Mt. Tomoros, 21.07.2011, 1 ex., on flowers of *S. ebulus*, leg. DM et DPM; Pelister National Park ad Brajčino, 23.07.2011, 1 ex., on flowers, leg. DM et DPM; Kolešino, 26.07.2011, 2 ex., leg. DM et DPM; Kalishta ad Struga, 10-13.05.2012, 5 ex., on flowers of *Crataegus* sp., leg. JB; Kališta ad Struga, 10-13.05.2012, 1 ex., leg. TM.

*Purpuricenens globulicollis skypetarum* Rapuzzi & Sama, 2013 – Ljubaništa, 17-19.07.2011, 1 ex., ad lucem, leg. DM et DPM. The nominotypical subspecies occurs from the Iberian Peninsula, through the southern (Balkans) and central European countries to eastern Siberia (DANILEVSKY *et al.* 2007). It develops in the living branches of different deciduous tree species, such as: *Quercus* spp., *Crataegus* spp., *Acer* spp., *Prunus* spp. and *Rhamnus* spp. Adult insects rarely visit flowers, however the adults are attracted to sweet baits used in traps (SAMA 2002). *P. globulicollis skypetarum* is known only from Albania and Greece (RAPUZZI, SAMA 2013). During the performed research, a reaction of this subspecies to artificial light sources was noted for the first time. This is the first record of the species for the fauna of the Republic of Macedonia.

*Rosalia alpina alpina* (Linnaeus, 1758) – Mavrovo National Park, Galičnik, 21.07.2012, 1 ex., on a felled trunk of *Fagus sylvatica* L., leg. DM et DPM; Mavrovo National Park, Trebište, 31.07.2013, 1 ex., on a dead trunk of *F. sylvatica*, leg. DM et DPM.

*Hylotrupes bajulus* (Linnaeus, 1758) – Mavrovo National Park, Mavrovo: 14-15.07.2011, 1 ex.; 18.07.2012, 1 ex., in a house, leg. DM et DPM; Mavrovo National Park, Bistra Mountains, 19.07.2012, 1 ex., on dry branches, leg. DM et DPM; Kožuf Mountains ad Michajlovo, 27.07.2013, 1 ex., on a felled trunk of *Picea* sp., leg. DM et DPM.

*Phymatodes (Phymatodes) testaceus* (Linnaeus, 1758) – Leskoec, 1.06.2010, 2 ex., on a felled trunk of *Quercus* sp., leg. MJ.

*Anaglyptus mysticus* (Linnaeus, 1758) – Mavrovo, 2-3.06.2010, 2 ex., leg. MJ; Vevčani ad Struga, 11.05.2012, 2 ex., leg. TM; Korošišta ad Struga, 12.05.2012, 1 ex., leg. TM; Mavrovo, 1.06.2012, 1 ex., leg. PG.

*Plagionotus arcuatus arcuatus* (Linnaeus, 1758) – Leskoec, 1.06.2010, 2 ex., leg. MJ; Trebeništa, 12.05.2012, 1 ex., leg. JB. The species occurs in nearly all European countries, northern Africa, Asia Minor and the Caucasus (SAMA 2002, DANILEVSKY 2014). It develops in the wood of different deciduous tree species mostly of oaks *Quercus* spp., but also of *Castanea* spp., *Carpinus* sp., *Fagus* spp.,

*Salix* spp., *Prunus* spp. and *Robinia* spp. (STARZYK 1999, SAMA 2002). During the research, the specimens were found on both living and dead oak trees. This is the first record of the species in the Republic of Macedonia.

*P. scalaris* (Brullé, 1832) – Trebeništa, 12.05.2012, 4 ex., leg. JB. In Europe, this species can be found in Greece and Italy. It also occurs in northern Africa, e.g. Algeria, Morocco and Tunisia (LÖBL, SMETANA 2010). The species develops in the roots of various plant species of the family Malvaceae Juss. (HERNÁNDEZ, ROSA 2001). During the study, the specimens were found on flowers of Malvaceae. This is the first record of the species for the fauna of the Republic of Macedonia.

