



A checklist and areography of longhorn beetles (Coleoptera: Cerambycidae) in Rila Mountain

Georgi Georgiev[‡], Vladimir Sakalian[§], Plamen Mirchev[‡], Margarita Georgieva[‡], Sevdalin Belilov[‡]

[‡] Forest Research Institute - Bulgarian Academy of Sciences, Sofia, Bulgaria

[§] Institute of Biodiversity and Ecosystem Research - Bulgarian Academy of Sciences., Sofia, Bulgaria

Corresponding author: Georgi Georgiev (ggeorgiev.fri@gmail.com)

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Abstract

Background

The complex of longhorn beetles in Rila Mt. in Bulgaria was studied by literature data and original biological materials. As a result, 126 taxa from six subfamilies were established, as follows: Prioninae (four taxa), Lepturinae (43 taxa), Necydalinae (two taxa), Spondylidinae (seven taxa), Cerambycinae (31 taxa) and Lamiinae (39 taxa).

New information

In this study, two new records for Rila Mt. (*Stenurella nigra nigra* and *Xylosteus spinolae*) and new localities or additional information for 24 cerambycid taxa were reported. The longhorn beetles belong to 18 zoogeographical categories and seven complexes. The European complex occupies a dominant position (37.3%), followed by the Palaearctic (23.8%), Eurosiberian (13.5%), Mediterranean (11.1%), European-Iranoturanian (7.1%), Balkan endemic (4.0%) and Holarctic (3.2%) complexes.

Keywords

Cerambycidae, Rila Mt., areography, Bulgaria

Introduction

Rila is the highest and one of the largest mountains in Bulgaria. The average altitude is 1487 m a.s.l. and the total area - 2629 km². The highest peak of the mountain, Musala (2925 m a.s.l.), is the highest on the Balkan Peninsula and in Eastern Europe (Ivanov 1966).

In Rila Mt., there is a large number of tree and shrub species clearly distributed in vegetation belts. The deciduous belt is formed mainly by hornbeam (*Carpinus betulus* L.), sessile oak (*Quercus petraea* (Matt.) Liebl.), common beech (*Fagus sylvatica* L.), aspen (*Populus tremula* L.) and birch (*Betula pendula* Roth) and coniferous one - by silver fir (*Abies alba* Mill.), Norway spruce (*Picea abies* (L.) Karst.), Scots pine (*Pinus sylvestris* L.), Balkan pine (*Pinus peuce* Griseb.) and dwarf mountain pine (*Pinus mugo* Turra) (Stoyanov 1966).

Information about findings of longhorn beetles of Rila is available in a number of literature sources (Heyrovský 1931, Kantardjiewa-Minkova 1932, Kantardjiewa-Minkova 1934, Minkova 1957, Minkova 1961, Angelov 1967, Angelov 1995, Ganev 1984, Ganev 1985, Ganev 1986, Doychev and Georgiev 2004, Migliaccio et al. 2007, Rapuzzi and Georgiev 2007 etc.). However, there is no check-list of cerambycid fauna of the mountain.

The aim of this study is to summarise data in entomological literature about longhorn beetles in Rila Mt., to report new records of longhorn beetles and to make zoogeographical analysis of cerambycid fauna in the mountain.

Materials and methods

The longhorn beetles of Rila Mt. were studied by literature data, original records and unpublished materials in entomological collections. The original material was collected on flowers and host plants.

In this study, classification and nomenclature of the longhorn beetles suggested by Sama 2002, Sama 2013, Téocchi 2003, Biscaccianti 2007, Lobl and Smetana 2010, Özdikmen 2011, Miroshnikov 2016 and Danilevsky 2021 are followed, without indication of tribes and subgenera. Some taxa reported from Rila Mt., but most likely misidentified, are not included in the list: *Agapanthia lais* Reiche & Saulcy, 1858 (Bringmann 1995) and *Phytoecia affinis nigropubescens* G. Müller, 1948 (reported as *Phytoecia nigripes nigropubescens* in Bringmann (1998)).

The zoogeographical characterisation of longhorn beetles was made on the basis of recent taxa distribution (Danilevsky 2021). According to Georgiev and Hubenov (2006) and

Sakalian and Langourov (2007) conceptions, the established taxa are arranged in 18 chorotypes (areographic categories).

The new cerambycid records are deposited in entomological collection of Georgi Georgiev (mentioned with the abbreviation [GG]).

Checklist

Prionus coriarius (Linnaeus, 1758)

Material

- a. country: Bulgaria; locality: Brashantsi vill.; eventDate: 13-08-81; sex: 2 males; recordedBy: V. Radkova leg. [GG]

Distribution: West Palaearctic species (Danilevsky 2021)

Alosterna tabacicolor subsp. *tabacicolor* (DeGeer, 1775)

Material

- a. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: West Eurosiberian subspecies (Danilevsky 2021)

Anastrangalia dubia subsp. *dubia* (Scopoli, 1763)

Materials

- a. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 3 males, 2 females; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 1 male, 3 females; recordedBy: G. Georgiev leg. [GG]
- c. country: Bulgaria; locality: Treshtenik loc.; verbatimElevation: 1250 m a.s.l.; verbatimLatitude: 42.052222; verbatimLongitude: 23.668694; sex: 3 males, 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: Euromediterranean subspecies (Danilevsky 2021)

Anastrangalia sanguinolenta (Linnaeus, 1760)

Materials

- a. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 4 males; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Treshtenik loc.; verbatimElevation: 1250 m a.s.l.; verbatimLatitude: 42.052222; verbatimLongitude: 23.668694; sex: 1 male, 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: West Eurosiberian species (Danilevsky 2021)

***Leptura quadrifasciata* subsp. *quadrifasciata* Linnaeus, 1758**

Material

- a. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 1 male; recordedBy: G. Georgiev leg. [GG]

