Terrestrial Ecology and Behaviour
Research Article

ACTA ZOOLOGICA BULGARICA
Acta zool. bulg., 69 (4), 2017: 511-528

Host Plants of Xylophagous Longhorn Beetles (Coleoptera: Cerambycidae) in Bulgaria

Danail Doychev[1], Pavel Topalov[2], Gergana Zaemdjikova[2], Vladimir Sakalian[3] & Georgi Georgiev[2]

[1]University of Forestry, 10 St. Kliment Ohridski Blvd., Sofia 1797, Bulgaria; E-mail: doychev@abv.bg
[2]Forest Research Institute, Bulgarian Academy of Sciences, 132 St. Kliment Ohridski Blvd., 1756 Sofia, Bulgaria; E-mail: ggeorg@bas.bg
[3]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tzar Osvoboditel Blvd., 1000, Sofia, Bulgaria; E-mail: sakalian@online.bg

Abstract: The host plants of xylophagous longhorn beetles (Coleoptera: Cerambycidae) were studied using the available literature and original data from Bulgaria. For the purposes of this study, only main (larval) feeding was taken into account and all records of adults on potential host plants, as well as information about observed additional (imaginal) feeding, was ignored. To obtain the original data, three methods were used: 1) laboratory rearing of adults from plant samples in photoeclectors; 2) analysing tree and shrub tissues and organs in order to find biological material; 3) rearing of collected larvae and pupae to adults in laboratory conditions. As a result, 49 tree and shrub species from two coniferous and 11 deciduous families were found as hosts for 86 cerambycid taxa belonging to the five subfamilies: Prioninae (four species and subspecies), Lepturinae (15), Spondylidinae (6), Cerambycinae (32) and Lamiinae (29). For a significant part of the cerambycids (59 taxa), new or additional trophic information is presented. Sixty-nine relationships between longhorn beetles and host plants are new for Bulgaria. The most numerous trophic relationships were recorded for *Pinus sylvestris* supporting 20 cerambycid taxa. Concerning longhorn beetle species, the most numersous host-plant relationships were revealed for *Rhagium inquisitor,* i.e. seven tree species.

Key words: Cerambycidae, xylophages, host plants, rearing, Bulgaria

Introduction

The longhorn beetles (Coleoptera: Cerambycidae) are relatively well studied in Bulgaria from faunistical point of view. Until now, 260 established cerambycid species have been reported in the country (Rapuzzi & Georgiev 2007, Doychev & Bencheva 2008, Georgiev et al. 2013), from which over two-thirds (69%) are connected with tree and shrub species (Georgiev & Hubenov 2006, Migliaccio et al. 2007). Among them, there are not only stenophagous species, monophages and olygophages, but also polyphages with wide range of hosts. The Bulgarian entomological literature contains numerous reports of cerambycid findings on different plants but there is insufficient knowledge about feeding or rearing from host plants.

The aim of this work is to summarise the scattered information in different literature sources about food plants of xylophagous longhorn beetles and to enrich it with results of unpublished original studies.

Materials and Methods

The literature information about host plants of cerambycids in Bulgaria was selected and summarised based only on main (larval) feeding. The published records of adults on potential host plants, as well as information about observed additional (imaginal) feeding were ignored. Suspicious data, such as *Exocentrus punctipennis* rearing from *Pinus sylves-*

tris (Tschorbadjiew 1927) most probably due to wrong identification, were also omitted.

The trophic relationships between cerambycids and forest tree and shrub species were studied following three entomological methods:

• Collection of plant samples and rearing of adults from them in photoeclectors in laboratory conditions;

• Identification of larvae and adults found in tissues and organs of host plants;

• Rearing of collected larvae and pupae to adults in the laboratory.

The adults were identified following the keys of Plavilstshikov (1936, 1940, 1958) and Bense (1995) and the larvae – following the keys of Švácha & Danilevsky (1986, 1987, 1988) and Mamaev & Danilevsky (1975).

The literature data regard cerambycid species, host plant, geographical region and locality, developmental stage, infested organs and feeding place. In some cases additional original data are given in order to clarify the localities. The new host plants of longhorn beetles are indicated with an asterisk.

The longhorn beetles are listed in alphabetic order within each subfamily, using the system and nomenclature of Danilevsky (2016). Nomenclature of plant species follows Euro+Med (2006).

Preimaginal stages (larvae and pupae) of some cerambycids were photographed, mainly in natural conditions. Pictures were taken with Nikon D80 and Olympus E-30 cameras equipped with macrophotography lenses.

Results

Prioninae

***Aegosoma* (*Aegosoma*) *scabricorne* (Scopoli, 1763)** – ***Populus* x euramericana (Dode) Guinier**: Struma River Valley, 800 m W of Slatino Vill., 400 m a.s.l., 42°09'40.2"N, 23°02'35.4"E, four larvae (Fig. 1E) in rotten wood (Georgiev & Doychev 2010).

***Ergates faber faber* (L., 1760)** – ***Pinus nigra* J. F. Arnold**: Western Rhodopes, 1.5 km SW of Bachkovo Vill., 550 m a.s.l., 41°56'01.5"N, 24°50'42.3"E, adult reared from larva found in rotten wood (Georgiev et al. 2005a). **New records: ****Pinus sylvestris* **L.**: Maleshevska Mt., 1.9 km S of Tzaparevo Vill., 820 m a.s.l., 41°36'32.3"N, 23°05'29.1"E, two adults reared from pupae (Fig. 1B) found in wood of fallen tree, pupae – 24 June 2011; 1.5 km SW of Razdol Vill., 990 m a.s.l., 41°36'20.1"N, 22°59'33.1"E, larva (Fig. 1A) in semi-decayed wood of fallen stem, 17 August 2006.

Prionus coriarius* (L., 1758)** – ***Pinus sylvestris: Western Balkan Range, 3.2 km S of Barzia Vill., 750 m a.s.l., 43°09'21.4"N, 23°08'58.7"E, larva in white rotten stump wood; 500 m W of Barzia Vill., 590 m a.s.l., 43°11'29.2"N, 23°08'58.3"E, three larvae in white rotten stump and root wood (Ovcharov & Doychev 2001). **New records: ****Quercus dalechampii* **Ten.**: Vitosha Mt., 430 m SE of Tihia kat Restaurant, 1090 m a.s.l., 42°38'10.4"N, 23°13'21.2"E, two larvae in semi-decayed wood of dry stem base (just above ground), 23 April 2016. ******Pseudotsuga menziesii* **(Mirb.) Franco**: Osogovo Mt., 680 m SW of Eremya Vill., 610 m a.s.l., 42°12'04.7" N, 22°50'09.2"E, larva in semi-decayed wood of stem, 12 July 2016.

Rhaesus serricollis* (Motschulsky, 1838)** – ***Populus alba* L.**: Maritsa River Valley, near the town of Lyubimets, two larvae, one pupa (Fig. 1D) and eight adults found under bark and in wood of dried stems (Georgiev & Doychev 2010). **New records: *Populus alba: Struma River Valley, 1.1 km NE from Valkovo Vill., 110 m a.s.l., 41°35'03.8"N, 23°13'59.4"E, two larvae (Fig. 1C) and remains of two dead adults in rotten wood of live tree stem, 25 June 2011.

Lepturinae

***Anastrangalia dubia dubia* (Scopoli, 1763)** – **New records: ****Pinus sylvestris*: Western Rhodopes, above Borino Vill., 1400 m a.s.l., 1♀ reared from a pupa found in lying trunk, pupa – 15 May 2011, emergence – 15 June 2011.

Anastrangalia sanguinolenta* (L., 1760)** – ***Pinus sylvestris: Western Balkan Range, 3.2 km S of Barzia Vill., 750 m a.s.l., 43°09'21.4"N, 23°08'58.7"E, six larvae in stump wood; 600 m W of Barzia Vill., 600 m a.s.l., 43°11'23.0"N, 23°08'52.2"E, four larvae in rotten stem wood (Ovcharov & Doychev 2001). **New records: *Pinus sylvestris***: Western Balkan Range, 3.2 km S of Barzia Vill., 750 m a.s.l., 43°09'21.4"N, 23°08'58.7"E, adult remains in stump wood, 14 September 2001.

***Grammoptera* (*Grammoptera*) *ruficornis ruficornis* Fabricius, 1781** – ***Sorbus aria* (L.) Crantz**: Golo bardo Mt., Ostritsa Botanical Reserve, pupa in a dead branch (Doychev & Georgiev 2004).

***Leptura* (*Leptura*) *aurulenta* Fabricius, 1793 – New records: ****Fagus sylvatica* **L.**: Western Balkan Range, 2.7 km NE of Petrohan Pass, 980 m a.s.l., 43°08'28.9"N, 23°08'33.8"E, 1♀ reared from larva found in semi-decayed wood of fallen stem, larva – 21 May 2016, dead adult – 24 November 2016.

***Leptura* (*Leptura*) *quadrifasciata quadrifasciata* L., 1758** – ***Populus* x euramericana**: Vitosha

Mt., Yanchovska River, adult found under bark of dried tree (Migliaccio et al. 2004).

***Oxymirus cursor* L., 1758** – **New records:** ***Picea abies* (L.) H. Karst.**: Western Rhodopes, 950 m SW of Yundola Vill., 1400 m a.s.l., 42°03'18.0"N, 23°51'05.7"E, larva (Fig. 2E) in log rotten wood, 14 November 2002.

Rhagium* (*Hagrium*) *bifasciatum* Fabricius, 1775** – ***Pinus nigra: Western Balkan Range, 1.7 km W of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, two larvae and six adults in rotten stump wood (Ovcharov & Doychev 2001). ***Pinus sylvestris***: Western Balkan Range, 3.2 km S of Barzia Vill., 750 m a.s.l., 43°09'21.4"N, 23°08'58.7"E, two larvae in rotten stump wood (Ovcharov & Doychev 2001). ***Picea abies***: Vitosha Mt., Bistrishko branishte Biosphere Reserve, near Vedra Hut, 1500 m a.s.l., three larvae and one adult in rotten wood of lying tree (Doychev et al. 2009). **New records:** ***Picea abies***: Lyulin Mt., above St. St. Cyril and Methodius Monastery, 1050 m a.s.l., 15 larvae (Fig. 2A) under bark of dried trunk, 21 April 2009; Western Rhodopes, 930 m SE of Yundola Vill., 1420 m a.s.l., 42°03'32.9"N, 23°51'52.9"E, one adult and four larvae in rotten wood of lying stem, 04 October 2016. ***Pinus nigra***: Osogovo Mt., 1 km SW of Bogoslov Vill., 1120 m a.s.l., 42°14'42.6"N, 22°40'02.7"E, larva under bark of fallen stem, 24 October 2016. ***Pinus sylvestris***: Western Rhodopes, above Borino Vill., 1400 m a.s.l., larva in wood of laying stem, 15 May 2011; Yundola Vill., Pashovi skali loc., adult in rotten wood of lying trunk, 29 September 2015. ***Prunus avium* (L.) L.**: Vitosha Mt., 320 m NW of Tihia kat Restaurant, 1030 m a.s.l., 42°38'29.35"N, 23°13'01.11"E, adult and larva in rotten wood of lying stem, 07 April 2016. ***Fagus sylvatica***: Western Balkan Range, Petrohan Pass, 1440 m a.s.l., 43°07'15.2"N, 23°07'17.8"E, adult and larva in stump rotten wood, three larvae in semi-decayed wood of fallen stem, 05 May 2016; larva in semi-decayed woof of lying branch with diameter about 12 cm, 27 August 2016; 1♀, newly emerged in rotten woof of lying branch with diameter about 12 cm, 22 November 2016; 4 km S of Barzia Vill., 750 m a.s.l., 43°09'19.1"N, 23°08'50.8"E, 1♂, newly emerged in semi-decayed wood of lying stem, 22 November 2016. ***Quercus dalechampii***: Vitosha Mt., 460 m SE of Tihia kat Restaurant, 1100 m a.s.l., 42°38'09.9"N, 23°13'22.4"E, three larvae in wood of lying stem, 30 September 2016.

