



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

Georgi Georgiev<sup>‡</sup>, Vladimir Sakalian<sup>§</sup>, Plamen Mirchev<sup>‡</sup>, Margarita Georgieva<sup>‡</sup>, Sevdalin Belilov<sup>‡</sup>

<sup>‡</sup> Forest Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria

<sup>§</sup> Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria

Corresponding author: Georgi Georgiev ([ggeorgiev.fri@gmail.com](mailto:ggeorgiev.fri@gmail.com)), Margarita Georgieva ([margaritageorgiev@gmail.com](mailto:margaritageorgiev@gmail.com))

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 Palearctic (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 km<sup>2</sup>.

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 Spantchevtsi 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;

recordedBy: D. Chobanov leg. [GG]; occurrenceID: A88ED3F7-C766-5689-8AE8-A2A411B111A6

- b. country: Bulgaria; locality: Kalimantsi vill.; verbatimEventDate: 06/06/2006; sex: 1 male, 1 female; recordedBy: N. Simov leg. [GG]; occurrenceID: D554C836-6D28-5408-85D1-12DAE85B6A61

**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).

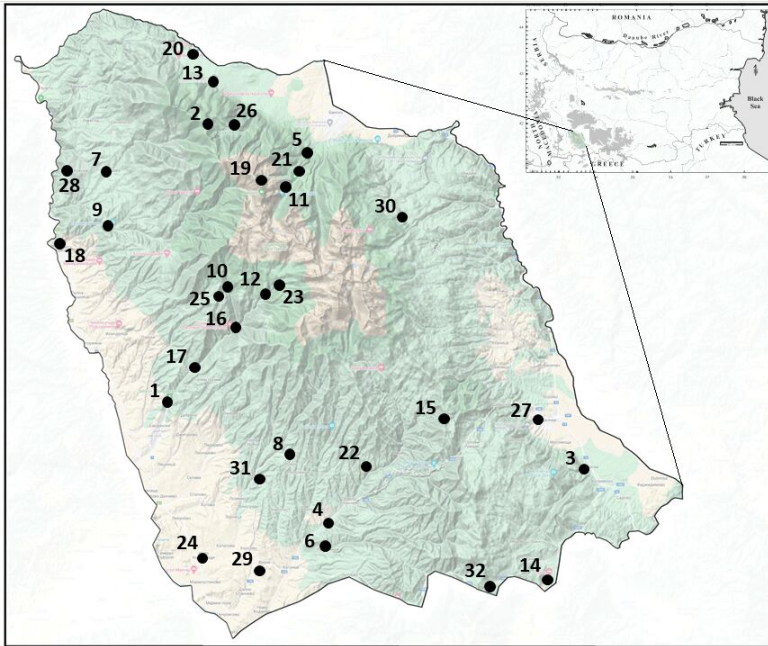


Figure 1. [doi](#)

Localities of the collected cerambycids in Pirin Mts.: 1 – Sandanski; 2 – Peyo Yavorov hut; 3 – Koprivlen; 4 – Gorno Spantchevtsi; 5 – Bansko; 6 – Kalimantsi; 7 – Oshtava; 8 – Rozhen Monsarety; 9 – Vlahi; 10 – Tremoshnitsa River; 11 – Banderitsa hut; 12 – Popina laka; 13 – Kulinoto; 14 – Nova Lovcha; 15 – Oreliak; 16 – Sandanska Bistritsa River; 17 – Lilyanovo; 18 – Kresna; 19 – Vihren; 20 – Predela; 21 – Demyanitsa River; 22 – Pirin; 23 – Yane Sandanski hut; 24 – Ilindentsi; 25 – Eltepe; 26 – Bayuvi Dupki; 27 – Gotse Delchev; 28 – Stara Kresna; 29 – Katuntsi; 30 – Gotse Delchev hut; 31 – Melnik; 32 – Paril

***Phytoecia coerulescens* subsp. *coerulescens* (Scopoli, 1763)****Material**

- a. country: Bulgaria; locality: Kalimantsi vill.; verbatimEventDate: 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.