*Echinocerus floralis* (Pallas, 1773) – Slivnica ad Resen, 1.06.2010, 2 ex., leg. MJ.

*Chlorophorus varius varius* (Müller, 1766) – Gradište ad Peļtani, 17.07.2010, 2 ex., in a sweep-net, on flowers, leg. DM et DPM; Matka Canyon ad Skopje, 27-28.07.2010, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Konjsko, 20.07.2011, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Galičica National Park, Mt. Tomoros, 21.07.2011, 1 ex., in a sweep-net, on flowers, leg. DM et DPM; Pelister National Park, ad Krani, 22.07.2011, 1 ex., in a sweep-net, on flowers, leg. DM et DPM; Star Dojran, 25.07.2011, 1 ex., leg. DM et DPM; Trpejca, 23-24.07.2012, 1 ex., in a sweep-net, on flowers, leg. DM et DPM.

*C. figuratus* (Scopoli, 1763) – Leskoec, 1.06.2010, 2 ex., leg. MJ; Pelister National Park, ad Brajčino, 23.07.2011, 3 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Bistra Mountains, 19.07.2012, 2 ex., on *Centaurea solstitialis* L., leg. DM et DPM.

*C. aegyptiacus* (Fabricius, 1775) – Ćopčeli ad Nov Dojran, 25.07.2011, 5 ex., on flowers of *Eryngium* sp., leg. DM et DPM; Kavadarci, 27.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*C. sartor* (Müller, 1766) – Pelister National Park ad Arvati, 15.07.2010, 2 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Pelister National Park, ad Krani, 22.07.2011, 1 ex., in a sweep-net, on flowers, leg. DM et DPM.

*Xylotrechus* (s. str.) *arvicola* (Olivier, 1795) – Pelister National Park ad Brajčino, 23.07.2011, 1 ex., on dry branches of *Quercus* sp., leg. DM et DPM; Mavrovo National Park, Galičnik, 21.07.2012, 2 ex., on a felled trunk of *Fagus sylvatica*, leg. DM et DPM; Mavrovo National Park, Tresonče, 5.08.2013, 1 ex., leg. DM et DPM.

*Xylotrechus* (*Rusticoclytus*) *rusticus* (Linnaeus,

1758) – Mešeišta ad Struga, 13.05.2012, 1 ex., leg. TM; Kožuf Mountains ad Michajlovo, 27.07.2013, 4 ex., on a felled trunk of *Picea*, leg. DM et DPM;

*Clytus arietis arietis* (LINNAEUS, 1758) – Trebeništa, 12.05.2012, 2 ex., on *Quercus* sp., leg. JB.

*C. rhamni rhamni* Germar, 1817 – Slivnica ad Resen, 1.06.2010, 2 ex., leg. MJ; Mavrovo National Park, Roztuša: 23.07.2010, 1 ex.; 15.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

#### Subfamily Lamiinae

*Parmena unifasciata* (Rossi, 1790) – Labuništa, 11.05.2012, 1 ex., leg. JB. The species occurs in southern Europe. The northernmost locations are situated in southern France (SAMA 2002, DANILEVSKY 2014). It primarily develops in the wood of various species of deciduous trees and shrubs such as: *Castanea* spp., *Ficus* spp., *Corylus* spp., *Alnus* spp., *Hedera helix* L., etc., and less frequently, of coniferous species, e.g. *Pinus pinaster* (Ait.) (SAMA 2002). The imago is nocturnal and spends the daytime in hiding. During this research, one specimen was collected under a branch lying on the ground. This is the first record of the species for the fauna of the Republic of Macedonia.

*Herophila tristis tristis* (Linnaeus, 1767) – Matka Canyon ad Skopje, 27-28.07.2010, 1 ex., on the ground, leg. DM et DPM; Ljubaništa, 17-19.07.2011, 1 ex., on the ground, leg. DM et DPM.

