A checklist and areography of the longhorn beetles (Coleoptera, Cerambycidae) of Pirin Mountains, Bulgaria

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Academic editor: Lech Karpiński

Received: 19 Aug 2022 | Accepted: 13 Oct 2022 | Published: 31 Oct 2022

Citation: Georgiev G, Sakalian V, Mirchev P, Georgieva M, Belilov S (2022) A checklist and areography of the longhorn beetles (Coleoptera, Cerambycidae) of Pirin Mountains, Bulgaria. Biodiversity Data Journal 10: e93718. https://doi.org/10.3897/BDJ.10.e93718

Abstract

Background

The longhorn beetles fauna of Pirin Mountains, Bulgaria, was studied, based on literature data and original material. As a result, 100 taxa from five subfamilies are listed for the area, as follows: Prioninae (7 taxa), Lepturinae (31 taxa), Spondylidinae (9 taxa), Cerambycinae (28 taxa) and Lamiinae (25 taxa).

New information

This study presents two new records for Pirin Mts. (Oxymirus cursor and Tetropium fuscum fuscum) and new localities or additional information for 13 cerambycid taxa (species and subspecies). The 100 longhorn beetle taxa belong to 17 zoogeographical categories and eight complexes. The European complex occupies a dominant position (34%), followed by those from Palaearctic (17%), Eurosiberian (15%), Mediterranean (15%), European-Iranoturanian (9%), Balkan endemic (5%) and Holarctic (4%) complexes.
Keywords

Pirin Mountains, cerambycids, faunistics, chorology

Introduction

Pirin is the second highest mountain in Bulgaria. The highest peak of the mountain, Vihren (2914 m), occupies the third position on the Balkan Peninsula after Musala (2925 m) in Rila (Bulgaria) and Mytikas (2918 m) in Olympus (Greece). The average altitude of Pirin Mts. is 1033 m a.s.l. and the total area is 2585 km².

The vegetation of Pirin Mts. is vertically divided into three altitude belts: forest, subalpine and alpine. The lower part of the forest belt is predominantly made up of broad-leaved species stands (*Carpinus betulus*, *Quercus petraea*, *Fagus sylvatica*, *Populus tremula* etc.) and the upper part is mainly occupied by conifers (*Pinus nigra*, *P. sylvestris*, *P. peuce*, *P. heldreichii*, *P. mugo*, *Abies alba* and *Picea abies*) (Stoyanov 1966).

The Bulgarian cerambycid fauna (Coleoptera, Cerambycidae) is relatively well studied. Fragmentary data about findings of longhorn beetles in different mountains of the country, including Pirin, are available in many publications (Heyrovský 1931, Kantardjiewa-Minkova 1932, Kantardjiewa-Minkova 1934, Minkova 1957, Minkova 1961, Angelov 1967, Ganev 1984, Ganev 1985, Ganev 1986, Angelov 1995, Doychev and Georgiev 2004, Georgiev et al. 2005, Migliaccio et al. 2007, Rapuzzi and Georgiev 2007, etc.). Recently, fragmentary data have been summarised in separate lists for some Bulgarian mountains: Eastern Rhodopes (Georgiev et al. 2004), Western Rhodopes (Georgiev et al. 2006), West Balkan Range (Georgiev 2011), Vitosha (Topalov 2018), Strandzha (Georgiev et al. 2018), Belasitsa (Georgiev et al. 2019) and Rila (Georgiev et al. 2021). However, there is no checklist of cerambycid fauna of Pirin Mountains.

The aim of this study is to summarise the published data about longhorn beetles in the Pirin Mts., report new records and provide a chorological analysis of the cerambycid fauna of this mountain range.

Materials and methods

The longhorn beetles of Pirin Mts. were studied using literature data, our original records and unpublished materials from the entomological collection of the National Museum of Natural History, Sofia. The original material was collected on flowers, host plants and using an interception trap in a tree crown of *Pinus heldreichii*.

In this study, we followed the classification and nomenclature of longhorn beetles proposed by Sama (2002), Sama (2013), Biscaccianti (2007), Lobl and Smetana (2010), Miroshnikov (2016), Miroshnikov (2021), Zamoroka et al. (2022) and Danilevsky (2022), without indication of tribes and subgenera.
The zoogeographical characterisation of longhorn beetles was made on the basis of chorotypes (Vigna-Taglianti et al. 1999) and recent distribution of the taxa (Danilevsky 2022). According to Georgiev and Hubenov (2006) and Sakalian and Langourov (2007) conceptions, the established taxa are arranged in 18 chorotypes (areographic categories).

This paper provides a map with all known localities of the longhorn beetles recorded from Pirin Mts. It includes new localities from the current study and those already published. The records without a specific location, such as "Pirin Mt.", were not marked on the map.

The cerambycid specimens collected in this study were deposited in the private entomological collection of Georgi Georgiev (mentioned with the abbreviation [GG]).

Checklist

**Ergates faber** subsp. **faber** (Linnaeus, 1760)

Material

a. country: Bulgaria; locality: Sandanski; verbatimEventDate: 13/07/2010; sex: 1 female; recordedBy: G. Georgiev leg. [GG]; occurrenceID: 1F526295-081D-561F-BDE3-4224D3344C7B

**Distribution:** West Palaearctic subspecies (Danilevsky 2022).

**Mesoprionus besikanus** (Fairmaire, 1855)

Material

a. country: Bulgaria; locality: Peyo Yavorov hut; verbatimLocality: tree trap in *Pinus heldreichii* stand; verbatimElevation: 1886 m a.s.l.; verbatimLatitude: 41.825139; verbatimLongitude: 23.375639; startDayOfYear: 03/08/2020; endDayOfYear: 30/10/2020; sex: 1 male; recordedBy: G. Georgiev leg. [GG]; occurrenceID: 49971BE7-1E39-5A82-99ED-39D191D8CD72

**Distribution:** East Mediterranean species (Danilevsky 2022).

**Carilia virginea** subsp. **virginea** (Linnaeus, 1758)

Material

a. country: Bulgaria; locality: Peyo Yavorov hut; verbatimElevation: 1750 m a.s.l.; verbatimEventDate: 03/08/2020; sex: 2 males, 1 female; recordedBy: G. Georgiev leg. [GG]; occurrenceID: D9552788-FD98-51B6-B16F-AE57FA7CFAD0

**Distribution:** West Eurosiberian species (Danilevsky 2022).
**Oxymirus cursor** (Linnaeus, 1758)

Material

a. country: **Bulgaria**; locality: Above Bansko; verbatimEventDate: 17/06/2006; sex: 1 male; recordedBy: G. Georgiev leg. [GG]; occurrenceID: A4716EEA-1076-5646-9EB9-969B76134037

**Distribution:** West Eurosiberian species (Danilevsky 2022).

**Pachytodes erraticus** (Dalman, 1817)

Material

a. country: **Bulgaria**; locality: Kalimantsi vill.; verbatimEventDate: 06/06/2006; sex: 1 female; recordedBy: N. Simov leg. [GG]; occurrenceID: 81A397FA-9725-5CF5-B4B7-C200E5E68367