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

N	Taxon	Locality (N – see Fig. 1)	Reference	Chorotype
<b>Subfamily Prioninae Latreille, 1802</b>				
1	<i>Aegosoma scabricorne</i> (Scopoli, 1763)	Sandanski (1) Rozhen Monsarety (8) Kalimantsi vill. (6)	Minkova (1957), Ganev (1985), Ganev (1986), Rapuzzi and Georgiev (2007), Georgiev (2020) Gradinarov et al. (2020)	European-Iranian
2	<i>Prinobius myardi slamorum</i> Danilevsky, 2012	Vlahi vill. (9)	Rapuzzi and Georgiev (2007), Migliaccio et al. (2007)	Pontomediterranean
3	<i>Rhaesus serricollis</i> Motschulsky, 1838	Tremoshtitsa River (10)	Ganev (1986)	East European-Iranian
4	<i>Tragosoma depsarium</i> (Linnaeus, 1767)	Banderitsa hut (11)	Dimitrov (1963)	Eurosiberian
5	<i>Mesoprionus besikanus</i> (Fairmaire, 1855)	Tremoshtitsa River (10)	Ganev (1986)	East Mediterranean
		Pirin Mt.	Angelov (1995)	
		Peyo Yavorov hut (2)	<b>New locality record</b>	
6	<i>Prionus coriarius</i> (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
		Pirin Mt.	Angelov (1995)	
		Kulinoto loc., Razlog (13)	Georgiev (2020)	
		Paril vill.	Georgiev (2020) Gradinarov et al. (2020)	
7	<i>Ergates faber faber</i> (Linnaeus, 1760)	Nova Lovcha vill. (14)	Gradinarov et al. (2020)	West Palaearctic
		Sandanski (1)	<b>New locality record</b>	
<b>Subfamily Lepturinae Latreille, 1802</b>				
8	<i>Alosterna tabacicolor tabacicolor</i> (DeGeer, 1775)	Bansko (5), Kalimantsi vill. (6)	Rapuzzi and Georgiev (2007)	West Eurosiberian
		Kalimantsi vill. (6)	Gradinarov et al. (2020)	
9	<i>Anastrangalia dubia dubia</i> (Scopoli, 1763)	Banderitsa (11)	Heyrovský (1931), Kantardjiewa-Minkova (1932)	Euromediterranean
		Pirin Mt.	Angelov (1995)	
10	<i>Anastrangalia sanguinolenta</i> (Linnaeus, 1760)	Oreliak Reserve (15)	Georgiev et al. (2005)	West Eurosiberian
		Sandanska Bistritsa River (16)	Georgiev (2020)	
		Bansko (5)	Gradinarov et al. (2020)	
11	<i>Etorofus pubescens</i> (Fabricius, 1787)	Pirin Mt.	Bringmann (1996)	European-Anatolian
12	<i>Grammoptera ruficornis ruficornis</i> (Fabricius, 1781)	Kalimantsi vill. (6)	Gradinarov et al. (2020)	European-Anatolian
13	<i>Pachytodes cerambyciformis</i> (Schrank, 1781)	Banderitsa hut (11)	Angelov (1967)	European
14	<i>Pachytodes erraticus</i> (Dalman, 1817)	Lilyanovo vill. (17), Kresna (18)	Angelov (1967)	European-Iranian
		Banderitsa Chalet - Vihren Peak (19)	Gradinarov et al. (2020)	
		Kalimantsi vill. (6)	<b>New locality record</b>	
15	<i>Leptura aurulenta</i> Fabricius, 1793	Popina laka loc. (12)	Ganev (1986)	Euromediterranean
16	<i>Leptura quadrifasciata quadrifasciata</i> Linnaeus, 1758	Bansko (5) Pirin Mt.	Heyrovský (1931), Kantardjiewa-Minkova (1932)	Transpalaearctic
17	<i>Paracorymbia fulva</i> (DeGeer, 1775)	Lilyanovo vill. (17), Kresna (18)	Angelov (1967)	European-Anatolian
		Bansko (5)	Gradinarov et al. (2020)	
18	<i>Paracorymbia pallens</i> (Brullé, 1832)	Vlahi vill. (9)	Gradinarov et al. (2020)	Northeast Mediterranean
19	<i>Pedostrangalia verticalis</i> Germar, 1822	Kalimantsi vill. (6)	Rapuzzi and Georgiev (2007)	Northeast Mediterranean