Rhagium* (*Rhagium*) *inquisitor inquisitor* (L., 1758)** – ***Pinus nigra: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949); Western Balkan Range, 1.7 km W of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, larva under bark of dried stem (Ovcharov & Doychev 2001); Western Rhodopes, Asenovgrad State Forestry, three adults under bark of stem (Georgiev et al. 2005a). ***Pinus sylvestris***: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949); Western Rhodopes, Yundola Vill., adult reared from semi-dried stem, emergence – 15 August 1997 (Samuelian 1998); Western Balkan Range, 3.0 km NE of Petrohan Pass, near Gavaneshtitsa River, 1180 m a.s.l., 43°08'10.2"N, 23°09'12.9"E, four larvae under bark of dried stem; 3.2 km S of Barzia Vill., 750 m a.s.l., 43°09'21.4"N, 23°08'58.7"E, seven larvae under bark of dried stems and stumps (Ovcharov & Doychev 2001). ***Pinus strobus* L.**: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949). ***Picea abies***: Vitosha Mt., Bistrishko branishte Biosphere Reserve, 520 m SE of Vedra Hut, 1570 m a.s.l., 42°34'40.5", 23°18'46.8"E, adult under bark of stem (Doychev et al. 2009); Lyulin Mt., above St. St. Cyril and Methodius Monastery, 1050 m a.s.l., nine larvae under bark of dried trunk (Takov et al. 2012). **New records:** ***Pinus nigra***: Near town of Stara Zagora, four larvae (Fig. 2B) under stem bark, 12 March 2011, leg. Kamelia Petrova; Osogovo Mt., 1 km SW of Bogoslov Vill., 1120 m a.s.l., 42°14'42.6"N, 22°40'02.7"E, three larvae under bark of fallen stem, 24 October 2016; Eastern Rhodopes, 1.1 km NW of Rogozche Vill., 430 m a.s.l., 41°28'18.0"N, 25°17'00.0"E, many larvae under bark of log, 19 August 2016. ***Pinus sylvestris***: Chudinska Mt., 700 m NE of Tserovitsa Vill., 950 m a.s.l., 42°21'06.6"N, 22°32'12.6"E, nine larvae under bark of basal part of dried stem, 31 March 2003; Vitosha Mt., Yarema loc., 1320 m a.s.l., 42°30'18.4"N, 23°19'45.4"E, many larvae under bark of dried stems, 01 November 2010; Western Rhodopes, 2.8 km NW of Pobit kamak Vill., 1350 m a.s.l., 41°50'01.8"N, 23°51'14.4"E, two larvae under stem bark, 27 July 2011, leg. Asim Asim; 760 m S of Yundola Vill., 1400 m a.s.l., 42°03'23.4"N, 23°51'09.5"E, three larvae under bark of logs, 03 October 2016; Osogovo Mt., 1 km SW of Bogoslov Vill., 1120 m a.s.l., 42°14'42.6"N, 22°40'02.7"E, newly emerged adult under bark of lying stem, 24 October 2016; Sofia, park of American College, 660 m a.s.l., 42°37'57.7"N, 23°21'50.1"E, larva and many empty pupal chambers under bark of dried stems, 05 December 2016. ***Pinus peuce* Griseb.**: Vitosha Mt., 2 km NE of Aleko Hut, 1500 m a.s.l., 42°35'44.4"N, 23°18'27.3"E, many larvae under bark in lower part of dried stem, 08 October 2004; Western Balkan Range, 400 m NW of Petrohan Hut, 1460 m a.s.l., 43°06'54.9"N, 23°0'53.2"E, larva un-

der bark of log, 02 June 2016. ***Pseudotsuga menziesii***: Belasitsa Mt., 1.7 km N of Kongur Hut, 950 m a.s.l., 41°21'43.4"N, 23°11'35.4"E, four larvae under stump bark, 04 May 2009; Osogovo Mt., 6.5 km S of Novo selo Vill., 1270 m a.s.l., 42°08'11.9"N, 22°40'31.7"E, six larvae under bark of log, 08 September 2016; two newly emerged adults and larva under bark of stump, 21 September 2016. ***Picea abies***: Western Rhodopes, above Borino Vill., 1250 m a.s.l., 13 larvae under bark of dried standing tree, 15 May 2011. ***Abies alba* Mill.**: Rila Mts., 2 km NW of Yundola Vill., 1600 m a.s.l., 42°04'14.1"N, 23°49'59.6"E, 12 larvae under bark of log, 31 May 2016; 1 km NW of Borovets resort, 1260 m a.s.l., 42°16'23.2"N, 23°35'39.5"E, larva under bark of lying stem, 13 August 2016.

Rhagium* (*Megarhagium*) *mordax* (DeGeer, 1775)** – ***Populus* x euramericana**: Vitosha Mt., Yanchovska River, adult found in a pupal cell under bark of dried tree (Migliaccio et al. 2004). **New records:** ***Fagus sylvatica: Rila Mts., Parangalitsa Biosphere Reserve, 1.7 km E of hotel Kartala, 1630 m a.s.l., 42°02'26.4"N, 23°22'53.1"E, three larvae and seven adults, reared from pupae found under bark of dried and fallen trees, sample collection – 3 August 2015, emergence – 17-20 August 2015; Western Balkan Range, 2.7 km NE of Petrohan Pass, 980 m a.s.l., 43°08'28.9"N, 23°08'33.8"E, adult and larva under bark of standing dry stem, 02 April, 2016; Petrohan Pass, 1440 m a.s.l., 43°07'15.2"N, 23°07'17.8"E, nine larvae under bark of standing dry stem, 02 April, 2016; larva under bark of stump, 22 May 2016; larva in semi-decayed wood of lying branch, 22 May 2016. ***Prunus avium***: Vitosha Mt., 320 m NW of Tihia kat Restaurant, 1030 m a.s.l., 42°38'29.35"N, 23°13'01.11"E, adult, pupa and eight larvae under bark of dead stem; adult under bark of external rot, 07 April 2016. ***Quercus cerris* L.**: Vitosha Mt., near Tihia kat Restaurant, 1050 m a.s.l., 42°38'16.8"N, 23°13'08.9"E, two larvae under bark of standing dry stem, 28 May 2016. ***Quercus dalechampii***: Vitosha Mt., 460 m SE of Tihia kat Restaurant, 1100 m a.s.l., 42°38'09.9"N, 23°13'22.4"E, adult reared from pupa found under bark of dried stem, pupa – 30 September 2016, emergence – 11 October 2016. ***Pseudotsuga menziesii***: Osogovo Mt., 6.5 km S of Novo selo Vill., 1270 m a.s.l., 42°08'11.9"N, 22°40'31.7"E, larva under bark of stump, 21 September 2016.

Rhagium* (*Megarhagium*) *sycophanta* (Schrank, 1781)** – ***Quercus petraea* (Matt.) Liebl.**: Western Rhodopes, 2 km E of Sveta Petka Vill., 1150 m a.s.l., 42°02'27.7"N, 23°53'54.6"E, adult under bark of stump. ***Castanea sativa* Mill.**: Belasitsa Mt., above Petrich, adult in a stump (Doychev & Georgiev 2004). **New records:** ***Castanea sativa: Belasitsa Mt., 1.2 km N of Kongur Hut, 1040 m a.s.l., 41°21'27.39"N, 23°11'31.55"E, larva under bark of dead standing tree, 26 April 2011, leg. Yana Gocheva.

***Rhamnusium bicolor bicolor* Schrank, 1781** – ***Populus* sp.**: town of Haskovo, larvae in wood (Doychev & Georgiev 2004). ***Populus* x euramericana**: Struma River Valley, 800 m W of Slatino Vill., 400 m a.s.l., 42°09'40.2"N, 23°02'35.4"E, two larvae (Fig. 1F) in rotten wood (Georgiev & Doychev 2010).

Rutpela maculata maculata* (Poda von Neuhaus, 1761)** – ***Pinus nigra: Western Balkan Range, 1.7 km W of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, larva in stump rotten wood (Ovcharov & Doychev 2001). ***Corylus avellana* L.**: Vitosha Mt., Bistrishka River above Bistritsa Vill., 1100 m a.s.l., adult reared from a pupa collected in basal part of stem (Topalov et al. 2014). **New records:** ***Pinus nigra***: Lyulin Mt., above Gorna banya, 810 m a.s.l., 42°39'47.8"N, 23°12'56.1"E, 1♂, 1♀ reared from larvae found in wood of stumps, larvae – 24 March 2001, emergence – 21 April 2001. ***Carpinus orientalis* Mill.**: Western Rhodopes, above Bachkovo Vill., 400 m a.s.l., 41°56'44.3"N, 24°51'15.8"E, adult reared from dried stem, sample collection – February 2006, dead imago – June 2006, leg. Doychin Kuhtev. ***Salix* sp.**: Vitosha Mt., Chuypetlovo Vill., 1250 m a.s.l., 42°31'15.5"N, 23°14'44.2"E, adult reared from pupa (Fig. 2D) found in semi-decayed stem wood, pupa – 06 May 2016, emergence – 26 May 2016. ***Fagus sylvatica***: Western Balkan Range, Petrohan Pass, 1440 m a.s.l., 43°07'15.2"N, 23°07'17.8"E, adult reared from pupa found in semi-decayed branch wood, pupa – 05 May 2016, emergence – 25 May 2016; three adults reared from parts of lying branch with diameter about 7 cm, sample collection – 05 May 2016, dead adults – July 2016; dead adult in semi-decayed wood of lying branch with diameter about 12 cm, 27 August 2016; 4 km S of Barzia Vill., 750 m a.s.l., 43°09'19.1"N, 23°08'50.8"E, two larvae (Fig. 2C) in semi-decayed wood of lying stem, 22 November 2016; Vitosha Mt., near Zlatnite Mostove loc., 1460 m a.s.l., 42°36'41.1" N, 23°14'29.2" E, adult reared from pupa found in stump wood, pupa – 27 May 2016, emergence – 10 May 2016.

Stictoleptura* (*Aredolpona*) *rubra rubra* (L., 1758)** – ***Pinus sylvestris: Western Balkan Range, 3 km NE of Petrohan Pass, near Gavaneshtitsa River, 1180 m a.s.l., 43°08'10.2"N, 23°09'12.9"E, six larvae in stump wood; Western Balkan Range, 3.2

km S of Barzia Vill., 750 m a.s.l., 43°09'21.4"N, 23°08'58.7"E, three adults reared from larvae found in stump wood (Ovcharov & Doychev 2001). **New records:** ***Pinus sylvestris***: Western Rhodopes, 1.2 km NE of Sveta Petka Vill., 1220 m a.s.l., 42°02'31.5"N, 23°53'21.1"E, 1♂ dead adult in stump wood, 24 July 2016.

Xylosteus bartoni* Obenberger & Mařan, 1933** – ***Picea abies: Vitosha Mt., Bistrishko branishte Biosphere Reserve, 1650 m a.s.l., adult under bark of dried tree (Georgiev et al. 2005b); Vitosha Mt., Bistrishko branishte Biosphere Reserve, 500 m SE of Vedra Hut, 1530 m a.s.l., 42°34'42.9"N, 23°18'50.3"E, two adults in wood of stem; ***Betula pendula* Roth**: Vitosha Mt., Bistrishko branishte Biosphere Reserve, 160 m S of Vedra Hut, 1530 m a.s.l., 42°34'47.9"N, 23°18'29.4"E, dead adult in rotten stump wood; ***Corylus avellana***: Vitosha Mt., Bistrishko branishte Biosphere Reserve, 60 m SE from Vedra Hut, 1500 m a.s.l., 42°34'51.8"N, 23°18'33.6"E, two adults in wood of dried stem (Doychev et al. 2009). **New records:** ***Picea abies***: Vitosha Mt., Zlatni Mostove loc., 1440 m a.s.l., 42°36'48.9"N, 23°14'26.4"E, adult in log rotten wood, 02 June 2011.

Xylosteus spinolae* Frivaldszky von Frivald, 1837** – ***Corylus avellana: Vitosha Mt., near road to Zlatni Mostove loc., two adults reared from pupae collected in white rotten wood (Georgiev et al. 2005b). **New records:** ***Picea abies***: Lyulin Mt., above St. St. Cyril and Methodius Monastery, 1050 m a.s.l., 42°39'00.8"N, 23°10'59.7"E, two adults in trunk wood of dead tree, 24 April 2009. ****Fagus sylvatica***: Western Balkan Range, Petrohan Pass, 1440 m a.s.l., 43°07'15.2"N, 23°07'17.8"E, two adults (dead and alive) in stump rotten wood, 05 May 2016.

Spondylidinae

Arhopalus* (*Arhopalus*) *ferus* (Mulsant, 1839)** – ***Pinus sylvestris: Western Balkan Range, 500 m W of Barzia Vill., 590 m a.s.l., 43°11'29.2"N, 23°08'58.3"E, 9 larvae under bark of dried stems (Ovcharov & Doychev 2001); Chudinska Mt., 700 m NE from Tserovitsa Vill., 950 m a.s.l., 42°21'06.6"N, 22°32'12.6"E, 113 adults reared from burned stumps; ***Pinus nigra***: Sakar Mt., Pastrogor Vill., adult reared from burned stump; ***Pinus brutia* Ten.**: Eastern Rhodopes, 2.8 km N of Dolno Lukovo Vill., 310 m a.s.l., 41°23'54.6"N, 26°03'50.7"E, adult reared from base of burned stem (Doychev & Georgiev 2004). **New records:** ***Pinus nigra***: East Balkan Range, 1.2 km NE from town of Aytos, 200 m a.s.l., 42°42'06.8"N, 27°17'17.7"E, 2 adults reared from larvae found in wood of burned tree, larvae – 12 July 2012, emergence – August 2012.