**Distribution:** European-Iranian species (Danilevsky 2022).

**Pedostrangalia verticalis** Germar, 1822

Material

a. country: **Bulgaria**; locality: Peyo Yavorov hut; verbatimElevation: 1750 m a.s.l.; verbatimLatitude: 41.824056; verbatimLongitude: 23.378472; verbatimEventDate: 03/08/2020; sex: 1 male, 1 female; recordedBy: G. Georgiev leg. [GG]; occurrenceID: 0FE1B1A0-C0DB-503A-9D14-0D076DCE9DDE

**Distribution:** Northeast Mediterranean species (Danilevsky 2022).

**Pseudovadonia livida** subsp. **livida** (Fabricius, 1777)

Material

a. country: **Bulgaria**; locality: Kalimantsi vill.; verbatimEventDate: 06/06/2006; sex: 2 males; recordedBy: N. Simov leg. [GG]; occurrenceID: 198F0B2A-AD84-5830-B29D-A74D95D5C9BD

**Distribution:** European subspecies (Danilevsky 2022).

**Rutpela maculata** subsp. **maculata** (Poda von Neuhaus, 1761)

Material

a. country: **Bulgaria**; locality: Peyo Yavorov hut; verbatimElevation: 1750 m a.s.l.; verbatimLatitude: 41.824056; verbatimLongitude: 23.378472; verbatimEventDate: 03/08/2020; sex: 1 male; recordedBy: G. Georgiev leg. [GG]; occurrenceID: DFC61675-6F84-5C03-9A40-C41BC6B29417

**Distribution:** European-Anatolian subspecies (Danilevsky 2022).
Rutpela nigra subsp. nigra (Linnaeus, 1758)

Materials

a. country: Bulgaria; locality: Koprivlen vill.; verbatimElevation: 600 m a.s.l.; verbatimEventDate: 06/06/2006; sex: 1 female; recordedBy: N. Simov leg. [GG]; occurrenceID: A35478D3-4611-542B-A9F5-364627A7E98B
b. country: Bulgaria; locality: Gorno Spanchevtsi vill.; verbatimElevation: 600 m a.s.l.; verbatimEventDate: 06/06/2006; sex: 1 female; recordedBy: N. Simov leg. [GG]; occurrenceID: DEB958C5-8C51-5E08-A813-BC5922B35805

Distribution: European-Anatolian subspecies (Danilevsky 2022).

Stictoleptura scutellata subsp. scutellata (Fabricius, 1781)

Material

a. country: Bulgaria; locality: Peyo Yavorov hut; verbatimElevation: 1750 m a.s.l.; verbatimLatitude: 41.824056; verbatimLongitude: 23.378472; verbatimEventDate: 03/08/2020; sex: 1 female; recordedBy: G. Georgiev leg. [GG]; occurrenceID: BDAAD8B2-BBB0-57E3-8EF9-F56100B594B5

Distribution: European subspecies (Danilevsky 2022).

Tetropium fuscum subsp. fuscum (Fabricius, 1787)

Material

a. country: Bulgaria; locality: Bansko; verbatimElevation: 1180 m a.s.l.; verbatimLatitude: 41.809944; verbatimLongitude: 23.468361; verbatimEventDate: 08/06/2019; sex: 1 male; recordedBy: G. Georgiev leg. [GG]; occurrenceID: 1CC6778F-5724-5186-874C-1315BDEA4920

Distribution: Transholarctic species (Danilevsky 2022).

Callimus angulatus subsp. angulatus (Schrank, 1789)

Material

a. country: Bulgaria; locality: Koprivlen vill.; verbatimElevation: 600 m a.s.l.; verbatimEventDate: 06/06/2006; sex: 1 male; recordedBy: N. Simov leg. [GG]; occurrenceID: 91AE5D50-EF4F-5251-8CD6-A58CD70CE605

Distribution: Euromediterranean subspecies (Danilevsky 2022).

Clytus rhamni subsp. rhamni Germar, 1817

Materials

a. country: Bulgaria; locality: Kalimantsi vill.; verbatimLocality: Shirokata Burchina place; verbatimElevation: 350 m a.s.l.; verbatimEventDate: 01/06/2002; sex: 2 males;
Distribution: Northeast Mediterranean subspecies (Danilevsky 2022).

*Agapanthia kirbyi* subsp. *kirbyi* (Gyllenhal, 1817)

**Material**

a. country: Bulgaria; locality: Oshtava vill.; verbatimEventDate: 15/06/2008; sex: 1 female; recordedBy: G. Georgiev leg. [GG]; occurrenceID: 46747924-CCCA-5F0C-A06C-58ABD5E728A1

Distribution: European-Iranian subspecies (Danilevsky 2022).
Phytoecia coerulescens subsp. coerulescens (Scopoli, 1763)

Material

a. country: Bulgaria; locality: Kalimantsi vill.; verbatim EventDate: 06/06/2006; sex: 1 male; recordedBy: N. Simov leg. [GG]; occurrenceID: E619F1FC-A2B1-5A87- BC9E-245749131A90

Distribution: West Palaearctic subspecies (Danilevsky 2022).

Analysis

According to the present study, 15 species are reported for Pirin Mountains. Of these, two species Oxymirus cursor and Tetropium fuscum fuscum are new records and new localities or new specimens are given for 13 species. Summarising our data with the published one, 100 cerambycid taxa from 32 localities are recorded in Pirin Mts. (Fig. 1).

The recorded cerambycid taxa belong to five subfamilies: Prioninae (7 taxa), Lepturinae (31 taxa), Spondylidinae (9 taxa), Cerambycinae (28 taxa) and Lamiinae (25 taxa) (Table 1).

Table 1. Localities and chorotypes of longhorn beetles (Coleoptera: Cerambycidae) in the Pirin Mts.