N	Taxon	Locality (N – see Fig. 1)	Reference	Chorotype
		Vlahi vill. (9)	Gradinarov et al. (2020)	
		Peyo Yavorov hut (2)	<b>New locality record</b>	
20	<i>Pedostrangalia revestita</i> (Linnaeus, 1767)	Sandanski (1)	Migliaccio et al. (2007)	European
21	<i>Pseudovadonia livida livida</i> (Fabricius, 1777)	Bansko (5)	Kantardjiewa-Minkova (1932)	European
		Lilyanovo vill. (17)	Angelov (1967)	
		Kalimantsi vill. (6)	<b>New locality record</b>	
22	<i>Rutpela maculata maculata</i> (Poda von Neuhaus, 1761)	Peyo Yavorov hut (2)	Georgiev (2020)	European-Anatolian
		Peyo Yavorov hut (2)	<b>Record in this study</b>	
23	<i>Rutpela nigra nigra</i> (Linnaeus, 1758)	Kalimantsi vill. (6)	Gradinarov et al. (2020)	European-Anatolian
		Koprivlen vill. (6)	<b>New locality record</b>	
		Gorno Spantchevtsi vill. (4)	<b>New locality record</b>	
24	<i>Rutpela septempunctata septempunctata</i> (Fabricius, 1793)	Bansko (5)	Kantardjiewa-Minkova (1932)	European
		Banderitsa Chalet - Vihren Peak (19)	Gradinarov et al. (2020)	
25	<i>Stenurella bifasciata intermedia</i> Holzschuh, 2006	Bansko (5)	Heyrovský (1931)	Balkan endemic
		Kresna gorge (18)	Danilevsky (2011)	
		Kalimantsi vill. (6)	Gradinarov et al. (2020)	
26	<i>Stenurella melanura melanura</i> (Linnaeus, 1758)	Kalimantsi vill. (6)	Rapuzzi and Georgiev (2007) Gradinarov et al. (2020)	Transpalearctic
		Predela loc. (20)	Georgiev (2020)	
27	<i>Stictoleptura cordigera cordigera</i> (Füsslin, 1775)	Popina laka (12)	Ganev (1986)	European-Iranian
28	<i>Stictoleptura rubra rubra</i> (Linnaeus, 1758)	Demyanitsa River (21)	Kantardjiewa-Minkova (1932)	Eurosiberian
29	<i>Stictoleptura scutellata scutellata</i> (Fabricius, 1781)	Popina laka (12)	Ganev (1986)	European
		Pirin vill. (22)	Gradinarov et al. (2020)	
		Peyo Yavorov hut (2)	<b>New locality record</b>	
30	<i>Vadonia dojraneensis mahri</i> Holzschuh, 1986	Kalimantsi vill. (6)	Minkova (1961)	Balkan endemic
31	<i>Oxymirus cursor</i> (Linnaeus, 1758)	Bansko (5)	<b>First record for Pirin Mts.</b>	West Eurosiberian
32	<i>Carilia virginea virginea</i> (Linnaeus, 1758)	Pirin Mt.	Kantardjiewa-Minkova (1932), Minkova (1957)	West Eurosiberian
		Peyo Yavorov hut (2)	<b>New locality record</b>	
33	<i>Cortodera femorata</i> (Fabricius, 1787)	Bansko (5)	Rapuzzi and Georgiev (2007)	West Eurosiberian