*Morimus asper funereus* (Mulsant, 1863) – Leskoec, 1.06.2010, 2 ex., leg. MJ; Matka Canyon ad Skopje, 27-28.07.2010, 2 ex., on the ground, leg. DM et DPM; Ljubaništa, 17-19.07.2011, 2 ex., on the ground, leg. DM et DPM; Kališta ad Struga, 9-10.05.2012, 1 ex., on the trunk of an old, burned *Salix* sp., leg. JB; Mavrovo National Park, Mavrovo, 1.06.2012, 5 ex., obs. PG; Mavrovo National Park, Galičnik, 21.07.2012, 2 ex., on a felled trunk of *F. sylvatica*, leg. DM et DPM.

*Dorcadion* (*Carinatodorcadion*) *aethiops aethiops* (Scopoli, 1763) – Kališta ad Struga, 10-13.05.2012, 1 ex., leg. TM.

*D. (Cribridorcadion) pedestre pedestre* (Poda, 1761) – Blace, 3.06.2010, 1 ex., leg. MJ.

*Neodorcadion bilineatum* (Germar, 1824) – Vevčani ad Struga, 11.05.2012, 1 ex., leg. TM.

*Pogonocherus* (s. str.) *hispidulus* (Piller et Mitterpacher, 1783) – Vevčani ad Struga, 11.05.2012, 1 ex., on felled branches of deciduous trees, leg. TM.

*Leiopus linnei* Wallin, Nylander & Kvamme, 2009 – Leskoec, 1.06.2010, 1♀, leg. MJ. *L. linnei* was recently identified as a species separated from

the closely related *L. nebulosus* (L.) (WALLIN *et al.* 2009). In Europe, it occurs in Sweden, Norway, Denmark, Belgium, Germany, Austria, Poland, France, Czech Republic, Bulgaria, Romania, Croatia, Estonia, Slovakia, Lithuania, Latvia, Belarus, Great Britain, the Kaliningrad region and the European part of Russia (BERGER 2009, DRUMONT, WALLIN 2009, WALLIN *et al.* 2009, GUTOWSKI *et al.* 2010, ALEKSEEV, BUKEJS 2011, BUKEJS, BALALAIKINS 2011, ZAMORKA, KAPELYUKH 2012, DANILEVSKY 2014). It develops under the bark of different species of deciduous and occasionally, coniferous trees and shrubs, (GUTOWSKI *et al.* 2010). During this research, one specimen was collected from a pile of oak timber. This is the first record of the species for the fauna of the Republic of Macedonia.

*Acanthocinus aedilis* (Linnaeus, 1758) – Labuništa, 11.05.2012, 1♀, on *Pinus* sp., leg. JB.

*Tetrops praeustus praeustus* (Linnaeus, 1758) – Kališta ad Struga, 9-10.05.2012, 1 ex., in a sweep-net, on flowers of *Crataegus* sp., leg. JB.

*Oberea* (*s. str.*) *oculata* (Linnaeus, 1758) – Mavrovo National Park, Tresonče, 21.07.2012, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*O.* (*Amaurostoma*) *erythrocephala erythrocephala* (Schrank, 1776) – Kožlar ad Veles, 27.05.2012, 2 ex., leg. MJ.

*Oxyilia duponcheli* (Brullé, 1832) – Kožlar ad Veles, 27.05.2012, 1 ex., leg. MJ.

*Phytoecia* (*Musaria*) *affinis affinis* (Harrer, 1784) – Mavrovo National Park, Nikiforovo, 16.07.2011, 4 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM.

*Ph.* (*s. str.*) *caerulea caerulea* (Scopoli, 1772) – Kališta ad Struga, 9-10.05.2012, 1 ex., in a sweep-net, leg. JB.

*Ph.* (*s. str.*) *pustulata pustulata* (Schrank, 1776) – Blace, 3.06.2010, 2 ex., leg. MJ; Kališta ad Struga, 9-10.05.2012, 1 ex., in a sweep-net, leg. JB; Mešeišta ad Struga, 13.05.2012, 2 ex., leg. TM; Kožlar ad Veles, 27.05.2012, 1 ex., leg. MJ.

*Ph.* (*s. str.*) *virgula* (Charpentier, 1825) – Kališta ad Struga, 9-10.05.2012, 1 ex., in a sweep-net, leg. JB; Mešeišta ad Struga, 13.05.2012, 1 ex., leg. TM.