| N | Taxon | Locality (N – see Fig. 1) | Reference | Chorotype          |
|---|-------|---------------------------|-----------|--------------------|
| 1 | *Aegosoma scabricorne* (Scopoli, 1763) | Sandanski (1) | Minkova (1957), Ganev (1985), Ganev (1986), Rapuzzi and Georgiev (2007), Georgiev (2020) | European-Iranian |
|   |       | Rozhen Monsarety (8) Kalimantsi vill. (6) | Gradinarov et al. (2020) |                |
| 2 | *Prinobius myardi slamorum* Danilevsky, 2012 | Vlahi vill. (9) | Rapuzzi and Georgiev (2007), Migliaccio et al. (2007) | Pontomediterranean |
| 3 | *Rhaesus serricollis* Motschulsky, 1838 | Tremoshtitsa River (10) | Ganev (1986) | East European-Iranian |
| 4 | *Tragosoma depsarium* (Linnaeus, 1767) | Banderitsa hut (11) | Dimitrov (1963) | Eurosiberian |
| 5 | *Mesoprionus besikanus* (Fairmaire, 1855) | Tremoshtnitsa River (10) | Ganev (1986) | East Mediterranean |
|   |       | Pirin Mt. | Angelov (1995) |          |
|   |       | Peyo Yavorov hut (2) | New locality record |                |
| 6 | *Prionus coriarius* (Linnaeus, 1758) | Bansko (5) | Ganev (1984) | West Palaearctic |
|   |       | Popina laka (12), Tremoshtitsa River (10) | Ganev (1986) |          |
| N | Taxon | Locality (N – see Fig. 1) | Reference | Chorotype |
|---|---|---|---|---|
| 7 | *Ergates faber faber* (Linnaeus, 1760) | Nova Lovcha vill. (14) | Gradinarov et al. (2020) | West Palaearctic |
| 8 | *Alosterna tabacicolor tabacicolor* (DeGeer, 1775) | Bansko (5), Kalimantsi vill. (6) | Rapuzzi and Georgiev (2007) | West Eurosiberian |
| 9 | *Anastrangalia dubia dubia* (Scopoli, 1763) | Banderitsa (11) | Heyrovský (1931), Kantardjiewa-Minkova (1932) | Euromediterranean |
| 10 | *Anastrangalia sanguinolenta* (Linnaeus, 1760) | Orelia Reserve (15) | Georgiev et al. (2005) | West Eurosiberian |
| | | Sandanska Bistritsa River (16) | Georgiev (2020) | |
| | | Bansko (5) | Gradinarov et al. (2020) | |
| 11 | *Etorofus pubescens* (Fabricius, 1787) | Pirin Mt. | Bringmann (1996) | European-Anatolian |
| 12 | *Grammoptera ruficornis ruficornis* (Fabricius, 1781) | Kalimantsi vill. (6) | Gradinarov et al. (2020) | European-Anatolian |
| 13 | *Pachytodes cerambyciformis* (Schrank, 1781) | Banderitsa hut (11) | Angelov (1967) | European |
| 14 | *Pachytodes erraticus* (Dalman, 1817) | Lilyanovo vill. (17), Kresna (18) | Angelov (1967) | European-Iranian |
| | | Banderitsa Chalet - Vihren Peak (19) | Gradinarov et al. (2020) | |
| | | Kalimantsi vill. (6) | New locality record | |
| 15 | *Leptura aurulenta* Fabricius, 1793 | Popina laka loc. (12) | Ganev (1986) | Euromediterranean |
| 16 | *Leptura quadrifasciata quadrifasciata* Linnaeus, 1758 | Bansko (5), Pirin Mt. | Heyrovský (1931), Kantardjiewa-Minkova (1932) | Transpalaearctic |
| 17 | *Paracorymbia fulva* (DeGeer, 1775) | Lilyanovo vill. (17), Kresna (18) | Angelov (1967) | European-Anatolian |
| | | Bansko (5) | Gradinarov et al. (2020) | |
| 18 | *Paracorymbia pallens* (Brullé, 1832) | Vlahi vill. (9) | Gradinarov et al. (2020) | Northeast Mediterranean |
| 19 | *Pedostrangalia verticalis* Germar, 1822 | Kalimantsi vill. (6) | Rapuzzi and Georgiev (2007) | Northeast Mediterranean |
| N  | Taxon                                | Locality (N – see Fig. 1) | Reference                                      | Chorotype        |
|----|--------------------------------------|---------------------------|------------------------------------------------|------------------|
|   20 | Pedostrangalia revestita (Linnaeus, 1767) | Vlahi vill. (9)          | Gradinarov et al. (2020)                        |                  |
|         |                                      | Peyo Yavorov hut (2)      | New locality record                             |                  |
|   21 | Pseudovadonia livida livida (Fabricius, 1777) | Sandanski (1)            | Migliaccio et al. (2007)                        | European         |
|         |                                      | Banske (5)                | Kantardjiewa-Minkova (1932)                     |                  |
|         |                                      | Liliyano vill. (17)       | Angelov (1967)                                  |                  |
|         |                                      | Kalimantsi vill. (6)      | New locality record                             |                  |
|   22 | Rutpela maculata maculata (Poda von Neuhaus, 1761) | Peyo Yavorov hut (2)      | Georgiev (2020)                                 | European-Anatolian |
|         |                                      | Peyo Yavorov hut (2)      | Record in this study                            |                  |
|   23 | Rutpela nigra nigra (Linnaeus, 1758)  | Kalimantsi vill. (6)      | Gradinarov et al. (2020)                        | European-Anatolian |
|         |                                      | Koprivlen vill. (6)       | New locality record                             |                  |
|         |                                      | Gorno Spantchevtsi vill. (4) | New locality record |                  |
|   24 | Rutpela septempunctata septempunctata (Fabricius, 1793) | Banske (5)                | Kantardjiewa-Minkova (1932)                     | European         |
|         |                                      | Banderitsa Chalet - Vihren Peak (19) | Gradinarov et al. (2020) |                  |
|   25 | Stenurella bifasciata intermedia Holzschuh, 2006 | Bansko (5)                | Heyrovský (1931)                                | Balkan endemic   |
|         |                                      | Kresna gorge (18)         | Danilevsky (2011)                               |                  |
|         |                                      | Kalimantsi vill. (6)      | Gradinarov et al. (2020)                        |                  |
|   26 | Stenurella melanura melanura (Linnaeus, 1758) | Kalimantsi vill. (6)      | Rapuzzi and Georgiev (2007)                     | Transpalaearctic |
|         |                                      | Predela loc. (20)         | Gradinarov et al. (2020)                        |                  |
|   27 | Stictoleptura cordigera cordigera (Füsslins, 1775) | Popina laka (12)          | Ganev (1986)                                   | European-Iranian |
|   28 | Stictoleptura rubra rubra (Linnaeus, 1758) | Demyanitsa River (21)    | Kantardjiewa-Minkova (1932)                     | Eurosiberian     |
|         |                                      | Popina laka (12)          | Ganev (1986)                                   | European         |
|         |                                      | Pirin vill. (22)          | Gradinarov et al. (2020)                        |                  |
|         |                                      | Peyo Yavorov hut (2)      | New locality record                             |                  |
|   30 | Vadonia doiranensis mahri Holzschuh, 1986 | Kalimantsi vill. (6)      | Minkova (1961)                                 | Balkan endemic   |
|   31 | Oxynirus cursor (Linnaeus, 1758)      | Bansko (5)                | First record for Pirin Mts.                     | West Eurosiberian|
|   32 | Carilia virginia virginia (Linnaeus, 1758) | Pirin Mt.                 | Kantardjiewa-Minkova (1932), Minkova (1957)    | West Eurosiberian|
|         |                                      | Peyo Yavorov hut (2)      | New locality record                             |                  |
|   33 | Cortodera femorata (Fabricius, 1787)  | Bansko (5)                | Rapuzzi and Georgiev (2007)                     | West Eurosiberian|
| N  | Taxon                                      | Locality (N – see Fig. 1)                                                                 | Reference                                      | Chorotype            |
|----|-------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------|
| 34 | Cortodera humeralis humeralis (Schaller, 1783) | Kalimantsi vill. (6)                                                                     | Rapuzzi and Georgiev (2007)                   | European-Anatolian   |
| 35 | Pachyta quadrimaculata (Linnaeus, 1758)    | Pirin Mt.                                                                               | Angelov (1995) Migliaccio et al. (2007)      | Transpalaeartic      |
|    |                                            | Tremoshtnitsa River (10)                                                                | Ganev (1986)                                  |                      |
| 36 | Rhagium bifasciatum Fabricius, 1775        | Pirin Mt.                                                                               | Kantardjiewa-Minkova (1932)                  | European-Iranian     |
|    |                                            | Yane Sandanski hut (23)                                                                 | Angelov (1967)                                |                      |
|    |                                            | Pirin vill. (22)                                                                         | Gradinarov et al. (2020)                     |                      |
| 37 | Rhagium inquisitor inquisitor (Linnaeus, 1758) | Yane Sandanski hut (23)                                                                 | Angelov (1967)                                | Eurosiberian         |
|    |                                            | Popina laka (12)                                                                        | Ganev (1986)                                  |                      |
|    |                                            | Ilindentsi vill. (24)                                                                   | Doychev et al. (2019)                         |                      |
|    |                                            | Eltepe shelter (25)                                                                     | Georgiev (2020)                               |                      |
|    |                                            | Bansko (5), Vichren peak (19)                                                           | Georgiev and Simov (2006)                    |                      |
| 38 | Xylosteus bartoni Obenberger & Mañan, 1933 | Banderitsa hut (11), Vihren (19)                                                         | Georgiev and Simov (2006)                    | Balkan endemic       |
|    |                                            | Vihren (19), Bayuvi Dupki - Dzhindhiritsa Reserve (26)                                   | Gradinarov et al. (2020)                     |                      |