Arhopalus* (*Arhopalus*) *rusticus rusticus* (L., 1758)** – ***Pinus nigra: Western Balkan Range, 1.7 km W of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, four larvae under bark of dried stems (Ovcharov & Doychev 2001). ***Pinus sylvestris***: Western Rhodopes, Byala cherkva Vill., adult under bark of dried stem (Georgiev et al., 2005a). **New records:** ***Pinus nigra***: Pirin Mts., above Ilindentsi Vill. 740 m W of Mura Hut, 1020 m a.s.l., 41°40'45.9"N, 23°17'24.7"E, adult reared from parts of dried stem, sample collection – 9 May 2004, emergence – 22 February 2005; Black Sea Coast, near town of Tsarevo, 40 m a.s.l., 42°10'18.5"N, 27°50'13.0"E, 51 larvae in rotten wood of trunk, 28 April 2011. ***Pinus sylvestris***: Western Balkan Range, above Barzia Vill., larva in rotten wood of trunk section, 13 June 2011; Western Rhodopes, 660 m S of Yundola Vill., 42°03'26.1"N, 23°51'14.5"E, adult reared from larva found in stump wood, larva – 01 June 2016, pupa – 06 June 2016, emergence – 16 June 2016; Osogovo Mt., 6.5 km S of Novo selo Vill., 1270 m a.s.l., 42°08'11.9"N, 22°40'31.7"E, larva in wood of stump, 21 September 2016; Sofia, park of American College, 660 m a.s.l., 42°37'57.7"N, 23°21'50.1"E, larva in stem wood, 05 December 2016.

Asemum* (*Cephalocrius*) *striatum* (L., 1758)** – ***Pinus sylvestris: Western Balkan Range, 500 m W of Barzia Vill., 590 m a.s.l., 43°11'29.2"N, 23°08'58.3"E, two larvae under bark of dried stems; 900 m W of Barzia Vill., 630 m a.s.l., 43°11'33.1"N, 23°08'39.1"E, two larvae under bark of dried stem; ***Pinus nigra***: Western Balkan Range, 1.7 km W of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, two larvae under bark of dried stems (Ovcharov & Doychev 2001).

Saphanus piceus ganglbaueri* Brancsik, 1886** – ***Corylus avellana: Vitosha Mt., Bistrishka River above Bistritsa Vill., 1100 m a.s.l., 14 adults reared from basal parts of stems and roots (Topalov et al. 2014). **New records:** ***Corylus avellana***: Belasitsa Mt., Belasitsa Hut, 680 m a.s.l., 41°22'14.9"N, 23°11'13.8"E, adult reared from underground part of dead stem, sample collection – 4 May 2005, emergence – 29 June 2005. ****Fagus sylvatica***: Vitosha Mt., near Zlatnite Mostove loc., 1460 m a.s.l., 42°36'41.1" N, 23°14'29.2" E, 2 adults reared from pupae found in stump wood, pupae – 27 May 2016, emergence – 09 and 13 May 2016.

Spondylis buprestoides* (L., 1758)** – **New records:** ****Pinus nigra: Western Rhodopes, 1.9 km SW of Dobrostan Vill., 1300 m a.s.l., 41°53'17.6"N, 24°54'42.9"E, two larvae in rotten wood of burned

stem, 19 October 2001. ***Pinus sylvestris***: Western Rhodopes, 1.2 km NE of Sveta Petka Vill., 1220 m a.s.l., 42°02'31.5"N, 23°53'21.1"E, two dead adults in stump wood, 24 July 2016.

Tetropium castaneum* (L., 1758)** – ***Picea abies: Vitosha Mt., Aleko Hut, adult found under bark (Topalov et al. 2014). **New records:** ***Picea abies***: Vitosha Mt., 2 km NE of Aleko Hut, 1500 m a.s.l., 42°35'44.4"N, 23°18'27.3"E, adult reared from top part of stem, sample collection – 08 October 2004, emergence – 05 January 2005; Western Rhodopes, above Borino Vill., 1250 m a.s.l., four pupae in the wood under bark of dried tree, 15 May 2011; 5.9 km S of Trigrad Vill., 1500 m a.s.l., 41°32'52.0"N, 24°24'03.2"E, six larvae (Fig. 2F) under bark of standing dried tree, 18 May 2011.

Cerambycinae

Anaglyptus mysticus* (L., 1758)** – **New records:** ***Carpinus betulus* L.**: Golo bardo Mt., Ostritsa Botanical Reserve, two adults in pupal cells in dried stems, 04 April 2004. ***Sorbus aria: Golo bardo Mt., Ostritsa Reserve, adult reared from dried stem, sample collection – 04 April 2004, emergence – 20 April 2004.

***Aromia moschata moschata* (L., 1758)** – ***Salix caprea* L.**: Rozovets Vill., Plovdiv District, adult reared from part of stem (Georgiev 1998); Vitosha Mt. (Kokalyane Vill.), adults reared from branches (Georgiev et al. 2004c); Western Balkan Range, below Petrohan Pass, 1300 m a.s.l., adult reared from stem (Georgiev et al. 2005b).

Axinopalpis gracilis gracilis* (Krynicki, 1832)** – ***Castanea sativa: Belasitsa Mt., above town of Petrich, 850 m a.s.l., adult reared from branches (Georgiev et al. 2013).

Callidium* (*Callidostola*) *aeneum aeneum* (DeGeer, 1775)** – ***Pinus sylvestris: Rila Mts., near Rila Monastery, 1150 m a.s.l., adults reared from branches, sample collection – 11 July 1926, emergence – March 1927 (Chorbadzhiev 1928).

Callimus* (*Callimus*) *angulatus angulatus* (Schrank, 1789)** – **New records:** ***Fagus sylvatica: Western Balkan Range, Churek Vill., two adults reared from dead dry stem wood, sample collection – April 2000, emergence – 02-06 June 2000.

Cerambyx* (*Cerambyx*) *cerdo cerdo* (L., 1758)** – ***Fraxinus excelsior* L.**: Sofia, Borisova gradina, 580 m a.s.l., in the roots of a dead tree (Stefanov & Zachev 1949). ***Prunus armeniaca* L.**: town of Sliven, 260 m a.s.l., larvae and adults in wood of semi-dried stems, September 1925 (Chorbadzhiev 1926). **New records:** ***Quercus* sp.**: Eastern Balkan Range, 300 m S of Lyaskovets Vill., 240 m a.s.l., 42°43'15.2"N, 27°17'12.4"E, female pupa (Fig. 3B) found in stump wood, 13 July 2012. ***Quercus cerris: Sakar Mt., 2 km S of Balgarska polyana Vill., 540 m a.s.l., 42°00'41.0"N, 26°11'26.7"E, larva (Fig. 3A) in stump wood, 02 May 2009; Eastern Balkan Range, 750 m NW of Belopol Vill., 300 m a.s.l., 42°42'55.8"N, 27°26'30.8"E, larva under stem bark, 15 July 2012.

Cerambyx* (*Microcerambyx*) *scopolii scopolii* Fuessly, 1775** – ***Carpinus orientalis: Western Rhodopes, Asenovgrad State Forestry, adult in wood (Georgiev et al. 2005a). ***Castanea sativa***: Western Balkan Range, near town of Berkovitsa, 530 m a.s.l., 43°13'18.2"N, 23°06'57.0"E, larva under bark of stump (Ovcharov et al. 2007). **New records:** ***Carpinus orientalis***: Western Rhodopes, above Bachkovo Vill., 400 m a.s.l., 41°56'44.3"N, 24°51'15.8"E, adult reared from dried stem, sample collection – February 2006, emergence – 9 February 2007, leg. Doychin Kuhtev. ***Castanea sativa***: Belasitsa Mt., 1.2 km N of Kongur Hut, 1040 m a.s.l., 41°21'27.39"N, 23°11'31.55"E, larva under bark of dried standing tree, 26 April 2011, leg. Yana Gocheva. ***Quercus dalechampii***: Vitosha Mt., 320 m NW of Tihia kat Restaurant, 1030 m a.s.l., 42°38'29.35"N, 23°13'01.11"E, three larvae under bark of dead stem, 07 April 2016. ***Prunus avium***: Vitosha Mt., 320 m NW of Tihia kat Restaurant, 1030 m a.s.l., 42°38'29.35"N, 23°13'01.11"E, larva under bark of dead stem, 07 April 2016. ***Fagus sylvatica***: Western Balkan Range, 4 km S of Barzia Vill., 750 m a.s.l., 43°09'19.1"N, 23°08'50.8"E, larva under bark of fallen stem, 03 April 2016.

***Chlorophorus* (*Crassofasciatus*) *aegyptiacus* (Fabricius, 1775)** – ***Ficus carica* L.**: Novo Konomladi Vill., near town of Petrich, adult reared from stump (Migliaccio et al. 2007).

Chlorophorus* (*Humeromaculatus*) *figuratus* Scopoli, 1763** – ***Castanea sativa: Belasitsa Mt., Belasitsa Hut, 680 m a.s.l., 41°22'14.9"N, 23°11'13.8"E, adult reared from dried shoot (Ovcharov et al. 2007). **New records:** ***Prunus avium***: Vitosha Mt., 320 m NW of Tihia kat Restaurant, 1030 m a.s.l., 42°38'29.35"N, 23°13'01.11"E, dead adult in pupa cell in rotten wood of lying stem, 07 April 2016.

***Chlorophorus* (*Immaculatus*) *herbstii* (Brahm, 1790)** – **New records:** ***Tilia* sp.**: Sofia, Borisova gradina, 600 m a.s.l., adult reared from larva under bark of dead tree, larva – 19 March 2003, pupa – 09 April 2003, dead adult – 10 June 2003.

Clytus* (*Clytus*) *arietis arietis* (L., 1758)** – ***Castanea sativa: Belasitsa Mt., above Belasitsa Vill., 560 m a.s.l., 41°21'40.6"N, 23°08'36.6"E, adult reared from dried shoot (Ovcharov et al. 2007). **New**

records: ****Corylus colurna* **L.: Western Rhodopes, Chervenata stena Biosphere Reserve, Kluvyata loc., 600 m a.s.l., 41°55'47.3"N, 24°52'03.3"E, 1♂, 1♀ reared from dried branches, sample collection – 13 November 2005, dead adults – 06 February 2006.

***Hylotrupes bajulus* (L., 1758)** – **New records: ****Picea abies*: Lyulin Mt., above St. St. Cyril and Methodius Monastery, 1050 m a.s.l., 42°39'00.8"N, 23°10'59.7"E, two larvae in wood of dried trunk, 21 April 2009. ******Pinus sylvestris*: Maleshevska Mt., 1.9 km S of Tzaparevo Vill., 820 m a.s.l., 41°36'32.3"N, 23°05'29.1"E, adult reared from larva found in wood of dried stem, larva – 16 April 2011, emergence – 16 June 2011.

Icosium tomentosum atticum* Ganglbauer, 1882** – ***Juniperus excelsa* M. Bieb.**: Struma River Valley, near town of Kresna, Tisata Reserve, adults reared from dried branches. ***Cupressus sempervirens* L.**: Petrich Town, adults reared from larvae found in dying stem (Doychev et al. 2006). **New records:** ***Cupressus sempervirens: Struma River Valley, Mikrevo Vill., 120 m a.s.l., 41°37'52.0"N, 23°11'35.7"E, four adults reared from dry branch, sample collection – 28 September 2006, emergence – 02-09 July 2007.

***Lioderina linearis* (Hampe, 1871)** – ***Prunus dulcis* (Mill.) D. A. Webb**: Eastern Rhodopes, town of Ivaylovgrad, adult reared from branch (Migliaccio et al. 2007).

Molorchus* (*Caenoptera*) *minor minor* (L., 1758)** – ***Picea pungens* Engelm.**: Sofia, Borissova gradina, imago in pupal cell under bark of cut down tree (Doychev & Georgiev 2004). ***Picea abies: Vitosha Mt., Bistrishko branishte Biosphere Reserve, 230 m SW of Pogledets Hut, 1530 m a.s.l., 42°34'44.6"N, 23°19'05.1"E, adult reared from dried twig (Doychev et al. 2009). **New records:** ***Picea abies***: Vitosha Mt., near Zlatnite Mostove loc., 1420 m a.s.l., 42°36'51.2" N, 23°14'19.1" E, four alive adults in stem wood, 27 May 2016.