*Ph.* (*s. str.*) *pubescens* Pic, 1895 – Leskoec, 1.06.2010, 1 ex., leg. MJ.

*Ph.* (*Opsilia*) *coerulescens coerulescens* (Scopoli, 1763) – Kališta ad Struga, 9-10.05.2012, 4 ex., in a sweep-net, leg. JB; Kališta ad Struga, 10-13.05.2012, 1 ex., leg. TM; Mešeišta ad Struga, 13.05.2012, 1 ex., leg. TM; Kožlar ad Veles, 27.05.2012, 2 ex., leg. MJ.

*Calamobius filum* (Rossi, 1790) – Blace,

3.06.2010, 2 ex., leg. MJ; Kališta ad Struga, 9-10.05.2012, 1 ex., leg. JB. In Europe, this species occurs from Spain and France through Austria, the Czech Republic, Slovakia, and Ukraine to the southern Russia. It is also known from northern Africa, Asia Minor, the Caucasus, the Middle East, and Cyprus. The species develops in the stems of grasses of the family Poaceae (SAMA 2002). During our research, the specimens were collected on sweep-netting herbaceous plants. This is the first record for the fauna of the Republic of Macedonia.

*Agapanthia* (*Homoblephara*) *maculicornis maculicornis* (Gyllenhal, 1817) – Mavrovo National Park, Mavrovo, 14-15.07.2011, 3 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Trebeništa, 12.05.2012, 3 ex., in a sweep-net, leg. JB; Kožlar ad Veles, 27.05.2012, 2 ex., leg. PG.

*A.* (*s. str.*) *cardui* (Linnaeus, 1767) – Blace, 3.06.2010, 2 ex., leg. MJ.

*A.* (*Smaragdula*) *violacea* (Fabricius, 1775) – Blace, 3.06.2010, 2 ex., leg. MJ; Mavrovo National Park, Mavrovo, 14-15.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Kališta ad Struga, 9-10.05.2012, 1 ex., in a sweep-net, leg. JB; Mešeišta ad Struga, 13.05.2012, 1 ex., leg. TM.

*Agapanthia* (*Synthapsia*) *kirbyi* (Gyllenhal, 1817) – Trebeništa, 12.05.2012, 2 ex., in a sweep-net, leg. JB; Kožlar ad Veles, 27.05.2012, 2 ex., leg. MJ.

*A.* (*Epoetes*) *asphodeli* (Latreille, 1804) – Trebeništa, 12.05.2012, 1 ex., in a sweep-net, leg. JB.

*A.* (*E.*) *dahli* (Richter, 1821) – Mavrovo National Park, Bistra Mountains, 14.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Mavrovo National Park, Mavrovo, 14-15.07.2011, 1 ex., in a sweep-net, on herbaceous plants, leg. DM et DPM; Trpejca, 30.07.2013, 1 ex., leg. DM et DPM.

*A.* (*E.*) *cynarae cynarae* (Germar, 1817) – Blace, 3.06.2010, 4 ex., leg. MJ.

*A.* (*E.*) *villosoviridescens* (DeGeer, 1775) – Blace, 3.06.2010, 1 ex., leg. MJ.

## Discussion

During the four years of the research conducted in the Republic of Macedonia, from the first decade of May till the first decade of August, the occurrence of 46.01% of the longhorn beetle fauna in this country was confirmed. The authors of the Catalogue of Palaearctic Coleoptera (LÖBL, SMETANA 2010) did not include in the catalogue two species, *Ph. testaceus* and *Ch. sartor*, which were listed in the earlier paper of HEYROVSKÝ (1967). During the present research, the occurrence of eight further species was recorded,

which means that the longhorn beetle fauna of the Republic of Macedonia currently counts a total of 171 species.

The longhorn beetle fauna of the Republic of Macedonia, in comparison to that of neighboring Balkan countries with a similar climate and geographic location, is relatively poorly known. For example, the occurrence of 184 species of longhorn beetles has been confirmed in Albania (RAPUZZI,

SAMA 2012), and over 400 species are known from Greece (DASCĂLU *et al.* 2012). For this reason, there is need for more extensive studies in the Republic of Macedonia, involving also locations less explored in search of this group of beetles.