Distribution: Transpalaeartic subspecies (Danilevsky 2021)

***Judolia cerambyciformis* (Schrank, 1781)**

Materials

- a. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 1 male, 1 female; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Harsovo vill.; verbatimElevation: 800 m a.s.l.; eventDate: 07-20-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]
- c. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 1 male; recordedBy: G. Georgiev leg. [GG]
- d. country: Bulgaria; locality: Ovtchartsitsi vill.; verbatimElevation: 900 m a.s.l.; eventDate: 07-21-04; sex: 1 male; recordedBy: G. Georgiev leg. [GG]
- e. country: Bulgaria; locality: Treshtenik loc.; verbatimElevation: 1250 m a.s.l.; verbatimLatitude: 42.052222; verbatimLongitude: 23.668694; sex: 2 males, 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: European species (Danilevsky 2021)

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

Materials

- a. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Ovtchartsitsi vill.; verbatimElevation: 900 m a.s.l.; eventDate: 07-21-04; sex: 1 male, 1 female; recordedBy: G. Georgiev leg. [GG]
- c. country: Bulgaria; locality: Treshtenik loc.; verbatimElevation: 1400 m a.s.l.; verbatimLatitude: 42.052222; verbatimLongitude: 23.668694; sex: 2 males; recordedBy: G. Georgiev leg. [GG]

Distribution: European-Anatolian subspecies (Danilevsky 2021)

***Stenurella nigra* subsp. *nigra* (Linnaeus, 1758)**

Material

- a. country: Bulgaria; locality: Ovtchartsitsi vill.; verbatimElevation: 900 m a.s.l.; eventDate: 07-21-04; sex: 1 male; recordedBy: G. Georgiev leg. [GG]

Distribution: European-Anatolian subspecies (Danilevsky 2021)

Stenurella bifasciata* subsp. *intermedia* Holzschuh, 2006*Material**

- a. country: Bulgaria; locality: Ovtchartsı vill.; verbatimElevation: 900 m a.s.l.; eventDate: 07-21-04; recordedBy: G. Georgiev leg. [GG]

Distribution: Balkan endemic species (Danilevsky 2021)

Stenurella septempunctata* subsp. *septempunctata* (Fabricius, 1793)*Materials**

- a. country: Bulgaria; locality: Harsovo vill.; verbatimElevation: 800 m a.s.l.; eventDate: 07-20-04; sex: 8 males, 4 females; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Ovtchartsı vill.; verbatimElevation: 900 m a.s.l.; eventDate: 07-21-04; sex: 1 male, 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: European subspecies (Danilevsky 2021)

Stenurella melanura* subsp. *melanura* (Linnaeus, 1758)*Materials**

- a. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 1 male; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Harsovo vill.; verbatimElevation: 800 m a.s.l.; eventDate: 07-20-04; sex: 1 male, 1 female; recordedBy: G. Georgiev leg. [GG]
- c. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]
- d. country: Bulgaria; locality: Treshtenik loc.; verbatimElevation: 1400 m a.s.l.; verbatimLatitude: 42.052222; verbatimLongitude: 23.668694; sex: 1 male; recordedBy: G. Georgiev leg. [GG]

Distribution: Transpalaeartic subspecies (Danilevsky 2021)

Stictoleptura rubra* subsp. *rubra* (Linnaeus, 1758)*Material**

- a. country: Bulgaria; locality: Ovtchartsı vill.; verbatimElevation: 900 m a.s.l.; eventDate: 07-21-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: Eurosiberian subspecies (Danilevsky 2021)

Paracorymbia maculicornis* (DeGeer, 1775)*Materials**

- a. country: Bulgaria; locality: Ravnite Mochuri loc. near Dobursko vill.; verbatimElevation: 1600 m a.s.l.; eventDate: 7/6-8/30/2003; sex: 1 male collected in tree traps on *Pinus sylvestri*; recordedBy: N. Simov leg. [GG]
- b. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 2 males, 1 female; recordedBy: G. Georgiev leg. [GG]
- c. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 3 males, 2 females; recordedBy: G. Georgiev leg. [GG]

Distribution: European species (Danilevsky 2021)

Strangalia attenuata* (Linnaeus, 1758)*Materials**

- a. country: Bulgaria; locality: Harsovo vill.; verbatimElevation: 800 m a.s.l.; eventDate: 07-20-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Ovtchartsı vill.; verbatimElevation: 900 m a.s.l.; eventDate: 07-21-04; sex: 1 male; recordedBy: G. Georgiev leg. [GG]

Distribution: Transpalaeartic species (Danilevsky 2021)

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

- a. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 1 male; recordedBy: G. Georgiev leg. [GG]

Distribution: Eurosiberian subspecies (Danilevsky 2021)

Cortodera humeralis* subsp. *humeralis* (Schaller, 1783)*Material**

- a. country: Bulgaria; locality: Above Dobarsko vill.; eventDate: 06-02-03; sex: 1 male, 1 female; recordedBy: N. Simov leg. [GG]

Distribution: European-Anatolian subspecies (Danilevsky 2021)

Pachyta quadrimaculata* (Linnaeus, 1758)*Materials**

- a. country: Bulgaria; locality: Parangalitsa; verbatimElevation: 1300 m a.s.l.; eventDate: 07-20-04; sex: 2 males, 1 female; recordedBy: G. Georgiev leg. [GG]

- b. country: Bulgaria; locality: Treshtenik loc.; verbatimElevation: 1400 m a.s.l.; verbatimLatitude: 42.052222; verbatimLongitude: 23.668694; sex: 2 males, 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: Transpalearctic species (Danilevsky 2021)

***Pidonia lurida* (Fabricius, 1793)**

Material

- a. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: European species (Danilevsky 2021)