Molorchus* (*Molorchus*) *marmottani marmottani* Brisout de Barneville, 1863** – ***Pinus sylvestris: Western Rhodopes, Asenovgrad State Forestry, 650 m a.s.l., adult reared from top part of stem (Doychev & Georgiev 2004).

***Molorchus* (*Molorchus*) *umbellatarus umbellatarus* Schreber, 1759** – **New records: ****Pistacia terebinthus* **L.**: Western Rhodopes, 310 m a.s.l., near Lukovitsa River, 41°58'39.7"N, 24°51'53.9"E, 1♀ reared from dried branches, sample collection – 22 April 2005, dead adult – 6 February 2006.

Nathrius brevipennis* (Mulsant, 1839)** – ***Prunus dulcis: Eastern Rhodopes, town of Ivailovgrad, adult reared from branch (Migliaccio et al. 2007). ***Castanea sativa***: Belasitsa Mt., above town of Petrich, six adults reared from branches (Georgiev et al. 2013).

***Obrium brunneum* (Fabricius, 1793)** – **New records: ****Pseudotsuga menziesii*: Osogovo Mt., 680 m SW of Eremya Vill., 610 m a.s.l., 42°12'04.7" N, 22°50'09.2"E, reared from larva found in wood of dry stem with diameter 8 cm, larva – 12 July 2016, pupa – 20 October 2016, emergence – 11 February 2017.

***Obrium cantharinum cantharinum* (L., 1767)** – ***Populus tremula* L.**: Lyulin Mt., above Gorna Banya, Bonsovi polyani loc., 900 m a.s.l., adult reared from larva in bark of dried tree (Georgiev et al. 2005b).

Phymatodes* (*Phymatodes*) *testaceus* (L., 1758)** – ***Fagus sylvatica: vicinity of Sofia, adults reared from cuttings, emergence – April - May 1926 (Chorbadzhiev 1928). **New records: ****Carpinus orientalis*: Western Rhodopes, above Bachkovo Vill., 400 m a.s.l., 41°56'44.3"N, 24°51'15.8"E, nine adults reared from dried stem, sample collection – February 2006, emergence – March-April 2007, leg. Doychin Kuhtev. ******Quercus frainetto* **Ten.**: Western Rhodopes, near Patriarh Evtimovo Vill., 230 m a.s.l., 42°01'03.6"N, 25°03'25.0"E, adult reared from dead stem, sample collection – 14 September 2005, emergence – 12 April 2006.

Phymatodes* (*Phymatoderus*) *glabratus* (Charpentier, 1825)** – ***Cupressus sempervirens: Pirin Mts., above Ilindentsi Vill, Mura Hut, four adults reared from seven larvae collected in wood of dried stem (Doychev & Georgiev 2006).

Phymatodes* (*Poecilium*) *alni alni* (L., 1767)** – ***Castanea sativa: Belasitsa Mt., above town of Petrich, adult reared from branches (Georgiev et al. 2013). **New records: ****Quercus frainetto*: Maleshevska Mt., 1.3 km SW of Palat Vill., 570 m a.s.l., 41°35'07.5"N, 23°10'31.5"E, six adults reared from dry branches, sample collection – 08 April 2006, emergence – 25 April - 4 May 2006.

***Purpuricenus kaehleri kaehleri* (L., 1758)** – **New records: ****Carpinus orientalis*: Western Rhodopes, above Bachkovo Vill., 400 m a.s.l., 41°56'44.3"N, 24°51'15.8"E, 1♀ reared from dried stem, sample collection – February 2006, dead adult – June 2006, leg. Doychin Kuhtev.

***Pyrrhidium sanguineum* L., 1758** – ***Quercus* sp.**: Western Rhodopes, Asenovgrad State Forestry, adults under bark of stem (Georgiev et al. 2005a).

Ropalopus* (*Ropalopus*) *clavipes* (Fabricius, 1775)** – ***Castanea sativa: Belasitsa Mt., Belasitsa Hut, 560-680 m a.s.l., 41°22'14.9"N, 23°11'13.8"E, seven adults reared from dried shoot (Ovcharov et

al. 2007).

***Ropalopus* (*Ropalopus*) *macropus* (Germar, 1824)** – ***Acer tataricum* L.**: Vitosha Mt., Kokalyane Vill., adults reared from branches (Migliaccio et al. 2007).

***Stenhomalus* (*Obriopsis*) *bicolor* (Kraatz, 1862)** – **New records: ****Juglans regia* **L.**: Struma Valley, Strumiani Vill., adult in thin dry twig, 28 March 2005.

Trichoferus fasciculatus fasciculatus* (Faldermann, 1837)** – ***Prunus dulcis: Eastern Rhodopes, town of Ivaylovgrad, adults reared from branches (Migliaccio et al. 2007). **New records: ****Juglans regia*: Struma River Valley, Strumiani Vill., 140 m a.s.l., 41°38'10.8"N, 23°12'04.8"E, adult reared from dry twig, sample collection – 28 March 2005, dead adult – 07 September 2005.

Trichoferus pallidus* (Olivier, 1790)** – ***Castanea sativa: Belasitsa Mt., above Belasitsa Hut, 780 m a.s.l., 41°21'59.8"N, 23°11'56.3"E, adult reared from larva under bark of dead standing tree (Ovcharov et al. 2007). **New records: ****Quercus robur* **L.**: Sofia, Borisova gradina, 580 m a.s.l., 42°40'43.9"N, 23°21'10.8"E, dead adult under bark of dried stem, 13 May 2015.

***Xylotrechus* (*Xylotrechus*) *arvicola arvicola* (Olivier, 1795)** – **New records: ****Carpinus orientalis*: Western Rhodopes, above Bachkovo Vill., 400 m a.s.l., 41°56'44.3"N, 24°51'15.8"E, four adults reared from dried stem, sample collection – February 2006, emergence – 19 March 2007 (one specimen), dead adults (three specimens) – 8 March 2016, leg. Doychin Kuhtev.

***Xylotrechus* (*Rusticoclytus*) *rusticus* (L., 1758)** – **New records: ****Salix caprea*: Vitosha Mt., Tihia kat loc., 1♂ reared from damaged stems of living trees, sample collection – 15 May 2015, emergence – 03 June 2015. ******Populus tremula*: Vitosha Mt., 340 m SE of Tihia kat Restaurant, 1090 m a.s.l., 42°38'15.8"N, 23°13'21.4"E, eight larvae (Fig. 3C) under bark and in wood of lying stem, 30 September 2016.

Lamiinae

Acanthocinus* (*Acanthocinus*) *aedilis* (L., 1758)** – ***Pinus sylvestris: Sofia, 560 m a.s.l., adults reared from larvae, emergence – July 1926 (Tschorbadjiew 1927, Chorbadzhiev 1928); Western Balkan Range, town of Berkovitsa, 410 m a.s.l., 43°13'22.6"N, 23°09'25.5"E, four larvae under bark of dried stem (Ovcharov & Doychev 2001). ***Pinus nigra***: Western Balkan Range, 1.7 km W of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, larvae, pupae and adult under bark of dried stems (Ovcharov & Doychev 2001); Western Rhodopes, Byala cherkva Resort, 1420 m a.s.l., 41°54'49.5"N, 24°39'48.5"E, larvae under bark of dried stem (Takov et al. 2012). **New records: *Pinus sylvestris***: near town of Pravets, golf course, four larvae under bark of dried trees, 30 June 2009; Western Rhodopes, above town of Velingrad, near hotel Zora, 850 m a.s.l., seven pupae under bark of cut down trees, 09 August 2010; 760 m S of Yundola Vill., 1400 m a.s.l., 42°03'23.4"N, 23°51'09.5"E, six larvae under bark of logs, 03 October 2016; Viskyar Mt. near town of Breznik, 820 m a.s.l., larva under bark of dried standing tree, 07 June 2013. ***Pinus nigra***: Osogovo Mt., 680 m SW of Eremya Vill., 610 m a.s.l., 42°12'04.7" N, 22°50'09.2"E, larva (Fig. 3D) under bark of fallen stem, 12 July 2016.

Acanthocinus* (*Acanthocinus*) *griseus* (Fabricius, 1793)** – ***Pinus sylvestris: Rila Mts., Iskar Dam, Starkelovo gnezdo loc., adults reared from basal parts of dried stems (Hubenov et al. 2001). ***Pinus nigra***: Western Balkan Range, 1.7 km W of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, six larvae under bark of dried stems (Ovcharov & Doychev 2001). ***Picea abies***: Western Rhodopes, road Asenovgrad-Smolyan, fork for Yugovo Vill., adult reared from larva found under bark of cut down tree (Georgiev et al. 2005a). **New records: ****Pinus peuce*: Western Balkan Range, above Petrohan Pass, larva under bark of broken branch, 10 October 2002; Vitosha Mt., 2 km NE of Aleko Hut, 1500 m a.s.l., 42°35'44.4"N, 23°18'27.3"E, 1♂ reared from stem top part of dried tree, sample collection – 08 October 2004, emergence – 11 February 2005. ***Pinus nigra***: Eastern Rhodopes, Ivaylovgrad State Forestry, Kavak dere loc., 1♀ reared from stem top parts of cut down trees affected by forest fire, sample collection – 18 April 2003, dead adult – 15 September 2003. ******Pinus strobus*: Sofia, dendrarium of University of Forestry, two adults reared from a dried tree, sample collection – 08 April 2015, emergence – May 2015.

Acanthocinus* (*Acanthocinus*) *reticulatus* (Razoumowsky, 1789)** – ***Pseudotsuga menziesii: Central Balkan Range, Ribaritsa Vill, imago under the bark of dried tree (Doychev & Georgiev 2004).

***Aegomorphus clavipes* (Schrank, 1781)** – ***Populus* x euramericana**: Maritsa River Valley, Skobelevo Vill., near town of Dimitrovgrad, four adults reared from stem parts (Georgiev & Doychev 2010).

Anaesthetis testacea testacea* Fabricius, 1781** – ***Castanea sativa: Belasitsa Mt., above Belasitsa Vill., 560 m a.s.l., 41°21'40.6"N, 23°08'36.6"E, adult reared from dried shoot (Ovcharov et al.

2007).

Exocentrus adspersus* Mulsant, 1846** – ***Castanea sativa: Belasitsa Mt., Belasitsa Hut, 560-680 m a.s.l., 41°21'59.8"N, 23°11'56.3"E, 16 adults reared from branches of dried shoots (**Ovcharov** et al. 2007). ***Betula pendula***: Vitosha Mt., Tihia kat loc., 1000 m a.s.l., adult reared from dried stem (Topalov et al. 2014). **New records: ****Corylus avellana***: Belasitsa Mt., Belasitsa Hut, 680 m a.s.l., 41°22'14.9"N, 23°11'13.8"E, adult reared from larva found in dry twig, larva – 4 May 2005, dead adult – June 2005.

***Exocentrus lusitanus* (L., 1767)** – ***Tilia tomentosa* Moench**: Western Rhodopes, Lukovitsa River, above town of Asenovgrad, 330 m a.s.l., 41°58'43.9"N, 24°51'46.0"E, adults reared from branches (Georgiev et al. 2005a). **New records: ****Tilia platyphyllos* Scop.**: Belasitsa Mt., above town of Petrich, 320 m a.s.l., 41°23'11.8"N, 23°12'07.0"E, three adults reared from pupae found in dry twig, pupae – 05 May 2005, dead adults – June 2005.

***Exocentrus punctipennis* Mulsant & Guillebeau, 1856 –** ***Ulmus* sp.**: vicinity of town of Kazanlak, adults reared from branch, sample collection –1923, emergence – April 1924 (Chorbadzhiev 1926). **New records: ****Ulmus glabra* Huds.**: Western Rhodopes, Bachkovo Vill., 360 m a.s.l., 41°56'40.3"N, 24°51'24.7"E, two adults reared from dry branches, sample collection – 22 April 2005, emergence – June 2005.

***Lamia textor* (L., 1758) –** ***Populus x* euramericana**: Western Balkan Range, Gorni Lom Vill., 900 m a.s.l., adult reared from larva, collected in basal part of stem (Georgiev 2011).

Leiopus* (*Leiopus*) *nebulosus nebulosus* (L., 1758)** – ***Carpinus betulus: Golo bardo Mt., Ostritsa Botanical Reserve, 1060 m a.s.l., 42°33'30.63"N, 23°03'08.51"E, larvae and pupae under bark of stem (Doychev & Ovcharov 2002). ***Castanea sativa***: Western Balkan Range, town of Botevgrad, adult reared from stem (Georgiev et al. 2005b); Belasitsa Mt., above town of Petrich, three adults reared from stems (Georgiev et al. 2013).