**Subfamily Spondylidinae Audinet-Serville, 1832**

| N  | Taxon                                      | Locality (N – see Fig. 1)                                                                 | Reference                                      | Chorotype            |
|----|-------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------|
| 39 | Alocerus moesiacus (Frivaldszky von Frivald, 1837) | Kalimantsi hut (6)                                                                     | Gradinarov et al. (2020)                     | Transmediterranean   |
| 40 | Archopalus ferus (Mulsant, 1839)           | Tremoshnitsa River (10)                                                                  | Ganev (1986)                                  | Transpalaeartic      |
|    |                                            | Pirin Mt.                                                                               | Angelov (1995)                                |                      |
| 41 | Archopalus rusticus rusticus (Linnaeus, 1758) | Bansko (5)                                                                             | Ganev (1984)                                  | Transpalaeartic      |
|    |                                            | Tremoshnitsa River (10)                                                                  | Ganev (1986)                                  |                      |
|    |                                            | Predela loc. (20)                                                                       | Georgiev (2020)                               |                      |
|    |                                            | Ilindentsi vill. (24), reared from Pinus nigra                                          | Doychev et al. (2017)                         |                      |
| 42 | Asemum striatum (Linnaeus, 1758)           | Demjanitsa hut (21)                                                                     | Angelov (1967)                                | Transholarctic       |
| 43 | Nothorhina punctata (Fabricius, 1798)      | Yane Sandanski hut (23)                                                                 | Migliaccio et al. (2007)                     | Transpalaeartic      |
| N  | Taxon                                      | Locality (N – see Fig. 1) | Reference                              | Chorotype      |
|----|-------------------------------------------|----------------------------|----------------------------------------|----------------|
| 44 | *Tetropium castaneum* (Linnaeus, 1758)    | Bansko (5)                 | Kantardjiewa-Minkova (1932)            | Transpalaearctic |
| 45 | *Tetropium fuscum fuscum* (Fabricius, 1787) | Bansko (5)                 | First record for Pirin Mts.            | Transholarctic  |
| 46 | *Sapbanus piceus ganglbaueri* Brancsik, 1886 | Pirin Mt.                  | Minkova (1957), Angelov (1995)         | European       |
|    |                                           | Kalimantsi vill. (6)       | Rapuzzi and Georgiev (2007)            |                |
|    |                                           | Peyo Yavorov hut (2)       | Georgiev (2020)                        |                |
| 47 | *Spondylis buprestoides* (Linnaeus, 1758) | Pirin Mt.                  | Kantardjiewa-Minkova (1932)            | Transpalaearctic |