N	Taxon	Locality (N – see Fig. 1)	Reference	Chorotype
34	<i>Cortodera humeralis humeralis</i> (Schaller, 1783)	Kalimantsi vill. (6)	Rapuzzi and Georgiev (2007)	European-Anatolian
35	<i>Pachyta quadrimaculata</i> (Linnaeus, 1758)	Pirin Mt.	Angelov (1995) Migliaccio et al. (2007)	Transpalaeartic
		Tremoshtnitsa River (10)	Ganev (1986)	
36	<i>Rhagium bifasciatum</i> Fabricius, 1775	Pirin Mt.	Kantardjiewa-Minkova (1932)	European-Iranian
		Yane Sandanski hut (23)	Angelov (1967)	
		Pirin vill. (22)	Gradinarov et al. (2020)	
37	<i>Rhagium inquisitor inquisitor</i> (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	<i>Xylosteus bartoni</i> Obenberger & Mařan, 1933	Banderitsa hut (11), Vihren (19)	Georgiev and Simov (2006)	Balkan endemic
		Vihren (19), Bayuvi Dupki - Dzhindhritsa Reserve (26)	Gradinarov et al. (2020)	
<b>Subfamily Spondylidinae Audinet-Serville, 1832</b>				
39	<i>Alocerus moesiacus</i> (Fruvaldszky von Fruvald, 1837)	Kalimantsi hut (6)	Gradinarov et al. (2020)	Transmediterranean
40	<i>Archopalus ferus</i> (Mulsant, 1839)	Tremoshtnitsa River (10)	Ganev (1986)	Transpalaeartic
		Pirin Mt.	Angelov (1995)	
41	<i>Archopalus rusticus rusticus</i> (Linnaeus, 1758)	Bansko (5)	Ganev (1984)	Transpalaeartic
		Tremoshtnitsa River (10)	Ganev (1986)	
		Predela loc. (20)	Georgiev (2020)	
		Ilindentsi vill. (24), reared from <i>Pinus nigra</i>	Doychev et al. (2017)	
42	<i>Asemum striatum</i> (Linnaeus, 1758)	Demjanitsa hut (21)	Angelov (1967)	Transholarctic
43	<i>Nothorhina punctata</i> (Fabricius, 1798)	Yane Sandanski hut (23)	Migliaccio et al. (2007)	Transpalaeartic

N	Taxon	Locality (N – see Fig. 1)	Reference	Chorotype
44	<i>Tetropium castaneum</i> (Linnaeus, 1758)	Bansko (5)	Kantardjewa-Minkova (1932)	Transpalaeartic
45	<i>Tetropium fuscum fuscum</i> (Fabricius, 1787)	Bansko (5)	<b>First record for Pirin Mts.</b>	Transholarctic
46	<i>Saphanus piceus ganglbaueri</i> Brancsik, 1886	Pirin Mt.	Minkova (1957), Angelov (1995)	European
		Kalimantsi vill. (6)	Rapuzzi and Georgiev (2007)	
		Peyo Yavorov hut (2)	Georgiev (2020)	
47	<i>Spondylis buprestoides</i> (Linnaeus, 1758)	Pirin Mt.	Kantardjewa-Minkova (1932)	Transpalaeartic
<b>Subfamily Cerambycinae Latreille, 1802</b>				
48	<i>Icosium tomentosum atticum</i> Ganglbauer, 1882	Kalimantsi vill. (6)	Gradinarov and Sivilov (2020)	Northeast Mediterranean
49	<i>Anaglyptus mysticus</i> (Linnaeus, 1758)	Gotse Delchev (27)	Georgiev (2020)	European-Anatolian
50	<i>Phymatodes glabratus</i> (Charpentier, 1825)	Ilindentsi vill. (24), reared from <i>Cupressus sempervirens</i>	Doychev and Georgiev (2006), Doychev et al. (2017)	European-Anatolian
51	<i>Phymatodes lividus</i> (Rossi, 1794)	Kalimantsi vill. (6)	Migliaccio et al. (2007), Rapuzzi and Georgiev (2007)	Euromediterranean
52	<i>Phymatodes testaceus</i> (Linnaeus, 1758)	Kalimantsi vill. (6)	Gradinarov et al. (2020)	Transholarctic
53	<i>Cerambyx miles</i> Bonelli, 1812	Kalimantsi vill. (6)	Gradinarov et al. (2020)	European-Anatolian
54	<i>Cerambyx scopolii scopolii</i> Fuessly, 1775	Bayuvi dupki loc. (26)	Georgiev (2020)	European-Anatolian
55	<i>Chlorophorus figuratus</i> (Scopoli, 1763)	Pirin Mt.	Rapuzzi and Georgiev (2007)	West Eurosiberian
		Kalimantsi vill. (6)	Gradinarov et al. (2020)	
56	<i>Chlorophorus herbstii</i> (Brahm, 1790)	Bansko (5)	Angelov (1967)	Eurosiberian
57	<i>Chlorophorus varius varius</i> (O. F. Müller, 1766)	Sandanski (1)	Angelov (1967)	West Eurosiberian
		Tremoshnitsa River (10)	Ganev (1986)	
58	<i>Chlorophorus sartor</i> (O. F. Müller, 1766)	Gotse Delchev (27)	Georgiev (2020)	West Palaeartic
		Banderitsa loc. (11), Sheitan Dere River, Stara Kresna vill. (28)	Gradinarov et al. (2020)	
59	<i>Clytus rhamni rhamni</i> Germar, 1817	Gotse Delchev (27)	Georgiev (2020)	Northeast Mediterranean
		Kalimantsi vill. (6)	<b>New locality record</b>	
60	<i>Echinocerus floralis aulicus</i> (Laicharting, 1784)	Sandanski (1)	Angelov (1967)	Transpalaeartic
		Bayuvi Dupki loc. (26)	Georgiev (2020)	