***Mesosa* (*Mesosa*) *curculionoides* (L., 1760)** – **New records: ****Carpinus orientalis*: Western Rhodopes, above Bachkovo Vill., 400 m a.s.l., 41°56'44.3"N, 24°51'15.8"E, adult reared from dried stem, sample collection – February 2006, dead adult – June 2006, leg. Doychin Kuhtev.

***Mesosa* (*Aplocnemia*) *nebulosa* (Fabricius, 1781)** – **New records: ****Betula pendula*: Vitosha Mt., 320 m NW of Tihia kat Restaurant, 1030 m a.s.l., 42°38'29.35"N, 23°13'01.11"E, two larvae under bark and in wood of fallen stem, 07 April 2016.

Monochamus galloprovincialis pistor* (Germar, 1818)** – ***Pinus sylvestris: Western Rhodopes, near town of Velingrad and Beglika loc., larvae from logs, August 1926 (Tschorbadjiew 1927, Chorbadzhiev 1928); near Shiroka polyana Dam (Stefanov 1948); Byala cherkva Resort, adult reared from branch (Georgiev et al. 2005a); Rila Mts., Parangalitsa Reserve, larvae under bark of stressed and fallen trees, August 1980 (Tsankov 1981); Western Balkan Range, 1.7 km west of Barzia Vill., 640 m a.s.l., 43°12'08.2"N, 23°08'14.1"E, larva in wood of dried stem (Ovcharov & Doychev 2001); Sofia, above Knyazhevo (Ruskov 1929); Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949). ***Pinus nigra***: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949). ***Pinus strobus***: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949). ***Picea abies***: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949). **New records: *Pinus strobus***: Sofia, dendrarium of University of Forestry, 590 m a.s.l., 42°39'11.5"N, 23°21'32.6"E, 2♂♂, 6♀♀ reared from stem of dried tree, sample collection – 08 April 2015, emergence – 07 May-16 June 2015. ***Pinus sylvestris***: Sofia, park of American College, 660 m a.s.l., 42°37'57.7"N, 23°21'50.1"E, larva under bark of dried stem, 05 December 2016. ***Pinus nigra***: Osogovo Mt., 1 km SW of Bogoslov Vill., 1120 m a.s.l., 42°14'42.6"N, 22°40'02.7"E, larva under bark of fallen stem, 24 October 2016.

***Monochamus sartor* (Fabricius, 1787)** – ***Larix decidua* Mill.**: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949).

Monochamus sutor sutor* (L., 1758) –** ***Pinus sylvestris: Western Rhodopes, Yundola Vill., adult reared from logs (Samuelian 1998). **New records: ****Picea abies*: Western Rhodopes, near Yundola Vill., 1380 m a.s.l., 42°03'36.7"N, 23°51'45.1"E, three larvae under bark of logs, 10 May 2001; Vitosha Mt., 1.2 km NE of Aleko Hut, 1720 m a.s.l., 42°35'31.3"N, 23°17'56.6"E, 18 larvae under bark and in log wood (fallen in 04 July 2013), 12 October 2013.

Morimus asper funereus* Mulsant, 1863** – ***Populus deltoides* Marshall**: vicinity of town of Kazanlak, adult reared from base of stem, sample collection – Spring 1929, emergence – 24 July 1929 (Chorbadzhiev 1932); ***Populus* x euramericana**: Western Balkan Range, Gorni Lom Vill., adult reared from dead stem (Georgiev et al. 2005b). ***Pseudotsuga menziesii: Belasitsa Mt., 1.7 km N of Kongur Hut, 950 m a.s.l., 41°21'43.4"N, 23°11'35.4"E, adult reared from larva (Fig. 3E) collected in stem (Georgiev et

al. 2013). ***Fagus sylvatica***: Vitosha, Tihia kat loc., 1000 m a.s.l., larva under bark (Topalov et al. 2014). **New records:** ***Fagus sylvatica***: Maleshevska Mt., 1.6 km E of Razdol Vill., 1190 m a.s.l., 41°37'04.5"N, 23°01'40.9"E, adult in stump rotten wood, 15 August 2008; Western Balkan Range, Vratsa Balkan, 400 m SW of Borov kamak loc, 1280 m a.s.l., 43°08'52.5"N, 23°29'48.2"E, two larvae under bark of dried stem, 12 August 2011; Western Balkan Range, 5.6 km S of town of Varshets, 840 m a.s.l., 43°08'31.1"N, 23°17'54.4"N, larva under bark of cut down tree, 14 August 2011; Eastern Balkan Range, 2.2 km NW from Rish Vill., 460 m a.s.l., 42°59'13.2"N, 26°53'30.7"E, three larvae under bark of dried tree, 27 August 2011. ***Quercus pubescens* Willd.**: Danube River Plane, 2.8 km E of Boynitsa Vill., 170 m a.s.l., 43°56'48.9"N, 22°34'07.9"E, two larvae in dried stem, 16 August 2012; ***Quercus* sp.**: 3 km SW of town of Lukovit, 320 m a.s.l., 43°11'24.6"N, 24°07'22.6"E, larva under bark of stump, 08 August 2012; Danube River Plane, 1.7 km SW of Makresh Vill., 230 m a.s.l., 42°34'51.8"N, 23°18'33.6"E, larva under bark of stump, 02 September 2012. ***Castanea sativa***: Belasitsa Mt., 1.1 km E of Belasitsa Hut, 780 m a.s.l., 41°21'59.8"N, 23°11'56.3"E, 25 larvae under bark of fallen old tree, 13 June 2004; 300 m E of Belasitsa Hut, 630 m a.s.l., 41°22'12.20"N, 23°11'25.26"E, adult under bark of lying stem, 24 April 2011, leg. Yana Gocheva. ***Pseudotsuga menziesii***: Vlahina planina Mt., 4.5 km SW of Frolosh Vill., 950 m a.s.l., 42°05'35.1"N, 22°54'03.7"E, four larvae under bark of stumps, 04 August 2016; Osogovo Mt., 6.5 km S of Novo selo Vill., 1270 m a.s.l., 42°08'11.9"N, 22°40'31.7"E, larva under bark of stump, 21 September 2016.

Oberea* (*Oberea*) *linearis* (L., 1761)** – ***Corylus avellana: Plovdiv, towns of Pazardzhik, Kazanlak and Zlatitsa, larvae in twigs. ***Juglans regia***: towns of Ivaylovgrad, Kazanlak, Zlatitsa, larvae in twigs (Popov 1940).

Oberea* (*Oberea*) *oculata* (L., 1758)** – ***Salix caprea: Vitosha Mt., Kokalyane Vill., adults reared from branches (Georgiev 1998); Western Balkan Range (Gorni Lom Vill.), Vitosha Mt. (Kokalyane Vill.), adults reared from branches (Georgiev et al. 2004c); Vitosha Mt., Aleko Hut, larva in branch (Topalov et al. 2014). ***Salix viminalis* L.**: near town of Ihtiman, 630 m a.s.l., larvae in branches (Chorbadzhiev 1932). **New records:** ***Salix* sp.**: Sofia, dendrarium of University of Forestry, 590 m a.s.l., 42°39'09.2"N, 23°21'28.3"E, adult reared from dried branch, 30 March 2011. ***Salix caprea***: Vitosha Mt., Fizkulturnik Hut, adult reared from branches, sample collection – 09 August 2013, emergence – 28 May 2014.

Pogonocherus* (*Pityphilus*) *decoratus* Fairmaire, 1855** – ***Pinus nigra: Western Rhodopes, Martsiganitsa Hut, adults reared from dried branches (Doychev & Georgiev 2004). **New records:** ***Pinus nigra***: Western Rhodopes, 1.5 km SW of Bachkovo Vill., 550 m a.s.l., 41°56'01.5"N, 24°50'42.3"E, adult reared from part of stem, sample collection – 21 April 2002, emergence – 18 September 2002; Chudinska Mt., 1.7 km NW of Dolno selo Vill., 1050 m a.s.l., 42°18'23.4"N, 22°28'24.5"E, three larvae under bark of branches of cut down trees affected by forest fire, 02 April 2002; larva and adult in branches, 15 November 2002. ***Pinus strobus***: Sofia, dendrarium of University of Forestry, 590 m a.s.l., 42°39'11.5"N, 23°21'32.6"E, 2 adults reared from dried branch, sample collection – 09 April 2015, dead adults – 22 March 2016.

Pogonocherus* (*Pityphilus*) *fasciculatus fasciculatus* (DeGeer, 1775)** – ***Pinus sylvestris: Rila Mts., Vitosha Mt. and Western Rhodopes, larvae from branches (Tschorbadjiew 1927); Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949); ***Pinus nigra***: Sofia, Borisova gradina, 580 m a.s.l. (Stefanov & Zachev 1949); Western Balkan Range, 500 m W of Barzia Vill., 590 m a.s.l., 43°11'29.2"N, 23°08'58.3"E, larva in dried shoot (Ovcharov & Doychev 2001); Gorna Malina Vill. and town of Kystendil, adults reared from stems of dried seedling and branches (Doychev & Georgiev 2004); ***Pinus strobus***: Sofia, Borisova gradina, 580 m a.s.l., (Stefanov & Zachev 1949); ***Pseudotsuga menziesii***: Sofia, Borisova gradina, 580 m a.s.l., (Stefanov & Zachev 1949). **New records:** ***Pinus nigra***: Golo bardo Mt., 800 m W of Kralev dol Vill., 910 m a.s.l., 42°33'48.8"N, 23°04'20.3"E, three adults reared from dried branches and parts of stems of young trees, sample collection – 20 April 2003, dead adults – 02 September 2003; Pirin Mts., above Ilindentsi Vill., 740 m W of Mura Hut, 1020 m a.s.l., 41°40'45.9"N, 23°17'24.7"E, three adults reared from dry branches, sample collection – 04 April 2004, dead adults – 23 September 2004; Struma River Valley, 1.2 km NW of Strumyani Vill., 160 m a.s.l., 41°39'05.9"N, 23°11'24.6"E, 1♂ reared from dried thin shoot, sample collection – 19 May 2005, emergence – 31 August 2005. ***Picea abies***: Rila Mts., above Yundola Vill., Filibeliiska polyana loc., 1620 m a.s.l., 42°04'48.5"N, 23°49'20.3"E, 2♀♀ reared from larvae found in wood of young dried tree, larvae – 06 July 2014, pupation – 07 July 2014, emergence – 30 July 2014. ***Pinus mugo* Turra**: Rila Mts., near Belmeken Dam, 1930 m a.s.l., 42°08'51.7"N, 23°47'09.8"E, 1♀ reared from a dried twig, sample collection – 06 July 2014, dead imago – 29 February 2016.

Pogonocherus* (*Pogonocherus*) *hispidulus* (Piller & Mitterpacher, 1783)** – ***Castanea sativa: Western Balkan Range, town of Botevgrad, adults reared from a stem (Georgiev et al. 2005b); Belasitsa Mt., above Belasitsa Vill., 560 m a.s.l., 41°21'40.6"N, 23°08'36.6"E, adult reared from dried shoot; Belasitsa Hut, 680 m a.s.l., 41°22'14.9"N, 23°11'13.8"E, adult reared from dried thin stem (Ovcharov et al. 2007); Belasitsa Mt., above town of Petrich, six adults reared from branches (Georgiev et al. 2013). **New records: ****Pinus sylvestris***: Viskyar Mt., above town of Breznik, Bardo forest Park, 820 m a.s.l., adult reared from dried twig, sample collection – 07 June 2013, emergence – 08 October 2013.

Pogonocherus* (*Pogonocherus*) *perroudi perroudi* Mulsant, 1839** – ***Pinus nigra: Sakar Mt., between Cherepovo and Balgarska poliana Villages, adults reared from branches; near Pastrogor Vill., adults reared from dried twigs (Georgiev et al. 2005b). **New records:** ***Pinus nigra***: Eastern Rhodopes, 350 m SW of Malko gradishte Vill., 250 m a.s.l., 41°45'19.1"N , 25°59'14.5"E, adult reared from dried twig, sample collection – 11 June 2005, dead adult – 30 August 2005.

Saperda* (*Saperda*) *carcharias* (L., 1758)** – ***Populus tremula: Western Balkan Range, Gorni Lom Vill., adults reared from basal parts of stems (Georgiev & Kolarov 1999); Vitosha Mt., Smilio Shelter between Yarlovo and Chuypetlovo Vill., eight larvae found in basal parts of stems and roots (Topalov et al. 2014). **New records:** ***Populus tremula***: Vitosha Mt., Smilio Shelter between Yarlovo and Chuypetlovo Vill., 1♀ reared from attacked parts of stems and roots, sample collection – 04 June 2014, emergence – 28 June 2015.