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## References

- ALEKSEEV V. I., A. BUKEJS 2011. Contributions to the knowledge of beetles (Insecta: Coleoptera) in the Kaliningrad region. 2. – *Baltic Journal of Coleopterology*, **11** (2): 209-231.
- BENSE U. 1995. Longhorn beetles. Illustrated key to the Cerambycidae and Vesperidae of Europe. Weikersheim, Margraf Verlag, 512 pp.
- BERGER P. 2009. *Leiopus linnei* Wallin, Nylander & Kvamme, 2009, espèce nouvelle pour la faune de France. – *Bulletin Rutilans*, **12** (2): 37-41.
- BUKEJS A., M. BALALAIKINS 2011. New records of beetles (Insecta: Coleoptera) in Estonia. – *Acta Zoologica Lituonica*, **21** (3): 235-237.
- ĆURČIĆ S. B., M. M. BRAJKOVIĆ, V. T. TOMIĆ and B. MIHAJLOVA 2003. Contribution to the knowledge of Longicorn beetles (Cerambycidae, Coleoptera) from Serbia, Montenegro, the Republic of Macedonia and Greece. – *Archives of Biological Sciences*, **55** (1-2): 33-38.
- DANILEVSKY M. L. 2014. A check-list of Longicorn Beetles (Coleoptera, Cerambycoidea) of Europe. <http://www.cerambycidae.net>. Updated 17.01.2014.
- DANILEVSKY M. L., S. V. DEDYUKHIN, L. V. EGOROV, R. KH. KADYRBEKOV, D. G. KASATKIN and A. M. SHAPOVALOV 2007. *Purpuricenus globulicollis* Dejean in Mulsant, 1839 – a Mediterranean Longicorn-beetle (Coleoptera: Cerambycidae) in the fauna Russia and Kazakhstan. – *Russian Entomological Journal*, **16** (1): 63-69.
- DASCĂLU M.-M., G. SAMA and G. RAMEL 2012. Report on the Cerambycidae species from the Lake Kerkini National Park, northern Greece. – *Analele Științifice ale Universității "Alexandru Ioan Cuza" din Iași, s. Biologie animală*, **58**: 65-76.
- DEMELT V. C. 1966. Bockkäfer oder Cerambycidae. Biologie mitteleuropäischer Bockkäfer (Col. Cerambycidae) unter besonderer Berücksichtigung der Larven. Die Tierwelt Deutschlands. VEB G. Fischer Verlag, Jena, 115 pp.
- DRUMONT A., H. WALLIN 2009. First record of *Leiopus linnei* Wallin, Nylander & Kvamme, 2009 in Belgium (Coleoptera, Cerambycidae, Lamiinae). – *Lambillionea*, **54** (4): 592.
- FUCHS E. 1971. Eine neue *Phytoecia* aus Mazedonien. – *Koleopterologische Rundschau*, **49**: 159.
- GUTOWSKI J. M., J. HILSZCZAŃSKI, D. KUBISZ, J. KURZAWA, M. MILKOWSKI, T. MOKRZYCKI, R. PLEWA, M. PRZEWOŹNY and M. WELNICKI 2010. Distribution and host plants of *Leiopus nebulosus* (L.) and *L. linnei* Wallin, Nylander et Kvamme (Coleoptera: Cerambycidae) in Poland and neighbouring countries. – *Polish Journal of Entomology*, **79** (3): 271-282.
- HERNÁNDEZ J. M., J. J. de la ROSA 2001. Description of larva and pupa of *Plagionotus scalaris* (Brullé, 1832) and distinctive host plant for Central Spain populations (Coleoptera, Cerambycidae, Cerambycinae). – *Mitteilungen aus dem Museum für Naturkunde in Berlin, Deutsche Entomologische Zeitschrift*, **48** (2): 267-271.
- HEYROVSKÝ L. 1967. Ergebnisse der Albanien-Expedition 1961 des Deutschen Entomologischen Institutes. *Beitrag zur Entomologie*, **17** (3/4): 573-621.