N	Taxon	Locality (N – see Fig. 1)	Reference	Chorotype
61	<i>Neoplacionotus bobelayei bobelayei</i> (Brullé, 1832)	Vlahi vill. (9)	Ganev (1985)	East European-Iranian
62	<i>Xylotrechus arvicola arvicola</i> (Olivier, 1795)	Predela (20)	Georgiev (2020)	Euromediterranean
63	<i>Xylotrechus stebbingi</i> Gahan, 1906	Lilyanovo vill. (17)	Gradinarov and Sivilov (2020)	Subcosmopolitan
64	<i>Rosalia alpina</i> (Linnaeus, 1758)	Banderitsa hut (11)	Angelov (1967)	European-Anatolian
		Popina laka loc. (12)	Ganev (1986)	
65	<i>Axinopalpis gracilis gracilis</i> (Krynicky, 1832)	Kalimantsi vill. (6), Ilindentsi vill. (24), Lilyanovo vill. (17)	Gradinarov et al. (2020)	European-Iranian
66	<i>Stromatium auratum</i> (Böber, 1793)	Sandanski (1)	Kovacs et al. (1998)	Transmediterranean
67	<i>Molorchus minor minor</i> (Linnaeus, 1758)	Bansko (5)	Georgiev et al. (2005)	Transpalaeartic
		Vihren peak (19)	Gradinarov et al. (2020)	
68	<i>Obrium brunneum</i> (Fabricius, 1793)	Bansko (5)	Angelov (1988)	European-Anatolian
		Pirin Mt.	Angelov (1995)	
		Banderitsa chalet (11)	Gradinarov et al. (2020)	
69	<i>Stenhomalus bicolor bicolor</i> (Kraatz, 1862)	Pirin Mt.	Heyrovský (1931)	Northeast Mediterranean
70	<i>Purpuricenus budensis</i> (Götz, 1783)	Pirin vill. (22), Stara Kresna vill. (28)	Georgiev (2020)	West Palaeartic
71	<i>Purpuricenus kaehleri rossicus</i> Danilevsky, 2019	Popina laka (12)	Ganev (1986)	East European
		Gotse Delchev – Katuntsi (29)	Gradinarov et al. (2020)	
72	<i>Callimus angulatus angulatus</i> (Schränk, 1789)	Koprivlen vill. (3)	Rapuzzi and Georgiev (2007)	Euromediterranean
		Kalimantsi vill. (6), Pirin vill. (22)	Gradinarov et al. (2020)	
		Koprivlen vill. (3)	<b>Record in this study</b>	
73	<i>Callimus femoratus</i> (Germar, 1824)	Katuntsi vill. (29)	Gradinarov et al. (2020)	East European-Iranian
74	<i>Stenopterus flavicornis</i> Küster, 1846	Vlahi vill. (9)	Ganev (1985)	Northeast Mediterranean
		Gotse Delchev (27)	Georgiev (2020)	
75	<i>Stenopterus rufus rufus</i> (Linnaeus, 1767)	Gotse Delchev (27)	Georgiev (2020)	European
<b>Subfamily Lamiinae Latreille, 1825</b>				
76	<i>Acanthocinus aedilis</i> (Linnaeus, 1758)	Banderitsa hut (11)	Dimitrov (1963)	Transpalaeartic
		Sandanski (1)	Angelov (1967)	
		Gotse Delchev hut (30)	Rapuzzi and Georgiev (2007)	