***Rhagium bifasciatum* Fabricius, 1775**

Materials

- a. country: Bulgaria; locality: Malyovitsa, Chalat loc.; verbatimElevation: 2050 m a.s.l.; eventDate: 06-07-64; sex: 1 male, 1 female; recordedBy: P. Beron leg. [GG]
- b. country: Bulgaria; locality: Maliovitsa; verbatimElevation: 2020 m a.s.l.; eventDate: 11-01-70; sex: 1 male; recordedBy: P. Beron leg. [GG]
- c. country: Bulgaria; locality: Bistritsa vill.; verbatimElevation: 700 m a.s.l.; eventDate: 06-06-81; sex: 1 female; recordedBy: V. Radkova leg. [GG]
- d. country: Bulgaria; locality: Blagoevgrad; verbatimElevation: 560 m a.s.l.; eventDate: 06-28-82; sex: 1 male; recordedBy: E. Andreeva leg. [GG]

Distribution: European-Iranoturanian species (Danilevsky 2021)

***Xylosteus spinolae* Frivaldszky von Frivald, 1837**

Material

- a. country: Bulgaria; locality: Govedartsi vill.; verbatimElevation: 1200 m a.s.l.; eventDate: 06-21-20; sex: 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: Northeast Mediterranean species (Danilevsky 2021)

***Cerambyx scopolii* subsp. *scopolii* Fuessly, 1775**

Material

- a. country: Bulgaria; locality: Brashantsii vill.; eventDate: 06-06-82; sex: 1 male, 1 female; recordedBy: V. Radkova leg. [GG]

Distribution: European-Anatolian subspecies (Danilevsky 2021)

Clytus rhamni* subsp. *rhamni* Germar, 1817*Material**

- a. country: Bulgaria; locality: Harsovo vill.; verbatimElevation: 800 m a.s.l.; eventDate: 07-20-04; sex: 3 males, 4 females; recordedBy: G. Georgiev leg. [GG]

Distribution: Northeast Mediterranean subspecies (Danilevsky 2021)

Molorchus minor* subsp. *minor* (Linnaeus, 1758)*Material**

- a. country: Bulgaria; locality: Rila Monastery; verbatimElevation: 1400 m a.s.l.; eventDate: 07-07-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: Transpalaeartic subspecies (Danilevsky 2021)

Lamia textor* (Linnaeus, 1758)*Materials**

- a. country: Bulgaria; locality: Blagoevgrad; verbatimElevation: 560 m a.s.l.; eventDate: 05-14-90; sex: 1 female; recordedBy: G. Georgiev leg. [GG]
- b. country: Bulgaria; locality: Harsovo vill.; verbatimElevation: 800 m a.s.l.; eventDate: 07-20-04; sex: 1 female; recordedBy: G. Georgiev leg. [GG]

Distribution: Transpalaeartic subspecies (Danilevsky 2021)

Monochamus sutor* subsp. *sutor* (Linnaeus, 1758)*Material**

- a. country: Bulgaria; locality: Iliina Riiver above Rila Monastery; eventDate: 06-22-13; sex: 1 male; recordedBy: P. Mirchev leg. [GG]

Distribution: West Eurosiberian subspecies Danilevsky 2021

Pogonocherus fasciculatus* subsp. *fasciculatus* DeGeer, 1775*Material**

- a. country: Bulgaria; locality: Above Dobarsko vill.; eventDate: 06-02-03; sex: 1 female; recordedBy: N. Simov leg. [GG]

Distribution: Transpalaeartic subspecies (Danilevsky 2021)

Analysis

In this study, two new taxa (*Stenurella nigra nigra* and *Xylosteus spinolae*) were established for Rila Mt. New localities or additional information for 24 cerambycid taxa were also reported.

The total number of cerambycid taxa in Rila Mt. is 126 from six subfamilies: Prioninae (four taxa), Lepturinae (43 taxa), Necydalinae (two taxa), Spondylidinae (seven taxa), Cerambycinae (31 taxa) and Lamiinae (39 taxa) (Table 1).

Table 1.				
Localities and chorotypes of longhorn beetles (Coleoptera: Cerambycidae) in Rila Mt.				
N	Taxon	Locality	References	Chorotype
Subfamily Prioninae Latreille, 1802				
1	<i>Tragosoma depsarium</i> (Linnaeus, 1767)	Blagoevgrad	Kantardjewa-Minkova 1932	Eurosiberian
2	<i>Mesoprionus besikanus</i> (Fairmaire, 1855)	Rila Mt.	Kantardjewa-Minkova 1932, Angelov 1995	East Mediterranean
3	<i>Prionus coriarius</i> (Linnaeus, 1758)	Yundola Borovets, Kostenets Rila Mt. Bistritsa Brashantsi vill.	Kantardjewa-Minkova 1932, Samuelian 1998, Kantardjewa-Minkova 1932, Angelov 1995, Georgiev 2020, New record	West Palaearctic
4	<i>Ergates faber</i> (Linnaeus, 1760)	Rila Monastery Rila Mt.	Kantardjewa-Minkova 1932, Angelov 1995	West Palaearctic
Subfamily Lepturinae Latreille, 1802				
5	<i>Alosterna tabacicolor tabacicolor</i> (DeGeer, 1775)	Rila Mt. Parangalitsa	Kantardjewa-Minkova 1932, New record	West Eurosiberian
6	<i>Anastrangalia dubia dubia</i> (Scopoli, 1763)	Rila Monastery Borovets Rila Mt. Parangalitsa, Treshthenik	Kantardjewa-Minkova 1932, Minkova 1957, Minkova 1957, Ganev 1985, Gradinarov et al. 2020, Angelov 1995, New records	Euromediterranean
7	<i>Anastrangalia sanguinolenta</i> (Linnaeus, 1760)	Kostenets Rila Mt. Gorno Osenovo Borovets Parangalitsa, Treshthenik	Heyrovský 1931, Kantardjewa-Minkova 1932, Angelov 1995, Georgiev 2020, Gradinarov et al. 2020, New records	West Eurosiberian
8	<i>Anoplodera rufipes rufipes</i> (Schaller, 1783)	Rila Mt.	Heyrovský 1931, Angelov 1995	European
9	<i>Anoplodera sexguttata</i> (Fabricius, 1775)	Rila Mt.	Angelov 1995	Euromediterranean