- HOLZSCHUH C. 1974. Neue Bockkäfer aus Pakistan, Iran, Anatolien und Mazedonien (Coleoptera, Cerambycidae). – *Zeitschrift der Arbeitsgemeinschaft Österreichischer Entomologen*, 1973, **25**: 81-100.
- HOLZSCHUH C. 1984. Beschreibung von 24 neuen Bockkäfern aus Europa und Asien, vorwiegend aus dem Himalaya (Col., Cerambycidae). – *Entomologica Basiliensia*, **9** (3-4): 340-372.
- HOLZSCHUH C. 1986. Zwölf neuer Bockkäfer aus Europa und Asien. – *Koleopterologische Rundschau*, **58**: 121-135.
- LÖBL I., A. SMETANA (eds.) 2010. Catalogue of Palaearctic Coleoptera. Chrysomeloidea. Vol. 6. Stenstrup, Apollo Books, 924 pp.
- MIKSIĆ R. 1963. Prilog poznavanju Faune Strizibuba (Cerambycidae) Jugoslavije. – *Jugoslavenska Akademija Znanosti i Umjetnosti. Acta Biologica III*, 55-188.
- MIKSIĆ R., E. GEORGJEVIĆ 1971. Cerambycidae Jugoslavije I Dio. Akademija Nauka Umjetnosti Bosne i Hercegovine, knjiga 3 Sarajevo, 175 pp.
- MIKSIĆ R., E. GEORGJEVIĆ 1973. Cerambycidae Jugoslavije II Dio. Akademija Nauka Umjetnosti Bosne i Hercegovine, knjiga XLV, Sarajevo, 153 pp.
- MIKSIĆ R., M. KORPIĆ 1985. Cerambycidae Jugoslavije III Dio. Akademija Nauka Umjetnosti Bosne i Hercegovine, knjiga 5, Sarajevo, 148 pp.
- PESARINI C., A. SABBADINI 2007. Notes on some longhorn beetles from Continental Greece, with description of two new subspecies (Coleoptera: Cerambycidae). – *Atti della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale in Milano* – Gennaio, **148** (1): 17-34.
- RAPUZZI P., G. SAMA 2012. Contributo alla conoscenza dei Cerambycidae di Albania (Coleoptera, Cerambycidae). – *Atti del Museo Civico di Storia Naturale di Trieste*, **55**: 181-234.
- RAPUZZI P., G. SAMA 2013. Revision of the *Purpuricenus interscapillatus* species – group and allied taxa (Coleoptera, Cerambycidae). – *Fragmenta entomologica*, Roma, **45** (1-2): 143-171.
- SAMA G. 2002. Atlas of the Cerambycidae of Europe and the Mediterranean Area. Vol. 1. Nakladdelstvi Kabourek, Zlín, 173 pp.

- SLÁMA M., J. SLÁMOVA 1996. Contribution to the recognition of Greek and Yugoslavian Longicorn beetles (Coleoptera, Cerambycidae). – *Bioscopia Mésogéen*, Nice, 1995, **12** (4): 117-143.
- STARZYK J. R. 1999. Rola kózkowatych (Coleoptera: Cerambycidae) w ekosystemach leśnych oraz ich znaczenie gospodarcze. – *Sylvan*, **143** (11): 5-22.
- WALLIN H., U. NYLANDER and T. KVAMME 2009. Two sibling species of *Leiopus* Audinet-Serville, 1835 (Coleoptera: Cerambycidae) from Europe: *L. nebulosus* (Linnaeus, 1758) and *L. linnei* sp. nov. – *Zootaxa*, **2010**: 31-45.
- ZAMORKA A. M., Y. I. KAPELYUKH 2012. The Genus *Leiopus* Audinet-Serville, 1835 in Western Ukraine and the invading of mediterranean-pontic species *Leiopus femoratus* Fairmaire 1859 (Coleoptera: Cerambycidae: Acanthocinini). – *Scientific Bulletin of the Uzhgorod Univeristy (Series Biology)*, **32**: 60-64.

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