N	Taxon	Locality (N – see Fig. 1)	Reference	Chorotype
77	<i>Aegomorphus clavipes</i> (Schrank, 1781)	Pirin Mt.	Rapuzzi and Georgiev (2007)	European
		Kalimantsi vill. (6)	Gradinarov et al. (2020)	
78	<i>Aegomorphus krueperi</i> (Kraatz, 1859)	Kulinoto loc. near Razlog (13)	Georgiev (2020)	Balkan endemic
79	<i>Agapanthia cardui</i> (Linnaeus, 1767)	Yane Sandanski hut (23)	Angelov (1967)	European
80	<i>Agapanthia villosoviridescens</i> (De Geer, 1775)	Yane Sandanski hut (23)	Angelov (1967)	Eurosiberian
81	<i>Agapanthia violacea</i> (Fabricius, 1775)	Pirin Mt.	Bringmann (1995)	European-Anatolian
		Melnik (31)	Georgiev (2020)	
82	<i>Agapanthia kirbyi kirbyi</i> (Gyllenhal, 1817)	Gotse Delchev hut (30)	Georgiev (2020)	European-Iranian
		Kalimantsi vill. (6)	Gradinarov et al. (2020)	
		Oshtava vill. (7)	<b>New locality record</b>	
83	<i>Anaesthetis testacea testacea</i> (Fabricius, 1781)	Gotse Delchev (27), Predela loc. (20)	Georgiev (2020)	European-Anatolian
		Paril vill. (32)	Gradinarov et al. (2020)	
84	<i>Dorcadion septemlineatum septemlineatum</i> Walth, 1838	Sandanski (1)	Rapuzzi and Georgiev (2007)	Balkan endemic
85	<i>Neodorcadion bilineatum</i> (Germar, 1823)	Bansko (5), Kalimantsi vill. (6)	Gradinarov et al. (2020)	Northeast Mediterranean
86	<i>Exocentrus adpersus</i> Mulsant, 1846	Pirin Mt.	Heyrovský (1931), Kantardjiewa-Minkova (1934)	European-Anatolian
		Lilyanovo vill. (17)	Gradinarov et al. (2020)	
87	<i>Exocentrus punctipennis punctipennis</i> Mulsant & Guillebeau, 1856	Kalimantsi vill. (6)	Gradinarov et al. (2020)	European
88	<i>Morimus asper funereus</i> Mulsant, 1862	Pirin Mt.	Bringmann (1997)	Northeast Mediterranean
		Bayuvi Dupki loc. (26)	Georgiev (2020)	
89	<i>Monochamus galloprovincialis pistor</i> (Germar, 1818)	Banderitsa hut (11)	Dimitrov (1963)	West Eurosiberian
		Pirin Mt.	Rapuzzi and Georgiev (2007)	
90	<i>Monochamus sutor sutor</i> (Linnaeus, 1758)	Peyo Yavorov hut (2)	Rapuzzi and Georgiev (2007)	West Eurosiberian
		Pirin Mt.	Georgiev (2020)	
91	<i>Phytoecia affinis affinis</i> (Harrer, 1784)	Yane Sandanski hut (23)	Bringmann (1998)	European-Anatolian
92	<i>Phytoecia coerulea coerulea</i> (Scopoli, 1763)	Kalimantsi vill. (6)	Rapuzzi and Georgiev (2007)	West Palaearctic
		Sandanska Bistritsa River (16)	Georgiev (2020)	