N	Taxon	Locality	References	Chorotype
10	<i>Grammoptera abdominalis</i> (Stephens, 1831)	Rila Mt.	Heyrovský 1931, Kantardjiewa-Minkova 1932, Angelov 1995	European-Iranian
11	<i>Grammoptera ustulata ustulata</i> (Schaller, 1783)	Rila Mt.	Heyrovský 1931, Kantardjiewa-Minkova 1932, Angelov 1995	European-Anatolian
12	<i>Leptura aurulenta</i> Fabricius, 1793	Yundola	Ganev 1986	Euromediterranean
13	<i>Leptura quadrifasciata quadrifasciata</i> Linnaeus, 1758	Raduil Rila Mt. Belmeken Yundola Parangalitsa	Heyrovský 1931, Kantardjiewa-Minkova 1932, Minkova 1957, Samuelian 1998, New records	Transpalaeartic
14	<i>Lepturobosca virens</i> (Linnaeus, 1758)	Rila Mt.	Angelov 1995	Transpalaeartic
15	<i>Judolia cerambyciformis</i> (Schrank, 1781)	Rila Mt. Borovets Yundola, Musala hut Kostenets Rila Monastery Harsovo, Parangalitsa, Ovtchartsii, Treshthenik	Heyrovský 1931, Kantardjiewa-Minkova 1932, Minkova 1957, Georgiev 2020, Angelov 1967, Minkova 1957, Ganev 1985, Ganev 1985, Gradinarov et al. 2020, New records	European
16	<i>Judolia erraticus</i> (Dalman, 1817)	Kostenets Yundola, Samokov Blagoevgrad Rila Monastery	Heyrovský 1931, Minkova 1957, Angelov 1967, Georgiev 2020, Gradinarov et al. 2020	European-Iranian
17	<i>Pseudovadonia livida livida</i> (Fabricius, 1777)	Borovets	Kantardjiewa-Minkova 1932	European
18	<i>Rutpela maculata maculata</i> (Poda von Neuhaus, 1761)	Borovets, Kostenets Belmeken Harsovo Govedartsii Rila Monastery Ovtchartsii, Treshthenik	Kantardjiewa-Minkova 1932, Minkova 1957, Rapuzzi and Georgiev 2007, Georgiev 2020, Gradinarov and Petrova 2019, New records	European-Anatolian
19	<i>Stenurella nigra nigra</i> (Linnaeus, 1758)	Ovtchartsii	New record	European-Anatolian
20	<i>Stenurella bifasciata intermedia</i> Holzschuh, 2006	Blagoevgrad Borovets Ovtchartsii	Georgiev 2020, Gradinarov et al. 2020, New record	Balkan endemic
21	<i>Stenurella septempunctata septempunctata</i> (Fabricius, 1793)	Borovets Rila Monastery Harsovo, Ovtchartsii	Kantardjiewa-Minkova 1932, Gradinarov et al. 2020, New records	European
22	<i>Stenurella melanura melanura</i> (Linnaeus, 1758)	Borovets Rila Monastery Blagoevgrad, Predela Harsovo, Parangalitsa, Treshthenik	Heyrovský 1931, Angelov 1967, Georgiev 2020, New records	Transpalaeartic

N	Taxon	Locality	References	Chorotype
23	<i>Stictoleptura rubra rubra</i> (Linnaeus, 1758)	Borovets Raduil, Samokov, Kostenets Rila Monastery Yundola Yakoruda Ovtcharts	Heyrovský 1931, Kantardjiewa-Minkova 1932, Gradinarov et al. 2020, Kantardjiewa-Minkova 1932, Angelov 1967, Samuelian 1998, Georgiev 2020, New record	Eurosiberian
24	<i>Paracorymbia maculicornis</i> (DeGeer, 1775)	Borovets Rila Mt. Dobarsko, Rila Monastery, Parangalitsa	Kantardjiewa-Minkova 1932, Gradinarov et al. 2020, Angelov 1995, New records	European
25	<i>Stictoleptura scutellata scutellata</i> (Fabricius, 1781)	Belmeken	Minkova 1957	European
26	<i>Paracorymbia fulva</i> (DeGeer, 1775)	Kostenets Rila Monastery Harsovo, Ovcharts	Heyrovský 1931, Kantardjiewa-Minkova 1932, Kantardjiewa-Minkova 1932, Rapuzzi and Georgiev 2007	European-Anatolian
27	<i>Stictoleptura erythroptera</i> (Hagenbach, 1822)	Borovets	Heyrovský 1931, Kantardjiewa-Minkova 1932	European-Iranian
28	<i>Strangalia attenuata</i> (Linnaeus, 1758)	Rila Mt. Belmeken Borovets Harsovo, Ovtcharts	Kantardjiewa-Minkova 1932, Minkova 1957, Ganey 1985, New records	Transpalaeartic
29	<i>Vadonia unipunctata unipunctata</i> (Fabricius, 1787)	Rila Monastery	Kantardjiewa-Minkova 1932	European-Anatolian
30	<i>Oxymirus cursor</i> (Linnaeus, 1758)	Rila Mt. Borovets Rila Monastery, Kostenets	Heyrovský 1931, Angelov 1995, Kantardjiewa-Minkova 1932, Minkova 1957, Ganey 1985, Kantardjiewa-Minkova 1932	West Eurosiberian
31	<i>Carilia virginea virginea</i> (Linnaeus, 1758)	Borovets Soleno Dere Rila Monastery Yundola Eleshnitsa River Parangalitsa	Kantardjiewa-Minkova 1932, Minkova 1957, Kantardjiewa-Minkova 1934, Angelov 1967, Samuelian 1998, Georgiev 2020, New record	West Eurosiberian
32	<i>Cortodera humeralis humeralis</i> (Schaller, 1783)	Kostenets, Rila Monastery Dobarsko	Kantardjiewa-Minkova 1932, Minkova 1957, New record	European-Anatolian
33	<i>Cortodera flavimana flavimana</i> (Waltl, 1838)	Yundola	Samuelian 1998	European-Anatolian
34	<i>Dinoptera collaris</i> (Linnaeus, 1758)	Rila Mt. Rila Monastery	Kantardjiewa-Minkova 1932, Gradinarov et al. 2020	Eurosiberian