**Subfamily Cerambicinae Latreille, 1802**

| N  | Taxon                                      | Locality (N – see Fig. 1) | Reference                              | Chorotype      |
|----|-------------------------------------------|----------------------------|----------------------------------------|----------------|
| 48 | *Icosium tomentosum atticum* Ganglbauer, 1882 | Kalimantsi vill. (6)     | Gradinarov and Sivilov (2020)          | Northeast Mediterranean |
| 49 | *Anaglyptus mysticus* (Linnaeus, 1758)    | Gotse Delchev (27)        | Georgiev (2020)                        | European-Anatolian |
| 50 | *Phymatodes glabratrus* (Charpentier, 1825) | Iliundentsi vill. (24), reared from Cupressus sempervirens | Doychev and Georgiev (2006), Doychev et al. (2017) | European-Anatolian |
| 51 | *Phymatodes lividus* (Rossi, 1794)        | Kalimantsi vill. (6)      | Migliaccio et al. (2007), Rapuzzi and Georgiev (2007) | Euromediterranean |
| 52 | *Phymatodes testaceus* (Linnaeus, 1758)   | Kalimantsi vill. (6)      | Gradinarov et al. (2020)               | Transholarctic  |
| 53 | *Cerambyx miles* Bonelli, 1812            | Kalimantsi vill. (6)      | Gradinarov et al. (2020)               | European-Anatolian |
| 54 | *Cerambyx scopoli* scopoli Fuessly, 1775  | Bayuvi dupki loc. (26)    | Georgiev (2020)                        | European-Anatolian |
| 55 | *Chlorophorus figuratus* (Scopoli, 1763)  | Pirin Mt.                 | Rapuzzi and Georgiev (2007)            | West Eurosiberian |
|    |                                           | Kalimantsi vill. (6)      | Gradinarov et al. (2020)               |                |
| 56 | *Chlorophorus herbstii* (Brahm, 1790)     | Bansko (5)                | Angelov (1967)                         | Eurosiberian    |
| 57 | *Chlorophorus varius varius* (O. F. Müller, 1766) | Sandanski (1)            | Angelov (1967)                         | West Eurosiberian |
|    |                                           | Tremoshnitsa River (10)   | Ganev (1986)                           |                |
| 58 | *Chlorophorus sartor* (O. F. Müller, 1766) | Gotse Delchev (27)       | Georgiev (2020)                        | West Palaearctic |
|    |                                           | Banderita loc. (11), Sheitan Dere River, Stara Kresna vill. (28) | Gradinarov et al. (2020)              |                |
| 59 | *Clytus rhamni rhamni* Germar, 1817       | Gotse Delchev (27)        | Georgiev (2020)                        | Northeast Mediterranean |
|    |                                           | Kalimantsi vill. (6)      | New locality record                    |                |
| 60 | *Echinocerus floralis aulicus* (Laicharting, 1784) | Sandanski (1)            | Angelov (1967)                         | Transpalaearctic |
|    |                                           | Bayuvi Dupki loc. (26)    | Georgiev (2020)                        |                |
| N  | Taxon                                      | Locality (N – see Fig. 1) | Reference                      | Chorotype                      |
|----|-------------------------------------------|----------------------------|--------------------------------|--------------------------------|
| 61 | *Neoplagionotus bobelayei bobelayei*      | Vlahi vill. (9)            | Ganev (1985)                   | East European-Iranian          |
| 62 | *Xylotrechus arvicola arvicola*           | Predela (20)               | Georgiev (2020)                | Euromediterranean              |
| 63 | *Xylotrechus stebbingi*                   | Lilyanovo vill. (17)       | Gradinarov and Sivilov (2020)  | Subcosmopolitan                |
| 64 | *Rosalia alpina*                         | Banderitsa hut (11)        | Angelov (1967)                 | European-Anatolian             |
| 65 | *Aixinopalpis gracilis gracilis*          | Kalimantsi vill. (6),      | Gradinarov et al. (2020)       | European-Iranian               |
|     |                                           | Ilindentsi vill. (24),     |                                |                                |
|     |                                           | Lilyanovo vill. (17)       |                                |                                |
| 66 | *Stromatium auratum*                      | Sandanski (1)              | Kovacs et al. (1998)           | Transmediterranean             |
| 67 | *Molorchus minor minor*                   | Bansko (5)                 | Georgiev et al. (2005)         | Transpalaearctic               |
|     |                                           | Vihren peak (19)           | Gradinarov et al. (2020)       |                                |
| 68 | *Obrium brunneum*                        | Bansko (5)                 | Angelov (1988)                 | European-Anatolian             |
|     |                                           | Pirin Mt.                  | Angelov (1995)                 |                                |
|     |                                           | Banderitsa chalet (11)     | Gradinarov et al. (2020)       |                                |
| 69 | *Stenhomalus bicolor bicolor*             | Pirin Mt.                  | Heyrovský (1931)               | Northeast Mediterranean        |
| 70 | *Purpuricenus budensis*                   | Pirin vill. (22),          | Georgiev (2020)                | West Palaearctic               |
|     |                                           | Stara Kresna vill. (28)    |                                |                                |
| 71 | *Purpuricenus kaehleri rossicus*          | Popina laka (12)           | Ganev (1986)                   | East European                  |
|     | Danilevsky, 2019                          |                            | Gotse Delchev – Katuntsi (29)  |                                |
|     |                                           |                            | Gradinarov et al. (2020)       |                                |
| 72 | *Callimus angulatus angulatus*             | Koprivlen vill. (3)        | Rapuzzi and Georgiev (2007)    | Euromediterranean              |
|     | Schrank, 1789                             |                            |                                |                                |
|     |                                           | Kalimantsi vill. (6),      | Gradinarov et al. (2020)       |                                |
|     |                                           | Pirin vill. (22)           |                                |                                |
|     |                                           | Koprivlen vill. (3)        | Record in this study           |                                |
| 73 | *Callimus femoratus*                      | Katuntsi vill. (29)        | Gradinarov et al. (2020)       | East European-Iranian          |
| 74 | *Stenopterus flavicornis*                 | Vlahi vill. (9)            | Ganev (1985)                   | Northeast Mediterranean        |
|     | Küster, 1846                              |                            | Gotse Delchev (27)             | Georgiev (2020)                |
| 75 | *Stenopterus rufus rufus*                 | Gotse Delchev (27)         | Georgiev (2020)                | European                       |
|     | Linnaeus, 1767                            |                            |                                |                                |
| 76 | *Acanthocinus aedilis*                    | Banderitsa hut (11)        | Dimitrov (1963)                | Transpalaearctic               |
|     | Linnaeus, 1758                            |                            | Angelov (1967)                 |                                |
|     |                                           | Gotse Delchev hut (30)     | Rapuzzi and Georgiev (2007)    |                                |
| N | Taxon | Locality (N – see Fig. 1) | Reference | Chorotype |
|---|-------|---------------------------|-----------|-----------|
| 77 | *Aegomorphus clavipes* (Schrank, 1781) | Pirin Mt. | Rapuzzi and Georgiev (2007) | European |
|    |       | Kalimantsi vill. (6) | Gradinarov et al. (2020) |   |
| 78 | *Aegomorphus krueperi* (Kraatz, 1859) | Kulino loc. near Razlog (13) | Georgiev (2020) | Balkan endemic |
| 79 | *Agapanthia cardui* (Linnaeus, 1767) | Yane Sandanski hut (23) | Angelov (1967) | European |
| 80 | *Agapanthia villososviridescens* (De Geer, 1775) | Yane Sandanski hut (23) | Angelov (1967) | Eurosiberian |
| 81 | *Agapanthia violacea* (Fabricius, 1775) | Pirin Mt. | Bringmann (1995) | European-Anatolian |
|    |       | Meinik (31) | Georgiev (2020) |   |
| 82 | *Agapanthia kirbyi kirbyi* (Gyllenhal, 1817) | Gotse Delchev hut (30) | Georgiev (2020) | European-Iranian |
|    |       | Kalimantsi vill. (6) | Gradinarov et al. (2020) |   |
|    |       | Oshtava vill. (7) | New locality record |   |
| 83 | *Anaesthetis testacea testacea* (Fabricius, 1781) | Gotse Delchev (27), Predela loc. (20) | Georgiev (2020) | European-Anatolian |
|    |       | Parii vill. (32) | Gradinarov et al. (2020) |   |
| 84 | *Dorcadion septemlineatum septemlineatum* Waltl, 1838 | Sandanski (1) | Rapuzzi and Georgiev (2007) | Balkan endemic |
| 85 | *Neodorcadion bilineatum* (Germain, 1823) | Bansko (5), Kalimantsi vill. (6) | Gradinarov et al. (2020) | Northeast Mediterranean |
| 86 | *Exocentrus adspersus* Mulsant, 1846 | Pirin Mt. | Heyrovský (1931), Kantardjiewa-Minkova (1934) | European-Anatolian |
|    |       | Lilyanovo vill. (17) | Gradinarov et al. (2020) |   |
| 87 | *Exocentrus punctipennis punctipennis* Mulsant & Guillebeau, 1856 | Kalimantsi vill. (6) | Gradinarov et al. (2020) | European |
| 88 | *Morimus asper funereus* Mulsant, 1862 | Pirin Mt. | Bringmann (1997) | Northeast Mediterranean |
|    |       | Bayuvi Dupki loc. (26) | Georgiev (2020) |   |
| 89 | *Monochamus galloprovincialis pistor* (Germar, 1818) | Banderitza hut (11) | Dimitrov (1963) | West Eurosiberian |
|    |       | Pirin Mt. | Rapuzzi and Georgiev (2007) |   |
| 90 | *Monochamus sutor sutor* (Linnaeus, 1758) | Peyo Yavorov hut (2) | Rapuzzi and Georgiev (2007) | West Eurosiberian |
|    |       | Pirin Mt. | Georgiev (2020) |   |
| 91 | *Phytoecia affinis affinis* (Harrer, 1784) | Yane Sandanski hut (23) | Bringmann (1998) | European-Anatolian |
| 92 | *Phytoecia coerulescens coerulescens* (Scopoli, 1763) | Kalimantsi vill. (6) | Rapuzzi and Georgiev (2007) | West Palaearctic |
|    |       | Sandanska Bistritsa River (16) | Georgiev (2020) |   |
The established cerambycid taxa belong to 17 areographical categories separated in eight complexes (Table 2).