Saperda* (*Saperda*) *similis* Laicharting, 1784** – ***Salix caprea: Vitosha Mt., Plana Mt. (Kokalyane Vill.), adults reared from branches (Georgiev 1998, Georgiev & Samuelian 2000, Georgiev et al. 2004c). **New records:** ***Salix caprea***: Vitosha Mt., Kokalyane Vill., adult reared from branches, sample collection – 03 March 2015, emergence – 29 April 2015.

Saperda* (*Compsidia*) *populnea populnea* (L., 1758)** – ***Populus* x euramericana**: Cherkvitsa Vill. (Danube River Valley), strong attack (huge number of larvae, pupae and adults) (Tsankov et al. 1986, Tsankov & Georgiev 1991); Zhelen Vill. (Iskar River Valley), town of Krivodol, strong attacks on two-year-old samplings in nurseries (Georgiev 1996); Maritsa River Valley (Lozen Vill., Ognyanovo Vill., Manole Vill., Plovdiv, towns of Simeonovgrad and Dimitrovgrad), Thracian Plane (Hristo Milevo Vill., Mirovo Vill.), Karlovo kettle (Dabene Vill.), strong attacks and many reared adults (Georgiev et al. 2004a, b). ***Populus tremula: Sofia, Western Balkan Range (Gorni Lom Vill., Gintsi Vill., Churek Vill.), Central Balkan Range (Dolno Kamartsi Vill., Klisura Vill.), Vitosha Mt. (Kokaliane Vill., Zheleznitsa Vill., Aleko Hut), Plana Mt. (Plana Vill.), Rila Mts. (town of Samokov), Western Rhodopes (town of Asenovgrad), strong attacks and many reared adults from branches (Georgiev et al. 2004b, Migliaccio et al. 2004). ***Salix caprea***: Vitosha Mt., Kokalyane Vill., adults reared from branches (Georgiev 1998); Plana Mt., Planshtitsa River, galls with larvae (Fig. 3F) on branches (Georgiev & Hubenov 2000); Western Balkan Range (Gorni Lom Vill.), Vitosha Mt. (Kokalyane Vill.), Plana Mt. (Plana Vill.), adults reared from branches (Georgiev et al. 2004a).

***Saperda* (*Lopezcolonia*) *punctata* (L., 1767)** – ***Ulmus minor* Mill.**: Tundja River, 2.3 km SW of town of Elhovo, Balabana Reserve, 100 m a.s.l., 42° 09' 10.3"N, 26° 32' 43.5"E, adult reared from pupa under bark (Doychev & Georgiev 2004). **New records: ****Ulmus laevis* Pall.**: Sofia, Geo Milev Park, 1♀ reared from larva found under bark of stem of attacked tree, larva – 17 April 2005, emergence – 04 June 2005.

Saperda* (*Lopezcolonia*) *scalaris scalaris* (L., 1758)** – ***Populus tremula: Western Balkan Range, Gorni Lom Vill., adult reared from dead branch (Georgiev et al. 2005b). **New records: ****Prunus avium***: Vitosha Mt., 320 m NW of Tihia kat Restaurant, 1030 m a.s.l., 42°38'29.35"N, 23°13'01.11"E, two adults reared from pupae found in wood of dead stem, pupae – 07 April 2016, emergence – 09 and 18 April 2016; seven larvae under bark of dead stem, 07 April 2016. ***Alnus glutinosa* (L.) Gaertn.**: Western Balkan Range, 4.2 km S of Barzia Vill., 750 m a.s.l., 43°09'11.0"N, 23°08'50.5"E, two adults under bark of standing dry stems, 3 May 2016. ***Pyrus communis* L.**: Vitosha Mt., 480 m SE of Tihia kat Restaurant, 1100 m a.s.l., 42°38'09.8"N, 23°13'23.3"E, larva under bark of lying

stem, 30 September 2016.

Stenostola ferrea ferrea* (Schrank, 1776)** – ***Tilia tomentosa: Western Rhodopes, Lukovitsa River above town of Asenovgrad, 330 m a.s.l., 41°58'43.9"N, 24°51′46.0"E, adult reared from dried branches (Georgiev et al. 2005a).

***Tetrops starkii starkii* Chevrolat, 1859** – ***Fraxinus ornus* L.**: Western Rhodopes, Lukovitsa River above town of Asenovgrad, 310 m a.s.l., 41°58'39.7"N, 24°51'53.9"E, adult reared from dried twigs (Georgiev et al. 2005a).

In this study trophic relationships between 86 cerambycid taxa and various trees and shrubs

Table 1. Host plants of xylophagous longhorn beetles in Bulgaria.

Family, tree species	Cerambycid species
Pinaceae	
Abies alba	*Rhagium inquisitor inquisitor*
Larix decidua	*Monochamus sartor*
Picea abies	*Acanthocinus griseus, Hylotrupes bajulus, Molorchus minor minor, Monochamus galloprovincialis pistor, Monochamus sutor sutor, Oxymirus cursor, Pogonocherus fasciculatus fasciculatus, Rhagium bifasciatum, Rhagium inquisitor inquisitor, Tetropium castaneum, Xylosteus bartoni, Xylosteus spinolae*
Picea pungens	*Molorchus minor minor*
Pinus brutia	*Arhopalus ferus*
Pinus mugo	*Pogonocherus fasciculatus fasciculatus*
Pinus nigra	*Acanthocinus aedilis, Acanthocinus griseus, Arhopalus ferus, Arhopalus rusticus rusticus, Asemum striatum, Ergates faber faber, Monochamus galloprovincialis pistor, Pogonocherus decoratus, Pogonocherus fasciculatus fasciculatus, Pogonocherus perroudi perroudi, Rhagium bifasciatum, Rhagium inquisitor inquisitor, Rutpela maculata maculata, Spondylis buprestoides*
Pinus peuce	*Acanthocinus griseus, Rhagium inquisitor inquisitor*
Pinus strobus	*Acanthocinus griseus, Monochamus galloprovincialis pistor, Pogonocherus decoratus, Pogonocherus fasciculatus fasciculatus, Rhagium inquisitor inquisitor*
Pinus sylvestris	*Acanthocinus aedilis, Acanthocinus griseus, Anastrangalia dubia dubia, Anastrangalia sanguinolenta, Arhopalus ferus, Arhopalus rusticus rusticus, Asemum striatum, Callidium aeneum, Ergates faber faber, Hylotrupes bajulus, Molorchus marmottani marmottani, Monochamus galloprovincialis pistor, Monochamus sutor sutor, Pogonocherus fasciculatus fasciculatus, Pogonocherus hispidulus, Prionus coriarius, Rhagium bifasciatum, Rhagium inquisitor inquisitor, Spondylis buprestoides, Stictoleptura rubra rubra*
Pseudotsuga menziesii	*Acanthocinus reticulatus, Morimus asper funereus, Obrium brunneum*, *Pogonocherus fasciculatus fasciculatus, Prionus coriarius, Rhagium inquisitor inquisitor, Rhagium mordax*
Cupressaceae	
Juniperus excelsa	Icosium tomentosum atticum
Cupressus sempervirens	*Icosium tomentosum atticum, Phymatodes glabratus*
Anacardiaceae	
Pistacia terebinthus	*Molorchus umbellatarus umbellatarus*
Betulaceae	
Alnus glutinosa	*Saperda scalaris scalaris*
Betula pendula	*Exocentrus adspersus, Mesosa nebulosa, Xylosteus bartoni*
Carpinus betulus	*Anaglyptus mysticus, Leiopus nebulosus nebulosus*
Carpinus orientalis	*Cerambyx scopolii scopolii, Mesosa curculionoides, Phymatodes testaceus, Purpuricenus kaehleri kaehleri, Rutpela maculata maculata, Xylotrechus arvicola arvicola*
Corylus avellana	*Exocentrus adspersus, Oberea linearis, Rutpela maculata maculata, Saphanus piceus ganglbaueri, Xylosteus bartoni, Xylosteus spinolae*
Corylus colurna	*Clytus arietis arietis*
Fagaceae	
Castanea sativa	*Anaesthetis testacea testacea, Axinopalpis gracilis gracilis, Cerambyx scopolii scopolii, Chlorophorus figuratus, Clytus arietis arietis, Exocentrus adspersus, Leiopus nebulosus nebulosus, Morimus asper funereus, Nathrius brevipennis, Phymatodes alni alni, Pogonocherus hispidulus, Rhagium sycophanta, Ropalopus clavipes, Trichoferus pallidus*
Fagus sylvatica	*Callimus angulatus angulatus, Cerambyx scopolii scopolii, Leptura aurulenta, Morimus asper funereus, Phymatodes testaceus, Rhagium bifasciatum, Rhagium mordax, Rutpela maculata maculata, Saphanus piceus ganglbaueri, Xylosteus spinolae*
Quercus cerris	*Rhagium mordax, Cerambyx cerdo cerdo*
Quercus dalechampii	*Cerambyx scopolii scopolii, Prionus coriarius, Rhagium bifasciatum, Rhagium mordax*
Quercus frainetto	*Phymatodes alni alni, Phymatodes testaceus*

Table 1. Continued.

Family, tree species	Cerambycid species
Quercus petraea	*Rhagium sycophanta*
Quercus pubescens	*Morimus asper funereus*
Quercus robur	*Trichoferus pallidus*
Quercus sp.	*Cerambyx cerdo cerdo, Morimus asper funereus, Pyrrhidium sanguineum*
Juglandaceae	
Juglans regia	*Oberea linearis, Stenhomalus bicolor, Trichoferus fasciculatus fasciculatus*
Malvaceae	
Tilia platyphyllos	*Exocentrus lusitanus*
Tilia tomentosa	*Exocentrus lusitanus, Stenostola ferrea ferrea*
Tilia sp.	*Chlorophorus herbstii*
Moraceae	
Ficus carica	*Chlorophorus aegyptiacus*
Oleaceae	
Fraxinus excelsior	*Cerambyx cerdo cerdo*
Fraxinus ornus	*Tetrops starkii starkii*
Rosaceae	
Prunus armeniaca	*Cerambyx cerdo cerdo*
Prunus avium	*Cerambyx scopolii scopolii, Chlorophorus figuratus, Rhagium bifasciatum, Rhagium mordax, Saperda scalaris scalaris*
Prunus dulcis	*Lioderina linearis, Nathrius brevipennis, Trichoferus fasciculatus fasciculatus*
Pyrus communis	*Saperda scalaris scalaris*
Sorbus aria	*Anaglyptus mysticus, Grammoptera ruficornis ruficornis*
Sapindaceae	
Acer tataricum	*Ropalopus macropus*
Salicaceae	
Populus alba	*Rhaesus serricollis*
Populus deltoides	*Morimus asper funereus*
Populus tremula	*Obrium cantharinum cantharinum, Saperda carcharias, Saperda populnea populnea, Saperda scalaris scalaris, Xylotrechus rusticus*
Populus x euramericana	*Aegomorphus clavipes, Aegosoma scabricorne, Lamia textor, Leptura quadrifasciata quadrifasciata, Morimus asper funereus, Rhagium mordax, Rhamnusium bicolor bicolor, Saperda populnea populnea*
Populus sp.	*Rhamnusium bicolor bicolor*
Salix caprea	*Aromia moschata moschata, Oberea oculata, Saperda populnea populnea, Saperda similis, Xylotrechus rusticus*
Salix viminalis	*Oberea oculata*
Salix sp.	*Rutpela maculata maculata, Oberea oculata*
Ulmaceae	
Ulmus minor	*Saperda punctata*
Ulmus laevis	*Saperda punctata*
Ulmus glabra	*Exocentrus punctipennis*
Ulmus sp.	*Exocentrus punctipennis*

were established. They belong to five subfamilies: Prioninae (four species and subspecies), Lepturinae (15), Spondylidinae (6), Cerambycinae (32) and Lamiinae (29).

The summarised data showed that 49 tree and shrub species from two coniferous and 11 deciduous families appear to be host plants for different longhorn beetles (Table 1). The most numerous was the cerambycid complex on *Pinus sylvestris* (20 taxa), followed by *Pinus nigra* and *Castanea sativa* (14), *Picea abies* (12), *Fagus sylvatica* (10) and *Populus* x euramericana (8).