N	Taxon	Locality	References	Chorotype
35	<i>Acmaeops septentrionis</i> (C. G. Thomson, 1866)	Parangalitsa Borovets, Dupnitsa	Kantardjiewa-Minkova 1932, Minkova 1957, Angelov 1995, Minkova 1957, Angelov 1995, Angelov 1995	Transpalaeartic
36	<i>Evodinellus clathratus</i> (Fabricius, 1793)	Rila Mt.	Angelov 1995	European
37	<i>Acmaeops pratensis</i> (Laicharting, 1784)	Borovets Rila Mt.	Kantardjiewa-Minkova 1932, Angelov 1995	Transholarctic
38	<i>Pachyta lamed</i> (Linnaeus, 1758)	Borovets Rila Mt.	Kantardjiewa-Minkova 1932, Angelov 1995	Transpalaeartic
39	<i>Pachyta quadrimaculata</i> (Linnaeus, 1758)	Borovets Kostenets, Belmeken Rila Mt. Parangalitsa, Treshnenik	Kantardjiewa-Minkova 1932, Ganev 1985, Gradinarov et al. 2020, Kantardjiewa-Minkova 1932, Angelov 1995, New records	Transpalaeartic
40	<i>Pidonia lurida</i> (Fabricius, 1793)	Samokov Borovets Rila Monastery	Heyrovský 1931, Kantardjiewa-Minkova 1932, New record	European
41	<i>Rhagium bifasciatum</i> Fabricius, 1775	Rila Mt. Borovets Sitnyakovo Kostenets Rila Monastery Yundola Malyovitsa Bistritsa, Blagoevgrad	Heyrovský 1931, Kantardjiewa-Minkova 1932, Angelov 1967, Kantardjiewa-Minkova 1932, Kantardjiewa-Minkova 1932, Minkova 1957, Ganev 1984, Ganev 1985, Samuelian 1998, Georgiev 2020, New records	European-Iranian
42	<i>Rhagium mordax</i> (DeGeer, 1775)	Rila Mt. Borovets, Dolna Banya Kostenets, Parangalitsa	Heyrovský 1931, Kantardjiewa-Minkova 1932, Kantardjiewa-Minkova 1932, Ganev 1986, Doychev et al. 2017	Eurosiberian
43	<i>Rhagium sycophanta</i> (Schrank, 1781)	Yundola	Samuelian 1998	West Eurosiberian
44	<i>Rhagium inquisitor inquisitor</i> (Linnaeus, 1758)	Parangalitsa Kostenets Borovets, Samokov Yundola, Bodrost Chalet	Drenski 1933, Kantardjiewa-Minkova 1932, Ganev 1984, Kantardjiewa-Minkova 1932, Samuelian 1998, Doychev et al. 2017, Gradinarov et al. 2020	Eurosiberian
45	<i>Stenocorus meridianus</i> (Linnaeus, 1758)	Borovets Rila Mt.	Ganev 1985, Angelov 1995	Eurosiberian
46	<i>Xylosteus bartoni</i> Obenberger & Mařan, 1933	Borovets, Parangalitsa	Minkova 1957, Angelov 1995, Georgiev and Simov 2006	Balkan endemic

N	Taxon	Locality	References	Chorotype
47	<i>Xylosteus spinolae</i> Frivaldszky von Frivald, 1837	Govedartsi	New record	Northeast Mediterranean
Subfamily Necydalinae Latreille, 1825				
48	<i>Necydalis major</i> Linnaeus, 1758	Borovets	Kantardjewa-Minkova 1932	Transpalaeartic
49	<i>Necydalis ulmi</i> Chevrolat, 1838	Borovets	Angelov 1995	European-Anatolian
Subfamily Spondyliinae Audinet-Serville, 1832				
50	<i>Alocerus moesiacus</i> (Frivaldszky von Frivald, 1837)	Yundola	Samuelian 1998	Transmediterranean
51	<i>Archopalus rusticus rusticus</i> (Linnaeus, 1758)	Borovets, Blagoevgrad Predela	Kantardjewa-Minkova 1932, Georgiev 2020	Transpalaeartic
52	<i>Asemum striatum</i> (Linnaeus, 1758)	Kostenets	Minkova 1957	Transholarctic
53	<i>Tetropium castaneum</i> (Linnaeus, 1758)	Parangalitsa Borovets Yundola Deno Peak	Drenski 1933, Kantardjewa-Minkova 1932, Samuelian 1998, Gradinarov et al. 2020	Transpalaeartic
54	<i>Tetropium fuscum fuscum</i> (Fabricius, 1787)	Rila Mt. Yundola Parangalitsa	Kantardjewa-Minkova 1932, Angelov 1995 Ganev 1986, Samuelian 1998, Angelov 1995	Transholarctic
55	<i>Saphanus piceus</i> <i>ganglbaueri</i> Brancsik, 1886	Borovets	Heyrovský 1931, Kantardjewa- Minkova 1932, Angelov 1995	European
56	<i>Spondylis buprestoides</i> (Linnaeus, 1758)	Rila Mt. Panichishte Govedartsi Yundola	Kantardjewa-Minkova 1932, Ganev 1984, Ganev 1986, Samuelian 1998	Transpalaeartic
Subfamily Cerambycinae Latreille, 1802				
57	<i>Anaglyptus mysticus</i> (Linnaeus, 1758)	Rila Monastery	Gradinarov et al. 2020	European-Anatolian
58	<i>Aromia moschata moschata</i> (Linnaeus, 1758)	Borovo	Kantardjewa-Minkova 1932	Eurosiberian
59	<i>Callidium violaceum</i> (Linnaeus, 1758)	Borovets	Kantardjewa-Minkova 1932	Transpalaeartic
60	<i>Callidium aeneum aeneum</i> (De Deer, 1775)	Rila Monastery	Kantardjewa-Minkova 1932, Doychev et al. 2017	Transpalaeartic
61	<i>Callidium coriaceum</i> Paykull, 1800	Yundola	Doychev and Bencheva 2008	Transpalaeartic
62	<i>Lioderina linearis</i> (Hampe, 1871)	Blagoevgrad	Ganev 1984	Northeast Mediterranean