Table 2.
Areogeographic characterisation of cerambycids in Pirin Mts.

| Areographic categories and complexes | Number | Percentage |
|-------------------------------------|--------|------------|
| Cosmopolitan complex                | 1      | 1.0        |
| Subcosmopolitan                     | 1      | 1.0        |
| Holarctic complex                   | 4      | 4.0        |
| Transholarctic                      | 4      | 4.0        |
| Palaearctic complex                 | 17     | 17.0       |
| Transpalaearctic                    | 12     | 12.0       |
| West Palaearctic                    | 5      | 5.0        |
| Eurosiberian complex                | 15     | 15.0       |
| Eurosiberian                        | 5      | 5.0        |
| West Eurosiberian                   | 10     | 10.0       |
| European-Iranoturanian complex      | 9      | 9.0        |
| Arealographic categories and complexes | Number | Percentage |
|---------------------------------------|--------|------------|
| European-Iranian                      | 6      | 6.0        |
| East European-Iranian                 | 3      | 3.0        |
| **European complex**                  | **34** | **34.0**   |
| Euromediterranean                     | 7      | 7.0        |
| European-Anatolian                    | 16     | 16.0       |
| European                              | 10     | 10.0       |
| East European                         | 1      | 1.0        |
| **Mediterranean complex**             | **15** | **15.0**   |
| Transmediterranean                    | 3      | 3.0        |
| East Mediterranean                    | 1      | 1.0        |
| Northeast Mediterranean               | 10     | 10.0       |
| Pontomediterranean                    | 1      | 1.0        |
| **Balkan endemic complex**            | **5**  | **5.0**    |
| Balkan endemics                       | 5      | 5.0        |
| **Total**                             | **100**| **100.0**  |

The taxa from the European complex are dominant in Pirin Mts. (34%) followed by those from Palaearctic (17%), Eurosiberian (15%) and Mediterranean (15%) complexes (Fig. 2).

![Graph showing percentages of arealographic complexes](image-url)
Discussion

The number of cerambycid taxa found in Pirin Mts. (100 species and subspecies) is closest to the West Balkan Range (107 taxa) (Georgiev 2011, Gradinarov and Petrova 2019), Belasitsa Mt. (110 taxa) (Georgiev et al. 2019), Vitosha Mt. (122 taxa) (Topalov 2018) and Rila Mt. (126 taxa) (Georgiev et al. 2021). It is also comparable to the number of cerambycids in other Bulgarian mountains studied: Strandzha (154 taxa) (Georgiev et al. 2018) and Western Rhodopes (161 taxa) (Georgiev et al. 2006).

In this study, taxa of the European complex occupy a dominant position (34%). They are connected with deciduous forests, which cover the largest parts of the lower territories of Pirin Mts. The second place is taken by the species and subspecies belonging to the Palaearctic complex (17%). These more eurybiont taxa are normally better represented in the high mountains, because of the harsh climatic conditions. Eurosiberian and Mediterranean complexes with equal value (15%) occupy the third place. This pattern differentiates Pirin from the rest of the studied high mountains - Vitosha (Topalov 2018) and Rila (Georgiev et al. 2021), where the third place is taken by Eurosiberian taxa. The difference is due not only to the more southerly location of the Pirin Mts., but also to the presence of the large valleys of Struma and Mesta Rivers, which allows the penetration of Mediterranean taxa.

The high territories mostly covered by coniferous trees and shrubs are favourable for distribution of the Eurosiberian taxa (fourth place). The refugial character of the region is underlined by the presence of five (5.0%) Balkan endemic cerambycids.

Concerning the other two studied mountains in Bulgaria - Strandzha (Georgiev et al. 2018) and Belasitsa (Georgiev et al. 2019), domination of European cerambycids were also established (33.1% and 38.2%, respectively), but the Mediterranean taxa have a greater share in both mountains (27.3% and 19.1%, respectively). In addition, European-Iranoturanian taxa are mostly represented in Strandzha Mt. (13.6%) compared to other mountains (7.2–11.1%). The level of Balkan and Bulgarian endemics is higher in Belasitsa Mt. – 9 taxa (8.2%), followed by Pirin 5 taxa (5.1 %), Rila Mt. – 5 (4.0%), Strandzha Mt. – 5 (3.3%) and Vitosha Mt. – 2 taxa (1.7%). Evidently, the conditions in Belasitsa Mt. and especially the distribution of relict forests of Castanea sativa is the most suitable for occurrence of endemics there.

In future investigations, the cerambycid fauna of Pirin Mt. will undoubtedly be enriched with species trophically associated with coniferous trees in the the mountains of Bulgaria, such as: Lepturobosca virens (Linnaeus, 1758), Acmaeops septentronics Thomson, 1866, Acmaeops pratensis (Laicharting, 1784), Evodinellus clathratus (Fabricius, 1793), Molorchus marmoratti marmoratti Brisout de Barneville, 1863, Pachyta lamed (Linnaeus, 1758), Paracorymbia maculicornis (De Geer, 1775), Pidonia lurida (Fabricius, 1793), Semanotus undatus (Linnaeus, 1758), Acanthocinus griseus (Fabricius, 1793),
Acanthocinus reticulatus Razoumowsky, 1789 and Monochamus sartor (Fabricius, 1787) (Georgiev and Hubenov 2006).

It is expected that longhorn beetles with Eurosiberian, Palearctic and European distribution associated with coniferous, broadleaved and grass vegetation in other mountains in south-western Bulgaria – Rila, Western Rhodopes and Belasitsa (Georgiev et al. 2006, Georgiev et al. 2019, Georgiev et al. 2021) will be also recorded: Prionus coriarius (Linnaeus, 1758), Anoplodera sexguttata (Fabricius, 1775), Anoplodera rufipes rufipes (Schaller, 1783), Dinoptera collaris (Linnaeus, 1758), Rhagium mordax (DeGeer, 1775), Rhagium sycophanta (Schrank, 1781), Strangalia attenuata (Linnaeus, 1758), Nectyda major Linnaeus, 1758, Clytus lama Mulsant, 1847, Ropalopus ungaricus insubricus (Germar, 1823), Stenocorus meridianus (Linnaeus, 1758), Aromia moschata moschata (Linnaeus, 1758), Callidium violaceum (Linnaeus, 1758), Callidium aeneum aeneum (De Deer, 1775), Callidium coriaceum Paykull, 1800, Plagionotus arcuatus arcuatus (Linnaeus, 1758), Pyrrhidium sanguineum (Linnaeus, 1758), Xylotrechus rusticus (Linnaeus, 1758), Agapanthia dahli dahli (C. F. W. Richter, 1820), Dorcadion fulvum erythropterus Fischer von Waldheim, 1823, Dorcadion tauricum tauricum Wlatt, 1838, Lamia textor (Linnaeus, 1758), Leiopus linnei Wallin, Nylander & Kvamme, 2009, Oberea erythrocephala erythrocephala (Schrank, 1776), Phytoecia cylindrica (Linnaeus, 1758), Phytoecia ictericà (Schaller, 1783), Phytoecia nigricornis (Fabricius, 1782), Phytoecia virgula virgula (Charpentier, 1825), Pogonocherus hispidulus (Piller & Mitterpacher, 1783), Saperda carcharias (Linnaeus, 1758) and Tetraps praestus praestus (Linnaeus, 1758).