New or additional trophic information was obtained for 59 cerambycid taxa: Prioninae (three spe-

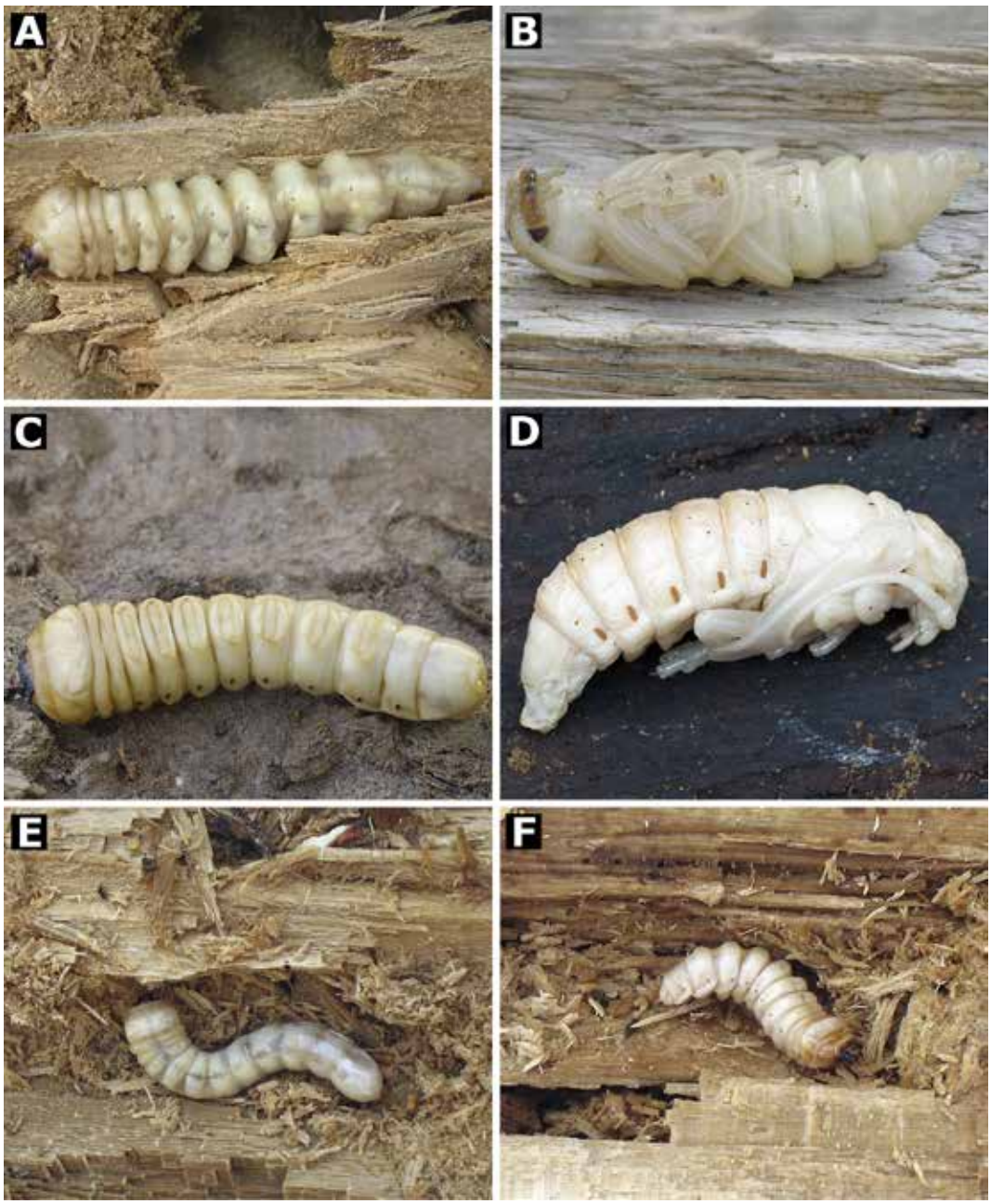

Fig. 1. A. *Ergates faber faber*, larva; B. *E. faber faber*, pupa; C. *Rhaesus serriocollis*, larva; D. *R. serriocollis*, pupa; E. *Aegosoma scabricorne*, larva; F. *Rhamnusium bicolor bicolor*, larva.

cies and subspecies), Lepturinae (12), Spondylidinae (5), Cerambycinae (20) and Lamiinae (19). Seventy relationships between longhorn beetles and host plants are new for Bulgaria.

Discussion

In the present study, 69 new trophic relationships were established between longhorn beetles and forest trees and shrubs in Bulgaria. It should be noted that almost all connections are well known in the entomological literature (Plavilstshikov 1936, 1940, 1958, Bense 1995). However, some trophic connections (*Xylosteus bartoni – Betula pendula*; *Xylosteus bartoni – Corylus avellana*; *Obrium brunneum – Pseudotsuga menziesii*; *Morimus asper funereus – Pseudotsuga menziesii*) expand the existing knowledge on food plants of cerambycids and could initiate future revisions.

In Bulgaria the most numerous trophic relationships in larval feeding of cerambycids have been found for *Rhagium inquisitor* (seven host plants), followed by *Rhagium bifasciatum, R. mordax, Morimus asper funereus* and *Pogonocherus fascicu-*

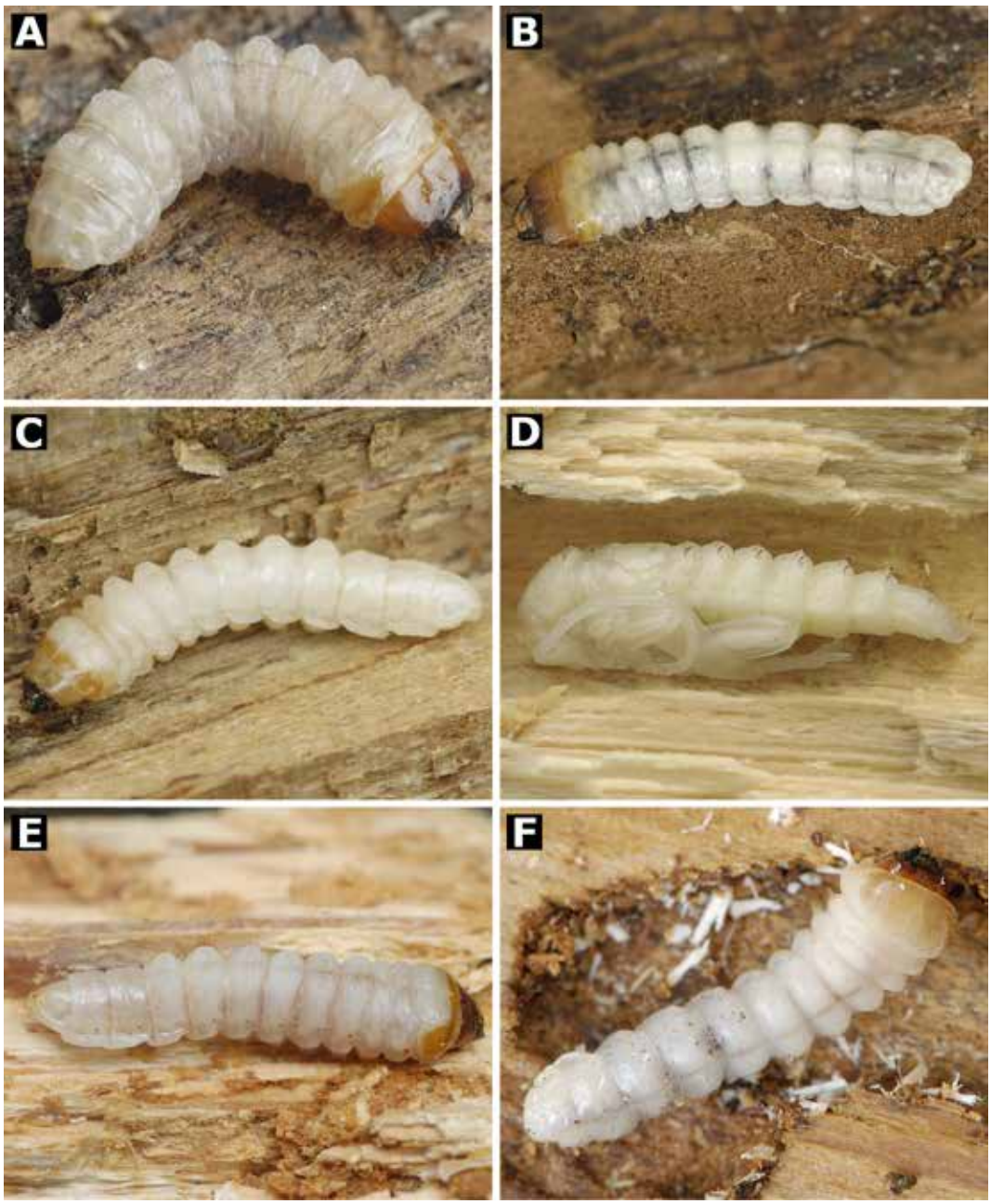

Fig. 2. A. *Rhagium bifasciatum*, larva; B. *R. inquisitor inquisitor*, larva; C. *Rutpela maculata maculata*, larva; D. *R. maculata maculata*, pupa; E. *Oxymirus cursor*, larva; F. *Tetropium castaneum*, larva.

latus, each with six hosts. Among them, *R. inquisitor* and *P. fasciculatus* develope on coniferous trees only but larvae of the rest, except for *Prionus coriarius, Rutpela maculata maculata, Xylosteus bartoni, X. spinolae* and *Pogonocherus hispidulus*, can live on both coniferous and deciduous hosts. For some of them, e.g. *M. asper funereus*, a protected saproxylic beetle, this information is important in monitoring and could be interpreted as favourable assessment of the conservation conditions of its habitats.

The majority of longhorn beetles were reared from physiological weakened or dead plants so they cannot be considered as pests. Many species (*Aegosoma scabricorne*, *Ergates faber faber*, *Prionus coriarius*, *Rhagium bifasciatum*, *Rhamnusium bicolor bicolor*, *Rutpela maculata maculata*, *Xylosteus spinolae*, *Saphanus piceus ganglbaueri*, etc.) are strongly saproxylic and develop in rotten or decayed wood, thus being an important component of biodiversity of the country.

One species (*Saperda populnea*), however, is an economically significant pest, attacking the branches of alive and vital trees. It causes strong damages in young poplar plantations created by hybrid poplars

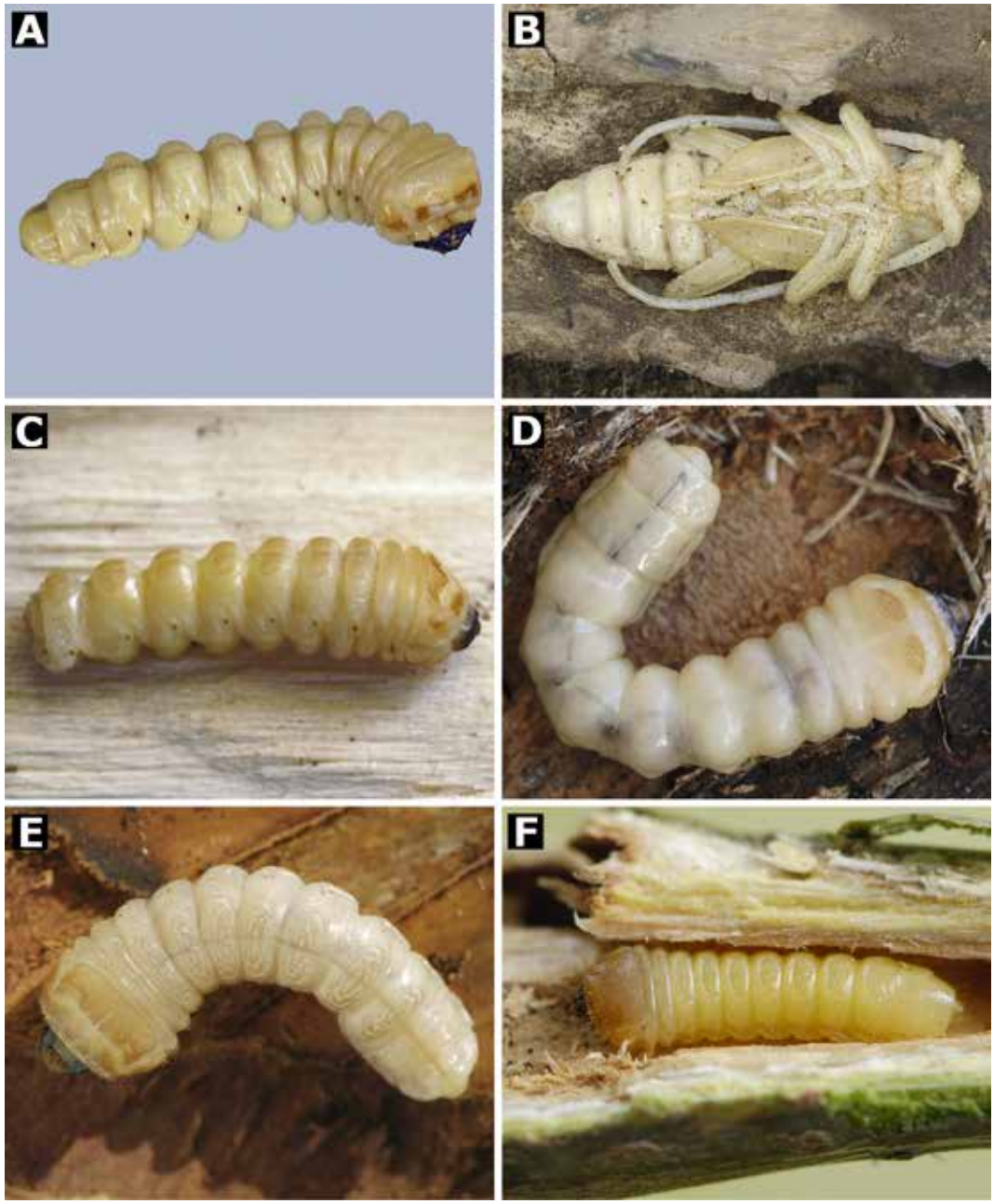

Fig. 3. A. *Cerambyx cerdo cerdo*, larva; B. *C. cerdo cerdo*, pupa; C. *Xylotrechus rusticus*, larva; D. *Acanthocinus aedilis*, larva; E. *Morimus asper funereus*, larva; F. *Saperda populnea populnea*, larva.

from the *Populus* x euramericana group (Tsankov et al. 1986, Tsankov & Georgiev 1991, Georgiev 1996).