N	Taxon	Locality	References	Chorotype
63	<i>Pyrrhidium sanguineum</i> (Linnaeus, 1758)	Yundola	Samuelian 1998	Euromediterranean
64	<i>Ropalopus clavipes</i> (Fabricius, 1775)	Rila Monastery Yundola	Kantardjewa-Minkova 1932, Samuelian 1998	European-Iranian
65	<i>Ropalopus ungaricus insubricus</i> (Germar, 1823)	Rila Monastery	Ganev 1986	European
66	<i>Cerambyx miles</i> Bonelli, 1812	Kostenets	Kantardjewa-Minkova 1932	European-Anatolian
67	<i>Cerambyx nodulosus nodulosus</i> Germar, 1817	Rila Monastery	Ganev 1985	Pontomediterranean
68	<i>Cerambyx scopolii scopolii</i> Fuessly, 1775	Rila Mt. Brashantsii	Heyrovský 1931, New record	European-Anatolian
69	<i>Chlorophorus herbstii</i> (Brahm, 1790)	Rila Mt. Kostenets	Kantardjewa-Minkova 1932, Ganev 1986	Eurosiberian
70	<i>Clytus arietis arietis</i> (Linnaeus, 1758)	Rila Mt.	Heyrovský 1931, Kantardjewa-Minkova 1932	European-Anatolian
71	<i>Clytus lama</i> Mulsant, 1847	Kostenets	Kantardjewa-Minkova 1932	European
72	<i>Clytus rhamnii rhamnii</i> Germar, 1817	Kostenets Harsovo	Kantardjewa-Minkova 1932, New record	Northeast Mediterranean
73	<i>Plagionotus arcuatus arcuatus</i> (Linnaeus, 1758)	Rila Mt. Yundola Razlog	Heyrovský 1931, Samuelian 1998, Georgiev 2020	Euromediterranean
74	<i>Plagionotus detritus detritus</i> (Linnaeus, 1758)	Kostenets Borovets	Kantardjewa-Minkova 1932, Kantardjewa-Minkova 1934, Kantardjewa-Minkova 1932	European-Anatolian
75	<i>Xylotrechus rusticus</i> (Linnaeus, 1758)	Rila Mt.	Kantardjewa-Minkova 1932	Transpalaeartic
76	<i>Xylotrechus arvicola arvicola</i> (Olivier, 1795)	Predela	Georgiev 2020	Euromediterranean
77	<i>Rosalia alpina</i> (Linnaeus, 1758)	Borovets, Kostenets	Kantardjewa-Minkova 1932	European-Anatolian
78	<i>Stromatium auratum</i> (Böber, 1793)	Blagoevgrad	Georgiev 2020	Transmediterranean
79	<i>Molorchus minor minor</i> (Linnaeus, 1758)	Parangalitsa Borovets Rila Mt. Rila Monastery	Drenski 1933, Kantardjewa-Minkova 1932, Angelov 1995, New record	Transpalaeartic
80	<i>Molorchus umbellatarum umbellatarum</i> (Schreber, 1759)	Rila Mt.	Heyrovský 1931, Kantardjewa-Minkova 1932, Angelov 1995	European-Iranoturanian
81	<i>Obrium brunneum</i> (Fabricius, 1793)	Rila Monastery	Georgiev et al. 2005	European-Anatolian
82	<i>Purpuricenus budensis</i> (Götz, 1783)	Yundola	Samuelian 1998	West Palaeartic