Due to the specific location of Pirin in south-eastern Europe and the penetration of Mediterranean influence along the valleys of the Struma and Mesta Rivers, it is very likely that species with European-Iranian and Mediterranean distribution reported for Rila and Belasitsa (Georgiev et al. 2019, Georgiev et al. 2021) may also be reported, for example: Grammoptera abdominalis (Stephens, 1831), Xylosteus spinolae Frivaldszky von Frivald, 1837, Cerambyx nodulosus nodulosus Germar, 1817, Liederina linearis (Hampe, 1871), Molorchus umbellatarum umbellatarum (Schreber, 1759), Ropalopus claviger (Fabricius, 1775), Agapanthia schurmanni Sama, 1979, Dorcadion aethiops strumense Danilevsky, 2014, Dorcadion axillare Küster, 1847, Dorcadion sturmii Frivaldszky von Frivald, 1837 and Phytoecia genericulata orientalis Kraatz, 1871 (Georgiev et al. 2019, Georgiev et al. 2021).

Regarding the endemic complex, in future research, it is likely that other species reported for neighbouring Rila and Belasitsa Mts. may also be found: Agapanthia schurmanni Sama, 1979, Dorcadion aethiops strumense Danilevsky, 2014, Dorcadion axillare Küster, 1847, Dorcadion sturmii Frivaldszky von Frivald, 1837 and Phytoecia genericulata orientalis Kraatz, 1871 (Georgiev et al. 2019, Georgiev et al. 2021).

Only three cerambycids were recorded in trophic associations with tree and shrub species in the Pirin Mts.: Arhopalus rusticus rusticus and Pogonocherus fasciculatus fasciculatus were reared from stems and branches of Pinus nigra (Doychev et al. 2017) and Phymatodes glabrum from a stem of Cupressus sempervirens (Doychev and Georgiev 2006).
In conclusion, finding of 100 taxa (approximately 35% of longhorn beetles in Bulgaria) indicates that this taxonomic group is not yet well-studied and about 70–80 taxa are expected to be recorded in future investigations in the Pirin Mts.

**Acknowledgements**

This study was supported by the project 'Structural and functional characteristics and perspectives for the use of endemic relict coniferous communities in the changing climate in Bulgaria' funded by the National Science Fund of Bulgaria (Grant no. KP-06-NP36/13/17.12.2019).

**References**

- Angelov P (1967) Beitrag zur Kenntnis der bulgarische Cerambyciden-Arten. Travaux scientifiques de l’Ecole Normale Supérieure Paisii Hilendarski. Plovdiv 5 (1): 113-128. [In Bulgarian, German summary].
- Angelov P (1988) Zwei unbekannten für die Fauna Bulgariens Cerambyciden-Arten. Travaux Scientifiques de l’Ecole Normale Supérieure ‘Paisii Hilendarski’, Plovdiv 26 (6): 137-138. [In Bulgarian, German summary].
- Angelov P (1995) Fauna Bulgarica. 24. Coleoptera, Cerambycidae. Part I (Prioninae, Lepturinae, Necydalinae, Aseminae, Cerambycinae). In: Golemski V, et al. (Ed.) Aedibus Academiae Scientiarum Bulgaricae. Sofia, 206 pp. [In Bulgarian].
- Biscaccianti AB (2007) I Coleotteri Cerambicidi del Vesuvio (Coleoptera: Cerambycidae). Artropodi Del Parco Nazionale Del Vesuvio. Ricerche Preliminari Conservazione Habitat Invertebrati 4: 249-278.
- Bringmann HD (1995) Die Agapanthia-Arten Bulgariens (Col., Cerambycidae). Entomologische Nachrichten und Berichte 39 (1-2): 67-71.
- Bringmann HD (1996) Die Pedostrangalia-Arten Bulgariens (Col., Cerambycidae). Entomologische Nachrichten und Berichte 40 (1): 52-53.
- Bringmann HD (1997) Die Morimus und Acanthoderes-Arten Bulgariens (Col., Cerambycidae). Entomologische Nachrichten und Berichte 40 (4): 237-239.
- Bringmann HD (1998) Die Musaria-Arten (Genus Phytoecia) Bulgariens (Col., Cerambycidae). Entomologische Nachrichten und Berichte 42 (1-2): 77-78.
- Bringmann HD, Döring W (2001) Die Pogonocherus-Arten Bulgariens (Col., Cerambycidae). Entomologische Nachrichten und Berichte 45 (2): 119-121. [In German].
- Danilevsky M (2011) New subspecies of *Stenurella bifasciata* (Müller, 1776) (Coleoptera, Cerambycidae) from South West Turkey. Munis Entomology & Zoology 6 (1): 1-5.
- Danilevsky ML (2022) Catalog of Palaearctic Cerambycoidea. [http://www.Cerambycidae.net/catalog.pdf](http://www.Cerambycidae.net/catalog.pdf). Accessed on: 2022-7-06.
- Dimitrov T (1963) Macedonian Pine (*Pinus peuce* Grsb.). Zemizdat, Sofia, 116 pp. [In Bulgarian].
- Doychev D, Georgiev G (2004) New and rare longhorn beetles (Coleoptera: Cerambycidae) in Bulgaria. Acta Zoologica Bulgarica 56 (2): 167-174.
• Doychev D, Georgiev G (2006) *Poecilium glabratum* (Charpentier) (Coleoptera: Cerambycidae) - a new phytophage of *Cupressus sempervirens* L. in Bulgaria. Forest Science 1: 111-114.

• Doychev D, Topalov P, Zaemdzhikova G, Sakalian V, Georgiev G (2017) Host plants of xylophagous longhorn beetles (Coleoptera: Cerambycidae) in Bulgaria. Acta Zoologica Bulgarica 69 (4): 511-528.

• Doychev D, Zaemdzhikova G, Topalov P, Hubenov Z, Georgiev G (2019) New parasitoids on longhorn beetles (Coleoptera: Cerambycidae) in Bulgaria. Acta Zoologica Bulgarica 71 (2): 175-182.

• Ganev J (1984) New Records for Bulgarian Cerambycidae (Coleoptera). Acta Entomologica Jugoslavica 20 (1-2): 57-61.

• Ganev J (1985) Über die von Dr. Botscharov von Bulgarien gesammelten Cerambycidae-Arten. Articulata 2 (6): 147-153.

• Ganev J (1986) Beitrag zur Verbreitung der Familie Cerambycidae (Coleoptera) in Bulgarien. Articulata 2 (9): 307-312.

• Georgiev G, Stojanova A, Boyadzhiev P, Langurov M (2004) Longhorn beetles (Coleoptera: Cerambycidae) in the Eastern Rhodopes (Bulgaria Biodiversity of Bulgaria. In: Beron P, Popov A (Eds) 2. Biodiversity of Eastern Rhodopes (Bulgaria and Greece). Natural Museum of Natural History, Pensoft, Sofia, 433-437 pp.

