

New Records of Rare and Threatened Beetles (Insecta: Coleoptera) in Bulgaria

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Abstract: New data on the distribution of the following rare, threatened and protected beetle species from the territory of Bulgaria are presented: *Carabus hungaricus* (Carabidae), *Omoglymmius germari* (Rhysodidae), *Cucujus cinnaberinus* (Cucujidae), *Triplax russica*, *Triplax lacordairei* (Erotylidae), *Probatiscus subrugosus* (Tenebrionidae), *Prostomis mandibularis* (Prostomidae), *Propomacrus bimucronatus* (Euchiridae), *Platycerus caraboides*, *Platycerus caprea* and *Sinodendron cylindricum* (Lucanidae).

Key words: Coleoptera, protected species, Natura 2000 sites

Introduction

According to the recently published new version of the IUCN Red List of saproxylic beetles (CÁLIX et al. 2018), the Balkans are one of the richest territory and, at the same time, with very poor and insufficient data on beetles. The territory of Bulgaria is not an exception and offers a vast potential for discovering new beetle species as well as for assessment of the known ones in terms of nature conservation. The distribution of the protected beetle species in Bulgaria has been studied mainly through the projects for designation and mapping of the Natura 2000 protected zones. However, the data concerning the species under consideration are scarce and sporadic. Due to the insufficient information, it is not possible to make any management decisions or local economic development to be started. In recent years, purposeful and detailed surveys were conducted and many new localities were found for a range of insect species, even among the well-studied groups.

The main purpose of the present work is to report new records of rare and threatened species of the Coleoptera from Natura 2000 sites in Bulgaria,

including species included in the IUCN Red List of saproxylic beetles (CÁLIX et al. 2018).

Materials and Methods

The beetles were collected during field expeditions between 2008 and 2018. To complete the information of the species distribution, additional data from the historical collection of National Museum of Natural History – Sofia (NMNHS) were used. The methods of collection were standard pitfall traps, light traps, leaf litter sifting and hand collection under tree bark and rotting wood. The materials have been deposited at NMNHS; Naturhistoriska Riksmuseet, Stockholm, Sweden (NHRM); Regional Natural History Museum – Plovdiv (RNHM) and at the Zoological Collection of the Sofia University “St. Kliment Ohridski”, Faculty of Biology (BFUS). The IUCN conservation status of the listed species was assessed at the European level (see CÁLIX et al. 2018). The IUCN Red List categories abbreviations used in the text are as follows: Least Concern

(LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN) and Data Deficient (DD).

Results

A list of the new records for 11 species of rare, threatened, endangered and protected beetles is presented below:

FAMILY RHYSODIDAE LAPORTE, 1840

Omoglymmius germari (Ganglbauer, 1891)

Known localities: between Nesebar and Emine, 13.09.1966 (PALM 1966); Strandzha Mts., Kondolovo Village, 14.04.2009 (BEKCHIEV 2010). New records: Bulgaria, “BG Nessebar T-E Leiler”, 2 ex. (NHRM); “BG Nessebar Emine T-E Leiler”, 4 ex. (NHRM); “Bulgarian Albena T.E. Leiler”, 3 ex. (NHRM); Belasitsa Mts., Kluch Village, pitfall traps near old *Platanus orientalis* Mill., 28.03-01.06.2009, 2 ex., leg. B. Guéorguiev (NMNHS); South of the Kamchia River mouth, N42.992128 E27.887892, 3 m a.s.l., 02.07.2011, 1 ex., in rotten stump, leg. O. Sivilov, B. Zlatkov & D. Chobanov; East of Novo Hodzhovo Village, N41.406839 E23.406422, 115 m a.s.l., 16.05.2012, 1 ex., under bark, leg. O. Sivilov & B. Zlatkov (BFSU). Natura 2000 sites: BG0001004 Emine-Irakli, BG0000116 Kamchya, BG0001007 Strandzha, BG0000167 Belasitsa, BG0001028 Sreden Pirin-Alibotush. Conservation status: IUCN Red List of European saproxylic beetles (DD); Red Data Book of the Republic of Bulgaria (EN) (GUÉORGUIEV 2015). Habitat preferences: Found under bark of *Quercus* sp. and *Platanus orientalis* L. Primeval forest relict species *sensu stricto* (category 1) (ECKELT et al. 2017).

FAMILY CARABIDAE LATREILLE, 1802

Carabus (Pachystus) hungaricus Fabricius, 1792

Known localities: Dragoman (HIEKE & WRASE 1988); Peturch, 18.10.1939 (GUÉORGUIEV 1989). New records: Beledie han, N42.89151 E23.15742, 07.09.2011, 2 ex., leg. B. Guéorguiev, E. Chehlarov; 15.10.2011, 3 ex., leg. B. Guéorguiev, E. Chehlarov (NMNHS); same locality, 30.09-01.10.2014, 5 ex. alive in soil traps, leg. B. Guéorguiev, E. Chehlarov; 2.5 km SE vil. Letnitsa, N42.9476 E22.9431, 30.09-01.10.2014, 22 ex. alive in soil traps, leg. B. Guéorguiev, E. Chehlarov. Natura 2000 sites: BG0000322 Dragoman. Conservation status: Annexes II and IV of Council Directive 92/43/EEC; Bern Convention (II); Annexes 2 and 3 of Biological Diversity Act; CORINE; Red Data Book of the Republic of Bulgaria (VU) (GUÉORGUIEV 2015). Habitat preferences: A steppe grassland specialist which prefers taller-vegetation patches with litter

(POKLUDA et al. 2012). At the BG0000322 Dragoman, it was found in calcareous grasslands exposed to the south and covered with low growth vegetation.