N	Taxon	Locality	References	Chorotype
83	<i>Purpuricenus kaehleri rossicus</i> Danilevsky, 2019	Raduil Rila	Kantardjiewa-Minkova 1932, Ganev 1985	East European
84	<i>Callimus angulatus angulatus</i> (Schrank, 1789)	Rila Mt.	Heyrovský 1931, Kantardjiewa-Minkova 1932	Euromediterranean
85	<i>Callimus femoratus</i> (Germar, 1824)	Yundola	Samuelian 1998	East European-Iranian
86	<i>Stenopterus flavicornis</i> Küster, 1846	Kostenets	Kantardjiewa-Minkova 1932	Northeast Mediterranean
87	<i>Stenopterus rufus rufus</i> (Linnaeus, 1767)	Harsovo, Parangalitsa	Rapuzzi and Georgiev 2007	European
Subfamily Lamiinae Latreille, 1825				
88	<i>Acanthocinus aedilis</i> (Linnaeus, 1758)	Borovets Samokov	Kantardjiewa-Minkova 1934, Ganev 1985	Transpalaeartic
89	<i>Acanthocinus griseus</i> (Fabricius, 1793)	Samokov	Hubenov et al. 2001, Doychev et al. 2017	Transpalaeartic
90	<i>Leiopus linnei</i> Wallin, Nylander & Kvamme, 2009	Rila Mt. Belmeken	Heyrovský 1931, Kantardjiewa-Minkova 1934	European
91	<i>Agapanthia cynarae cynarae</i> (Germar, 1817)	Dupnitsa Borovets	Kantardjiewa-Minkova 1934, Ganev 1985	North Mediterranean
92	<i>Agapanthia dahli dahli</i> (C. F. W. Richter, 1820)	Borovets	Kantardjiewa-Minkova 1934, Ganev 1985	European
93	<i>Agapanthia villosoviridescens</i> (De Geer, 1775)	Rila Mt. Rila Monastery Borovets	Heyrovský 1931, Kantardjiewa-Minkova 1934, Angelov 1967, Ganev 1985	Eurosiberian
94	<i>Agapanthia violacea</i> (Fabricius, 1775)	Rila Mt. Blagoevgrad, Bistritsa, Rila Monastery	Heyrovský 1931, Georgiev 2020	European-Anatolian
95	<i>Agapanthia kirbyi kirbyi</i> (Gyllenhal, 1817)	Borovets Parangalitsa	Heyrovský 1931, Kantardjiewa-Minkova 1934, Georgiev 2020	European-Iranian
96	<i>Anaesthetis testacea testacea</i> (Fabricius, 1781)	Predela	Georgiev 2020	European-Anatolian
97	<i>Stenidea genei genei</i> (Aragona, 1830)	Kostenets	Angelov 1967	North Mediterranean
98	<i>Dorcadion aethiops aethiops</i> (Scopoli, 1763)	Rila Mt. Borovets Samokov	Kantardjiewa-Minkova 1934, Minkova 1961, Ganev 1986	Northeast Mediterranean
99	<i>Dorcadion fulvum erythropterum</i> Fischer von Waldheim, 1823	Blagoevgrad Yundola	Ganev 1985, Samuelian 1998	East European
100	<i>Dorcadion axillare</i> Küster, 1847	Rila Mt.	Kantardjiewa-Minkova 1934, Minkova 1961	Balkan endemic

N	Taxon	Locality	References	Chorotype
101	<i>Dorcadion sturmii</i> Frivaldszky von Frivald, 1837	Kostenets	Minkova 1961	Balkan endemic
102	<i>Dorcadion tauricum tauricum</i> Waltl, 1838	Rila Mt.	Heyrovský 1931	East European
103	<i>Dorcadion pedestre pedestre</i> (Poda von Neuhaus, 1761)	Yundola	Samuelian 1998	Northeast Mediterranean
104	<i>Neodorcadion bilineatum</i> (Germar, 1823)	Kostenets	Heyrovský 1931	Northeast Mediterranean
105	<i>Lamia textor</i> (Linnaeus, 1758)	Kostenets Blagoevgrad, Harsovo	Kantardjiewa-Minkova 1934, New records	Transpalaeartic
106	<i>Morimus asper funereus</i> Mulsant, 1862	Rila Mt. Yundola	Heyrovský 1931, Samuelian 1998	Northeast Mediterranean
107	<i>Mesosa curculionoides</i> (Linnaeus, 1760)	Rila Mt. Blagoevgrad	Heyrovský 1931, Kantardjiewa- Minkova 1934, Rapuzzi and Georgiev 2007	European-Iranian
108	<i>Monochamus galloprovincialis pistor</i> (Germar, 1818)	Parangalitsa	Doychev et al. 2017	West Eurosiberian
109	<i>Monochamus sartor</i> (Fabricius, 1787)	Parangalitsa Kostenets	Drenski 1933, Ganev 1985	European
110	<i>Monochamus sutor sutor</i> (Linnaeus, 1758)	Rila Mt. Yundola Rila Monastery, Borovets Iliina River	Heyrovský 1931, Samuelian 1998, Gradinarov et al. 2020, New record	West Eurosiberian
111	<i>Oberea erythrocephala erythrocephala</i> (Schrank, 1776)	Rila Monastery, Borovets	Gradinarov et al. 2020	West Palaearctic
112	<i>Phytoecia affinis affinis</i> (Harrer, 1784)	Rila Mt. Rila Monastery	Heyrovský 1931, Kantardjiewa-Minkova 1934, Bringmann 1998, Gradinarov et al. 2020	European-Anatolian
113	<i>Phytoecia coerulea coerulea</i> (Scopoli, 1763)	Rila Mt.	Heyrovský 1931	West Palaearctic
114	<i>Phytoecia cylindrica</i> (Linnaeus, 1758)	Rila Mt. Kostenets	Heyrovský 1931, Kantardjiewa-Minkova 1934	Transpalaeartic
115	<i>Phytoecia geniculata orientalis</i> Kraatz, 1871	Borovets	Migliaccio et al. 2007	Balkan endemic
116	<i>Phytoecia icterica</i> (Schaller, 1783)	Samokov	Heyrovský 1931, Kantardjiewa- Minkova 1934	West Palaearctic
117	<i>Phytoecia nigricornis</i> (Fabricius, 1782)	Rila Mt.	Heyrovský 1931, Kantardjiewa-Minkova 1934	Eurosiberian