N	Taxon	Locality (N – see Fig. 1)	Reference	Chorotype
		Banderitsa Chalet - Vihren Peak (19)	Gradinarov et al. (2020)	
		Kalimantsi vill. (6)	<b>Record in this study</b>	
93	<i>Phytoecia vittipennis vittipennis</i> Reiche, 1877	Melnik (31)	Rapuzzi and Georgiev (2007)	Northeast Mediterranean
94	<i>Phytoecia albovittigera</i> Heyden, 1863	Vlahi vill. (9)	Gradinarov et al. (2020)	Northeast Mediterranean
95	<i>Phytoecia hirsutula hirsutula</i> (Frölich, 1793)	Kalimantsi vill. (6)	Gradinarov et al. (2020)	West Eurosiberian
96	<i>Pogonocherus fasciculatus fasciculatus</i> DeGeer, 1775	Sandanski, Melnik (31)	Bringmann and Döring (2001)	Transpalaeartic
		Banderitsa hut (11)	Doychev and Georgiev (2004)	
		Ilindentsi vill. (24), reared from <i>Pinus nigra</i>	Doychev et al. (2017)	
97	<i>Pogonocherus perroudi perroudi</i> Mulsant, 1839	Rhozhen Monastery (8)	Bringmann and Döring (2001), Migliaccio et al. (2007)	Transmediterranean
98	<i>Saperda populnea</i> (Linnaeus, 1758)	Sandanski (1)	Angelov (1967)	Transholarctic
99	<i>Saperda punctata</i> (Linnaeus, 1767)	Lilyanovo vill. (17)	Gradinarov et al. (2020)	Euromediterranean
100	<i>Saperda scalaris scalaris</i> (Linnaeus, 1758)	Pirin vill.	Gradinarov et al. (2020)	Euromediterranean

The established cerambycid taxa belong to 17 areogeographical categories separated in eight complexes (Table 2).

Table 2.

Areogeographic characterisation of cerambycids in Pirin Mts.

Areogeographic categories and complexes	Number	Percentage
<b>Cosmopolitan complex</b>	<b>1</b>	<b>1.0</b>
Subcosmopolitan	1	1.0
<b>Holarctic complex</b>	<b>4</b>	<b>4.0</b>
Transholarctic	4	4.0
<b>Palaeartic complex</b>	<b>17</b>	<b>17.0</b>
Transpalaeartic	12	12.0
West Palaeartic	5	5.0
<b>Eurosiberian complex</b>	<b>15</b>	<b>15.0</b>
Eurosiberian	5	5.0
West Eurosiberian	10	10.0
<b>European-Iranoturanian complex</b>	<b>9</b>	<b>9.0</b>

Areographic categories and complexes	Number	Percentage
European-Iranian	6	6.0
East European-Iranian	3	3.0
<b>European complex</b>	<b>34</b>	<b>34.0</b>
Euromediterranean	7	7.0
European-Anatolian	16	16.0
European	10	10.0
East European	1	1.0
<b>Mediterranean complex</b>	<b>15</b>	<b>15.0</b>
Transmediterranean	3	3.0
East Mediterranean	1	1.0
Northeast Mediterranean	10	10.0
Pontomediterranean	1	1.0
<b>Balkan endemic complex</b>	<b>5</b>	<b>5.0</b>
Balkan endemics	5	5.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