• Georgiev G, Simov N, Stojanova A, Doychev D (2005) New and interesting records of longhorn beetles (Coleoptera: Cerambycidae) in some Bulgarian Mountains. Acta Zoologica Bulgarica 57 (2): 131-138.

• Georgiev G, Hubenov Z (2006) Vertical distribution and zoogeographical characteristics of Cerambycidae (Coleoptera) family in Bulgaria. Acta Zoologica Bulgarica 58 (3): 315-343.

• Georgiev G, Simov N (2006) New localities and distribution of *Xylosteus bartoni* (Coleoptera: Cerambycidae) in Bulgaria. Forest Science 2: 105-108.

• Georgiev G, Migliaccio E, Doychev D (2006) Longhorn beetles (Coleoptera: Cerambycidae) in Western Rhodopes (Bulgaria). In: Beron P, et al. (Eds) Biodiversity of Western Rhodopes (Bulgaria and Greece). Pensoft & Natural Museum of Natural History, Sofia, 347-360 pp.

• Georgiev G (2011) Species composition of cerambycid fauna (Coleoptera: Cerambycidae) in Western Balkan Range, Bulgaria. Forest Science 1-2: 69-81. [In Bulgarian, English summary].

• Georgiev G, Gradinarov D, Gjonov I, Sakalian V (2018) A check list and areography of longhorn beetles (Coleoptera: Cerambycidae) in Strandzha Mountain, Bulgaria and Turkey. Silva Balcanica 19 (1): 89-116.

• Georgiev G, Gradinarov D, Sivilov O, Gjonov I, Doychev D, Gashtarov V, Cvetkovska-Gjorgjievskaja A, Sakalian V (2019) A check list and areography of longhorn beetles (Coleoptera: Cerambycidae) in Belasitsa Mountain. Bulgaria and North Macedonia. ZooNotes Supplement 8: 1-27.

• Georgiev G (2020) New records of longhorn beetles (Coleoptera: Cerambycidae) in entomological collections in Bulgaria. Forest Science 1: 87-99.

• Georgiev G, Sakalian V, Mirchev P, Georgieva M, Belilov S (2021) A checklist and areography of longhorn beetles (Coleoptera: Cerambycidae) in Rila Mountain. Biodiversity Data Journal 9 [https://doi.org/10.3897/bdj.9.e72494](https://doi.org/10.3897/bdj.9.e72494)
• Gradinarov D, Petrova Y (2019) Longhorn beetles (Coleoptera: Cerambycidae) from Vrachanska Planina Mountains and Vrachanski Balkan Nature Park. In: Bechev D, Georgiev D (Eds) Faunistic diversity of Vrachanski Balkan Nature Park. Part 2. ZooNotes, Supplement 7. Plovdiv University Press, Plovdiv, 59-79 pp.

• Gradinarov D, Sivilov O (2020) First records of Xylotrechus pantherinus (Savenius, 1825) and X. stebbingi Gahan, 1906 (Cerambycidae: Cerambycinae) in Bulgaria. ZooNotes 161: 1-4.

• Gradinarov D, Sivilov O, Gashtarov V, Migliaccio E, Sakalian V, Georgiev G (2020) New records of longhorn beetles (Coleoptera: Cerambycidae) in Bulgaria. Silva Balcanica 21 (1): 91-112. https://doi.org/10.3897/silvabalcanica.21.e54609

• Heyrovský L (1931) Beitrag zur Kenntnis der bulgarischen Cerambyciden. Mitteilungen aus den Königlichen naturwissenschaftlichen Instituten in Sofia- Bulgarien 4: 78-86.

• Kantardjiewa-Minkova S (1932) Die Arten der Familie Cerambycidae (Col.). I. Prioninae und Cerambycinae. Mitteilungen der Bulgarischen Entomologischen Gesellschaft in Sofia 7: 78-99. [In Bulgarian, German summary].

• Kantardjiewa-Minkova S (1934) Die Arten der Familie Cerambycidae (Col.). II. Lamiiinae. Bulletin de la Société Entomologique de Bulgarie 8: 132-144. [In Bulgarian, German summary].

• Kovacs T, Hegessy G, Medvegy M (1998) Foodplant data of longhorn beetles from Europe (Coleoptera: Cerambycidae). Folia Historico Naturalia Matraensis 23: 333-339.

• Lobl I, Smetana A (Eds) (2010) Catalogue of Palaearctic Coleoptera. Vol. 6/1. Chrysomeloidea I (Vesperidae, Disteniidae, Cerambycidae). Updated and revised second edition’, Leiden – Boston: Brill, 2020, with corrections and additions. Caucasian Entomological Bulletin 17 (2): 459-497. https://doi.org/10.23885/181433262021172-459497

• Miroshnikov A (2021) Critical remarks on “Catalogue of Palaearctic Coleoptera. Vol. 6/1. Chrysomeloidea I (Vesperidae, Disteniidae, Cerambycidae). Updated and revised second edition”, Leiden – Boston: Brill, 2020, with corrections and additions. Caucasian Entomological Bulletin 17 (2): 459-497. https://doi.org/10.23885/181433262021172-459497

• Rapuzzi P, Georgiev G (2007) Contribution to the knowledge of species composition and regional distribution of longhorn beetles (Coleoptera: Cerambycidae) in Bulgaria. Acta Zoologica Bulgarica 59 (3): 253-266.

• Sakalian V, Langourov M (2007) Fauna and Zoogeography of Jewel Beetles (Coleoptera: Buprestidae) in Bulgaria. In: Fet V, Popov A (Eds). Biogeography and ecology of Bulgaria. Monographiae Biologicae, Springer 82: 3: 57-378.

• Sama G (2002) Atlas of the Cerambycidae of Europe and the Mediterranean Area. In: Sama G (Ed.) Volume 1: Northern, Western, Central and Eastern Europe. British Isles
and Continental Europe from France (excl. Corsica) to Scandinavia and Urals. Zlin: Kabourek, 175 pp.

- Sama G (2013) Fauna Europaea: Cerambycidae. In: Audisio P (Ed.) Fauna Europaea: Coleoptera, Cucujiformia. Fauna Europaea version 2017.06. https://fauna-eu.org. Accessed on: 2022-7-06.
- Stoyanov N (1966) Vegetation cover. In: Gerasimov IP, Galabov ZS (Eds) Geography of Bulgaria. Physical Geography. 1. BAS, Sofia, 445-482 pp. [In Bulgarian].
- Topalov P (2018) A check list and areography of longhorn beetles (Coleoptera: Cerambycidae) in Vitosha Mountain. Silva Balcanica 3: 21-40.
- Vigna-Taglianti A, Audisio P, Biondi M, Bologna M, Carpaneto G, Biase A, Fattorini S, Piattella E, Sindaco R (1999) A proposal for a chorotype classification of the Near East fauna, in the framework of the Western Palearctic Region. Biogeographia 20: 31-59.
- Zamoroka AM, Trócoli S, Shparyk VY, Semaniuk DV (2022) Polyphyly of the genus *Stenurella* (Coleoptera, Cerambycidae): Consensus of morphological and molecular data. Biosystems Diversity 30 (2): 119-136. https://doi.org/10.15421/012212