N	Taxon	Locality	References	Chorotype
118	<i>Phytoecia virgula virgula</i> (Charpentier, 1825)	Rila Mt.	Heyrovský 1931, Kantardjiewa-Minkova 1934	Transpalaeartic
119	<i>Pogonocherus fasciculatus fasciculatus</i> DeGeer, 1775	Rila Mt. Borovets Yundola, Belmeken Dobarsko	Tschorbadjiew 1927, Kantardjiewa-Minkova 1934, Doychev et al. 2017, New record	Transpalaeartic
120	<i>Pogonocherus hispidulus</i> (Piller & Mitterpacher, 1783)	Rila Mt. Yakoruda	Heyrovský 1931, Kantardjiewa-Minkova 1934, Bringmann and Dring 2001	Euromediterranean
121	<i>Saperda populnea</i> (Linnaeus, 1758)	Rila Mt. Kostenets Samokov	Heyrovský 1931, Kantardjiewa-Minkova 1934, Georgiev et al. 2004	Transholarctic
122	<i>Saperda octopunctata</i> (Scopoli, 1772)	Kostenets	Kantardjiewa-Minkova 1934, Ganev 1986	European-Anatolian
123	<i>Saperda scalaris scalaris</i> (Linnaeus, 1758)	Rila Mt. Kostenets	Heyrovský 1931, Kantardjiewa-Minkova 1934, Ganev 1986	Euromediterranean
124	<i>Saperda carcharias</i> (Linnaeus, 1758)	Kostenets	Ganev 1985	Transpalaeartic
125	<i>Stenostola ferrea ferrea</i> (Schrank, 1776)	Kostenets	Kantardjiewa-Minkova 1934	European-Anatolian
126	<i>Tetrops praeustus praeustus</i> (Linnaeus, 1758)	Rila Mt.	Heyrovský 1931	Transpalaeartic

Three taxa were previously reported under synonymous names: before revision of Danilevsky (2021), *Stenurella bifasciata intermedia* was reported as *Stenurella bifasciata*; recently described *Purpuricenus kaehleri rossicus* is distributed in Central and partly South Europe, including Bulgaria (Danilevsky 2021). Danilevsky (2019) mentioned that, in his collection, all materials of *Leiopus nebulosus* from Russia and adjacent countries, including Bulgaria, belong to recently described *Leiopus linnei* (Wallin et al. 2009).

The established cerambycid taxa belong to 18 areographical categories separated in seven complexes (Table 2).

Table 2.

Areogeographic characterisation of cerambycids in Rila Mt.

Areographic categories and complexes	Number	Percentage
Holarctic complex	4	3.2
Transholarctic	4	3.2
Palaeartic complex	30	23.8
Transpalaeartic	24	19.0
West Palaeartic	6	4.8
Eurosiberian complex	17	13.5

Areographic categories and complexes	Number	Percentage
Eurosiberian	10	7.9
West Eurosiberian	7	5.6
European-Iranoturanian complex	9	7.1
European-Iranoturanian	1	0.8
European-Iranian	7	5.5
East European-Iranian	1	0.8
European complex	47	37.3
Euromediterranean	9	7.1
European-Anatolian	20	15.9
European	15	11.9
East European	3	2.4
Mediterranean complex	14	11.1
Transmediterranean	2	1.6
North Mediterranean	2	1.6
East Mediterranean	1	0.8
Northeast Mediterranean	8	6.3
Pontomediterranean	1	0.8
Balkan endemic complex	5	4.0
Balkan endemics	5	4.0
Total	126	100.0

The taxa from the European complex are dominant in Rila Mt. (37.3%), followed by those from Palaearctic (23.8%), Eurosiberian (13.5%) and Mediterranean (11.1%) complexes (Fig. 1).

Discussion

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

In this study, the taxa of the European complex occupy a dominant position. They are connected with deciduous forests, which cover most of the mountainous territory of Rila. The second place is taken by the species and subspecies belonging to Palaearctic complex. These more euribiont taxa with broad areas of distribution normally are better presented in the high mountains, because of the harsh climatic conditions there. The third and fourth positions take taxa belonging to Eurosiberian and Mediterranean complexes. The high territories, mostly covered by coniferous trees and shrubs, are favourable for

distribution of the Eurosiberian taxa. In the lower parts and along the rivers, conditions in Rila Mt. allow penetration of Mediterranean taxa. The refugial character of the region is underlined by the presence of five (4%) Balkan endemic cerambycids.

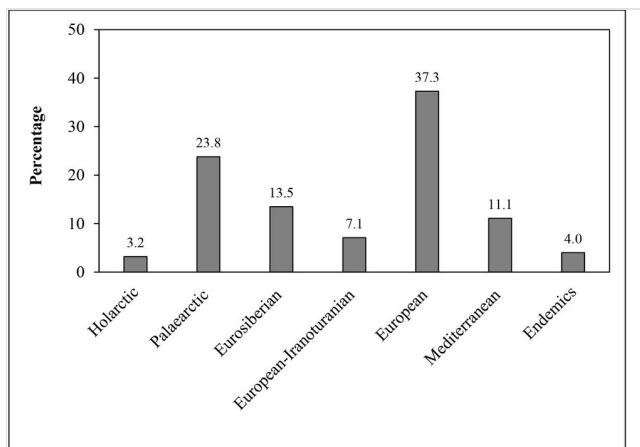


Figure 1. [doi](#)

Arealographic complexes of cerambycids in Rila Mt.

Similar aerographic characteristics of cerambycid fauna were established in Vitosha Mt. where European taxa (36.4%) take first place, followed by Palaearctic (20.6%), Eurosiberian (14.0%) and Mediterranean (12.4%) taxa (Topalov 2018). Vitosha with its elevation, oreographic patterns and vegetation is comparable to Rila Mt. Concerning the other two studied Mountains in Bulgaria - Strandzha (Georgiev et al. 2018) and Belasitsa (Georgiev et al. 2019), domination of European cerambycids was also established (33.1% and 38.2%, respectively), but the Mediterranean taxa take 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. – nine taxa (8.2%), followed by Rila Mt. – five taxa (4.0%), Strandzha Mt. – five taxa (3.3%) and Vitosha Mt. – two taxa (1.7%). Evidently, the conditions in Belasitsa Mt. and, especially, the distribution of relict forests of *Castanea sativa*, are the most suitable for occurrence of endemics there.

In conclusion, it should be noted that the finding of 126 taxa (approximately 45% of longhorn beetles in Bulgaria) indicates that this taxonomic group is not yet well-studied and about 50 species and subspecies are expected to be found in future investigations in Rila Mt.

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