FAMILY CUCUJIDAE LATREILLE, 1802

Cucujus cinnaberinus (Scopoli, 1763) (Fig. 1a)

Known localities: Rila Mts., Borovets, 30.08.1937; East Stara planina, Nova Shipka Village, 23.09.1949; Maleshevska Mts., Razdol Village, 11-19.05.2008/28.03.2008/11-25.04.2008/ 12.09.2008/25.04.2008/11.04.2008 (GUÉORGUIEV et al. 2008). New records: The Western Rhodopes, near Peshtera Town, N42.00706 E24.28084, 04.10.2008, 1 ex., under bark of old *Fagus sylvatica* L., leg. R. Bekchiev, R. Kostova (NMNHS); Pirin Mts., near Pirin Village, N41.52214 E23.56773, 19.07.2012, 1 ex., bred from larva, leg. O. Sivilov (NMNHS); Central Stara Planina Mts., near Troyan Town, Chiflika, N42.824994 E 24.543326, 24.09.2017, 1 ex., leg. O. Todorov (RNHM); The Western Rhodopes, Boikovo Village, N41.999957 E24.621070, 18.08.2017, 1 ex., leg. O. Todorov (RNHM); Rila Mts., near Rilski Monastery, under bark of *Alnus* sp., 14.07.2018, N42.0913 E23.3841, 3 ex. (larva), obs. R. Bekchiev; Osogovo Mts., near Novo selo Village, under bark of *Pinus sylvestris* L., N42.1827 E22.6639, 27.10.2018, 1 ex., obs. Stefan Samarinov. Natura 2000 sites: BG0000116 Kamchia, BG0000224 Ograzhden-Maleshevo, BG0001030 Rodopi-Zapadni, BG0001028 Sreden Pirin-Alibotush, BG0000495 Rila, BG0001011 Osogovska planina, BG0001493 Tzentralen Balkan – buffer. Conservation status: IUCN Red List of European saproxylic beetles (VU A1c); Annex II of Council Directive 92/43/EEC; Bern Convention (II); CORINE. Rare in Bulgaria. Habitat preferences: Found under bark of *Picea abies* and *Fagus sylvatica*.

FAMILY EROTYLIDAE LATREILLE, 1802

Triplax russica Linnaeus, 1758

Known localities: Gorubliane; Maleshevska Mts., Breznitsa; Strandzha Mts., Mladezhko Village (BEKCHIEV et al. 2012). New records: Belasitsa Mts., near Belasita Hut, 800 m a.s.l., 17.05.2008, 1 ex., leg. R. Bekchiev (NMNHS). Natura 2000 sites: BG0000366 Kresna – Ilindentsi; BG0001007 Strandzha; BG0000167 Belasitsa. Conservation status: IUCN Red List of European saproxylic beetles (LC). Rare in Bulgaria.

Triplax lacordairei Crotch, 1870

Known localities: West Stara planina Mts., Petrohan; Rila Mts., Rila Monastery; Strandzha Mts., Fazanovo (BEKCHIEV et al. 2012). New records: Belasitsa Mts., near Kongura Hut, 1400-1700 m a.s.l., 17.06.2008, 1 ex., leg. R. Bekchiev

(NMNHS). Natura 2000 sites: BG0001040 Zapadna Stara planina i Predbalkan; BG0000496 Rilski manastir; BG0001007 Strandzha, BG; BG0000167 Belasitsa. Conservation status: IUCN Red List of European saproxylic beetles (EN). Rare in Bulgaria.