The species of genus *Monochamus* Dejean, 1821, and especially *M. galloprovincialis pistor*, are vectors of a destructive pine nematode, *Bursaphelenchus xylophilus* (Steiner & Buhrer) Nickle. In Bulgaria about 1.5 million ha of artificial pine forests were created. *Monochamus galloprovincialis pistor* is widespread in the country and could be a big threat to them in case of *B. xylophilus* penetration.

In conclusion, it should be noted that this study is important not only to reveal trophic relationships of longhorn beetles, but also to clarify their distribution in Bulgaria.

Acknowledgements: A part of the published data was based on the results of Project № 19/19.01.2016 'Stocks and role of dead biomass in beech (*Fagus sylvatica* L.) forest ecosystems in Western Balkan Range'; Project № 18/19.01.2016 'Adaptivity of coniferous plantations in Osogovo region' supported by the University of Forestry, Sofia; Project IZEBZ0143109 supported by the Swiss National Science Fund; Project TUNESinURB 'To better understanding of ecosystem services in urban environment through evaluation and mapping of ecosystem services', BG03 Biodiversity and ecosystems, FM of EEA, 2009-2014.

References

Bense U. 1995. Longhorn Beetles. Illustrated key to the Cerambycidae and Vesperidae of Europe. Weikersheim: Margraf Verlag, 512 p.

Chorbadzhiev P. 1926. Pests on the culture plants in Bulgaria during 1925. Svedenia po zemedelieto 7 (2): 20-68. (In Bulgarian).

Chorbadzhiev P. 1928. Pests on the culture plants in Bulgaria during 1926. Svedenia po zemedelieto 9 (3/4): 1-51. (In Bulgarian).

Chorbadzhiev P. 1932. Pests on the culture plants in Bulgaria during 1928-1929. Svedenia po zemedelieto 13 (1/2): 3-64. (In Bulgarian).

Danilevsky M. L. 2016. Catalogue of Palaearctic Cerambycoidea. (Updated: 09.05.2016). URL: http://www.cerambycidae.net.

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. & Ovcharov D. 2002. Phytophagous from Coleoptera (Insecta) order presented in Ostritsa Botanical Reserve. Journal of Balkan Ecology 5 (3): 244-252.

Doychev D., Ovcharov D. & Georgiev G. 2006. Notes on distribution and ecology of *Icosium tomentosum atticum* Ganglbauer (Coleoptera: Cerambycidae) in Bulgaria. Forest Science 3: 117-121.

Doychev D. & Bencheva S. 2008. First record of *Callidium coriaceum* Paykull (Coleoptera: Cerambycidae) in Bulgaria. Silva Balcanica 9 (1): 97-99.

Doychev D., Bencheva S., Hristova I. & Dounchev A. 2009. Biodiversity of the longhorn beetles (Coleoptera: Cerambycidae) in the Vitosha Natural Park and Bistrishko Branishte Biosphere Reserve. Forestry Ideas, 37 (1): 186-197.

Euro+Med 2006-. Euro+Med PlantBase - The information resource for Euro-Mediterranean plant diversity. – http://ww2.bgbm.org/EuroPLusMed/ [Accessed 15 February 2017].

Georgiev G. 1996. Biological and ecological peculiarities of *Saperda populnea* L., (Coleoptera: Cerambycidae) in Bulgaria. Forest Science 2: 51-58. (In Bulgarian, English summary).

Georgiev G. 1998. New and little-known phytophagous insects on the willows (*Salix* spp.) in Bulgaria. In: Stoykov H. (Ed.): Proceedings '70-th Anniversary of the Forest Research Institute'. Sofia, Iris, pp. 196-199. (In Bulgarian, English summary).

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

Georgiev G. Doychev D., Simov N., Guéorguiev B. & Bekchiev R. 2013. Contribution to the knowledge of cerambycid fauna (Coleoptera: Cerambycidae) of Belasitsa Mountain in Bulgaria. Silva Balcanica 14 (1): 109-116.

Georgiev G. & Doychev D. 2010. New xylophagous beetles (Insecta: Coleoptera) on poplars in Bulgaria. Acta Zoologica Bulgarica 62 (2): 175-180.

Georgiev G., Doychev D. & Migliaccio E. 2005a. Studies on cerambycid fauna (Coleoptera: Cerambycidae) in Western Rhodopes in Bulgaria. Forest Science 2: 81-90.

Georgiev G. & Hubenov Z. 2000. *Triarthia setipennis* (Fall.) (Diptera: Tachinidae) – a new species for the fauna of Bulgaria. Forest Science 1: 69-71. (In Bulgarian, English summary).

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. & Kolarov J. 1999. New Ichneumonidae (Hymenoptera) parasitoids on forest insect pests in Bulgaria. Journal of Pest Science 72 (3): 57-61.

Georgiev G., Raikova M., Ljubomirov T. & Ivanov K. 2004a. New parasitoids of *Saperda populnea* (L.) (Coleoptera: Cerambycidae) in Bulgaria. Journal of Pest Science 77 (3): 179-182.

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

Georgiev G. & Samuelian S. 2000. *Saperda similis* Laich. (Coleptera: Cerambycidae) – new species for the Bulgarian fauna. Acta Zoologica Bulgarica 52 (1): 9-11.

Georgiev G., Ljubomirov T., Raikova M., Ivanov K. & Sakalian V. 2004b. Insect inhabitants of old larval galleries of *Saperda populnea* (L.) (Coleoptera: Cerambycidae) in Bulgaria. Journal of Pest Science 77 (4): 235-243.

Georgiev G., Sakalian V., Ivanov K. & Boyadzhiev P. 2004c. Insects reared from stems and branches of goat willow (*Salix caprea* L.) in Bulgaria. Journal of Pest Science 77 (3): 151-153.

Hubenov Z., Georgiev G., Mirchev P. & Naidenov J. 2001. *Acanthocinus griseus* (F.) (Coleoptera: Cerambycidae) – a new host of *Billaea triangulifera* (Zett.) (Diptera: Tachinidae) in Bulgaria. Forest Science 1/2: 87-89. (In Bulgarian, English summary).

Mamaev B. M. & Danilevsky M. L. 1975. Larvae of Longhorned Beetles. Nauka, Moscow, 282 p. (In Russian).

Migliaccio E., Georgiev G. & Mirchev P. 2004. Studies on cerambycid fauna (Coleoptera: Cerambycidae) of Vitosha Mountain, Bulgaria. Acta Zoologica Bulgarica 56 (2): 137-144.

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 107 (1), suppl. 1: 1-78.

Ovcharov D. & Doychev D. 2001. Xylophagous insects of the order Coleoptera in the pine plantations on non-typical habitats in the 'Petrohan' experimental and educational forest enterprise. Forestry Ideas 1-4: 64-75. (In Bulgarian, English summary).

Ovcharov D., Doychev D. & Dimitrova P. 2007. Insects feeding on the Sweet Chestnut (*Castanea sativa* Mill.) in Bulgaria. In: Bratanova-Doncheva S. (Ed.). Sustainable Management of Sweet Chestnut Ecosystems - CAST Bul. Reports presented at the First Balkan Regional Workshop, 2–5 November 2005, Blagoevgrad, Bulgaria, pp. 173-182.

Plavilstshikov N. 1936. Faune de l' URSS. Insectes Coleopteres. 21. Cerambycidae (P. 1), Moscou-Leningrad, Edition de l'Academie des Sciences de l' URSS. 612 p. (In Russian).

Plavilstshikov N. 1940. Faune de l' URSS. Insectes Coleopteres. 22. Cerambycidae (P. 2), Moscou-Leningrad, Edition de l'Academie des Sciences de l' URSS. 785 p. (In Russian).

Plavilstshikov N. 1958. Faune de l' URSS. Insectes Coleopteres. 23. Cerambycidae (P. 3), Lamiinae, P. 1. Moscou-Leningrad, Edition de l'Academie des Sciences de l' URSS. 592 p. (In Russian).

Popov V. 1940. *Oberea lonearis* [sic!] L. – a dangerous pest on Hazelnut and Walnut in Bulgaria. Gradinarstvo 21 (9): 287-290. (In Bulgarian).

Rapuzzi P. & G. Georgiev 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.

Ruskov M. 1929. Beitrag zur Kenntnis der Ursachen des Nichtgedeihens und Sterbens der Kiefernkulturen bei dem Dorfe Knjaschewo (Besirk Sofia). Annuaire de l'Université de Sofia, Faculté de Agronomique 7 (1928-1929): 212-272. (In Bugarian, German summary).

Samuelian S. 1998. Species of family Cerambycidae, Coleoptera found at Jundola (near Velingrad). Acta Entomologica Bulgarica 1: 39-42. (In Bulgarian, English summary).

Stefanov D. 1948. Study of attacks of some insect and fungal pests during drying of Scotch Pine resin tapped trees. Annuaire de L'université de Sofia, Faculté de Sylviculture 2: 75-120. (In Bugarian, Russian summary).

Stefanov D. & Zachev B. 1949. Causes pour le desséchement en masse des cultures dans le "Parc de la liberté" aux environs de Sofia. Annuaire de L'Académie Rurale "G. Dimitroff" - Sofia, Faculte Forestiere 2 (1948-1949): 55-94. (In Bulgarian, with French and Russian summaries).

Švácha P. & Danilevsky M. L. 1986. Cerambycoid larvae of Europe and Soviet Union (Coleoptera, Cerambycoidea). Part I. Acta Universitatis Carolinae. Biologica 30 (1-2): 1-186.

Švácha P. & Danilevsky M. L. 1987. Cerambycoid larvae of Europe and Soviet Union (Coleoptera, Cerambycoidea). Part II. Acta Universitatis Carolinae. Biologica 31 (3-4): 121-284.

Švácha P. & Danilevsky M. L. 1988. Cerambycoid larvae of Europe and Soviet Union (Coleoptera, Cerambycoidea). Part III. Acta Universitatis Carolinae. Biologica 32 (1-2): 1-205.

Takov D., Doychev D., Linde A., Draganova S. & Pilarska D. 2012. Pathogens of bark beetles (Curculionidae: Scolytinae) and other beetles in Bulgaria. Biologia 67 (5): 966-972.

Topalov P., Doychev D., Simov N., Sakalian V. & Georgiev G. 2014. New records of longhorn beetles (Coleoptera: Cerambycidae) in Vitosha Mountain. Forest Science 1/2: 95-102. (In Bulgarian, English summary).

Tsankov G. 1981. Insect pests on tree vegetation in Parangalitsa Reserve – their number and function. – In: Proceedings of regional symposium of Project 8 on the Programme 'Man and the Biosphere' (MAB) of UNESCO, 20-24.10.1980, Blagoevgrad, Bulgaria, pp. 141-151. (In Bulgarian).

Tsankov G. & Georgiev G. 1991. Records on parasitoids on smaller poplar borer, *Saperda populnea* (Coleoptera, Cerambycidae) along the Danube in Bulgaria. Entomophaga 36 (4): 48-53.

Tsankov G., Georgiev G. & Bochev N. 1986. New parasitoids of *Saperda populnea* in Bulgaria. In: Proceedings of the Symposium of EPS IOBS 'Biological and integrated pest management in the forest ecosystems', Kraimorie, Bulgaria, September 1986, Moscow, 163-169. (In Russian).

Tschorbadjiew P. 1927. Bemerkungen über einige schädliche Insekten in Bulgarien, beobachtet während der Jahre 1926 und 1927. Mitteilungen der Bulgarischen Entomologischen Gesellschaft in Sofia 4: 125-134. (In Bulgarian).

Received: 17.02.2017
Accepted: 13.04.2017