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

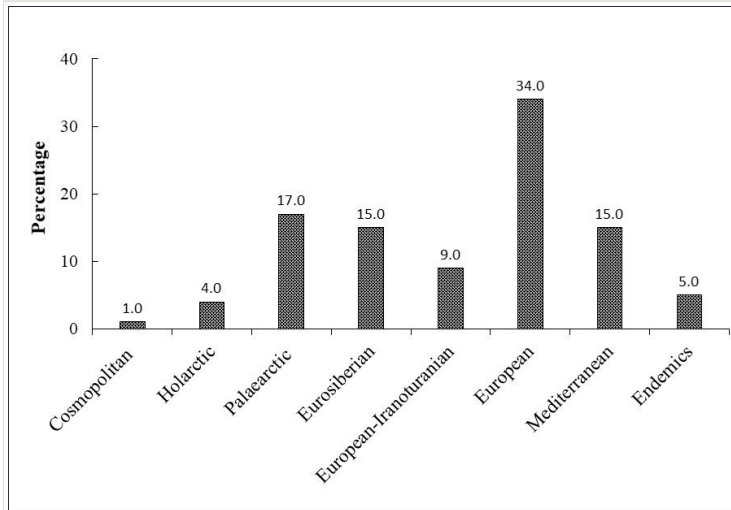


Figure 2. [doi](#)

Arealographic complexes of the longhorn beetles in Pirin Mts.

## 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 septentrionis* Thomson, 1866, *Acmaeops pratensis* (Laicharting, 1784), *Evodinellus clathratus* (Fabricius, 1793), *Molorchus marmottani marmottani* 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), *Necydalis 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 erythropterum* Fischer von Waldheim, 1823, *Dorcadion tauricum tauricum* Walth, 1838, *Lamia textor* (Linnaeus, 1758), *Leiopus linnei* Wallin, Nylander & Kvamme, 2009, *Oberea erythrocephala erythrocephala* (Schrank, 1776), *Phytoecia cylindrica* (Linnaeus, 1758), *Phytoecia icterica* (Schaller, 1783), *Phytoecia nigricornis* (Fabricius, 1782), *Phytoecia virgula virgula* (Charpentier, 1825), *Pogonocherus hispidulus* (Piller & Mitterpacher, 1783), *Saperda carcharias* (Linnaeus, 1758) and *Tetrops praeustus praeustus* (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, *Lioderina linearis* (Hampe, 1871), *Molorchus umbellatarum umbellatarum* (Schreber, 1759), *Ropalopus clavipes* (Fabricius, 1775), *Agapanthia cynarae cynarae* (Germar, 1817), *Mesosa curculionoides* (Linnaeus, 1760) and *Stenidea genei genei* (Aragona, 1830).

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 sturmi* Frivaldszky von Frivald, 1837 and *Phytoecia geniculata 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 glabratus* 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 unbekanntes 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: Golemanski 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>. 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. (Ed.) Biodiversity of Bulgaria. 3. 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-Gjorgjievska 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>

- 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.
- Kantardjewa-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].
- Kantardjewa-Minkova S (1934) Die Arten der Familie Cerambycidae (Col.). II. Lamiinae. Bulletin de la Société Entomologique de Bulgarie 8: 132-144. [In Bulgarian, German summary].
- Kovacs T, Hegyessy 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. 6. Apollo Books, 924 pp.
- Migliaccio E, Georgiev G, Gashtarov V (2007) An annotated list of Bulgarian cerambycids with special view on the rarest species and endemics (Coleoptera: Cerambycidae). Lambillionea Supplément 1 Bruxelles (Tervuren) 107 (1): 78 pp.
- Minkova S (1957) Neue seltene Arten Cerambycidae für Bulgarien. Bulletin de l'Institut Zoologique 6: 539-560. [In Bulgarian, Russian and German summaries].
- Minkova S (1961) Untersuchungen über die Artenzusammensetzung der Tribus Dorcadionini (Col. Cerambycidae) in Bulgarien. Bulletin de l'Institut Zoologique 10: 293-309. [In Bulgarian, German summary].
- Miroshnikov A (2016) Myths and reality: critical remarks on M.L. Danilevsky's monograph, "Longicorn beetles (Coleoptera, Cerambycoidea) of Russia and adjacent countries. Part 1". Moscow: HSC, 2014. 518 p. Caucasian Entomological Bulletin 12 (1): 181-214. <https://doi.org/10.23885/1814-3326-2016-12-1-181-214>
- 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 Palaearctic 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>