FAMILY TENEBRIONIDAE LATREILLE, 1802

***Probatiscus subrugosus* (Duftschmid, 1812)**

Known localities: "Kamčik-Dere (Peitschenfluss)" 5.06 (APFELBECK 1894); Sofia – "Kurubaglar" (= Lozenets) 25.03.1900 (YOAKIMOV 1904); Sofia; Stara Zagora; Chirpan (NEDELKOV 1909); Kavarna (MÜLLER 1929); Plovdiv; Ognyanovo; Kresna gorge (ANGELOV & MEDVEDEV 1981); Vitosha, 23.04.1909; Harmanli, 03.05.1973; Plovdiv, 05.1924 (PICKA 1983). New records: Ognyanovo Village, 07.06.1960, 1 ex., leg. N. Vihodcevsky; Sofia, X., 2 ex., leg. N. Nedialkov; Stara Zagora Town, 04. 1908, 9 ex., leg. N. Nedialkov; Chirpan Town, 02.05.1906, 1. ex., leg. N. Nedialkov; Basapari Hills, between Ognyanovo and Tridvortsii Villages, N42.13265 E24.43868, 16.04.2012, 3 ex., found dead, under large stone, leg. R. Bekchiev (NMNHS); The Eastern Rhodopes, Harmanli env., Ostar kamak, N41.901916 E 25.893814, 24.04.2012, remains of 2 ex., leg. B. Guéorguiev, E. Chehlarov (NMNHS). Natura 2000 sites: BG0000578 Reka Maritsa, BG0000113 Vitosha, BG0000116 Kamchia, BG0000254 Besaparski vazvishenia, BG0000366 Kresna-Ilindentsi, BG0000573 Kompleks Kaliakra, BG0001032 Rodopi Iztochni, BG0001033 Brestovitsa, BG0001034 Ostar kamak. Conservation status: Annexes II and IV of Council Directive 92/43/EEC. Rare in Bulgaria. Habitat preferences: The species inhabits exposed limestone terrains with meadow vegetation, mostly with southerly exposure. Notes: PICKA (1983) has mentioned that the main part of the material he examined is kept in the MNP (Prague) but Dr. Merkl (Hungarian Natural History Museum) has stated (pers. comm.) that this material is in the Musée d'Histoire Naturelle de Lyon at this moment.

FAMILY PROSTOMIDAE THOMSON, 1859

***Prostomis mandibularis* (Fabricius, 1801)**

Known localities: Belasitsa Mts., Belasitsa Hut; environs of Petrich Town (GUÉORGUIEV 2011). New records: Belasitsa Mts., Samuilovo Village, pit-fall traps, *Platanus orientalis* L., forest, N41.367792 E23.093738, 14.06-05.07.2008, 1 ex., leg. R. Bekchiev, R. Kostova (NMNHS). Natura 2000 sites: BG0000167 Belasitsa. Conservation status: IUCN Red List of European saproxylic beetles (NT). Rare in Bulgaria. Habitat preferences: *Castanea sativa* and *Platanus orientalis* forests. Primeval forest relict species *sensu lato* (category 2) (ECKELT et al. 2017).

FAMILY EUCHIRIDAE HOPE, 1840

***Propomacrus bimucronatus* (Pallas, 1781) (Fig. 1b)**

Known localities: Primorsko, 15.08.1975 (MAŠEK 1985); Sozopol, <100 m a.s.l., VII.1971; Arkutino, <150 m a.s.l., 07.1973; south slope of Ograzhden Mts., Lebnitsa Village, 100-500 m a.s.l., 05.1988 (KRÁL & MALÝ 1993); Kresna Gorge, train station Peio Yavorov, 120-150 m a.s.l., 08-09.1993-1994 (KALUSHKOV & DIMOVA 1995); Krumovgrad, Ada tepe (BEKCHIEV & ZLATKOV 2010). New records: The Eastern Rhodopes, near Boinik Village, Valchi dol Reserve, N41.59082 E25.58880, 14.09.2014, 1 ex., found dead, leg. R. Bekchiev, R. Kostova (NMNHS); Madzharovo Town, N41.64328 E25.87271, 20.09.2014, 2 ex., at light, leg. R. Bekchiev, R. Kostova (NMNHS). Natura 2000 sites: BG0001001 Ropotamo, BG0000366 Kresna-Ilindentsi, BG0001032 Rodopi Iztochni, BG0000224 Ograzhden-Maleshevo. Conservation status: Extremely rare, tropical faunal element, associated with old forests. In Europe, it is spread mainly in the southern part, with Bulgaria being a refuge for its most northwest populations. The species is included in the Red Data Book of Bulgaria (EN) (GUÉORGUIEV 2015) and the IUCN Red List of European saproxylic beetles (NT). Habitat preferences: *Quercus* sp. and *Platanus orientalis* forests.

FAMILY LUCANIDAE LATREILLE, 1804

***Platycerus caraboides* (Linnaeus, 1758)**

Known localities: Lyulin, Vitosha, Zemenska, Rila, Pirin, Western Rhodope, Maleshevska and Strandzha Mts. (GUÉORGUIEV & BUNALSKI 2004). New records: Sredna gora Mts., Buzovgrad env., 25.04.1948, 3 ex., leg. S. Bocharov (NMNHS); Belasitsa Mts., between Belasitsa Hut and Kongura Hut, 800-1400 m a.s.l., 17.05.2008, 1 ex., leg. R. Bekchiev (NMNHS); between Belasitsa Hut and Kongura Hut., 12-13. 06. 2010, 1. ex., leg. B. Guéorguiev, E. Chehlarov (NMNHS). Natura 2000 sites: BG0000113 Vitosha; BG0001012 Zemen; BG0000495 Rila; BG0000209 Pirin; BG0001030 Rodopi – Zapadni; BG0000224 Ograzhden – Maleshevo; BG0001007 Strandzha, BG; BG0000167 Belasitsa. Conservation status: IUCN Red List of European saproxylic beetles (LC). Rare in Bulgaria.

***Platycerus caprea* (De Geer, 1774)**

Known localities: Vitosha Mts., Boyanski Vodopad; Rila Mts., Borovets (GUÉORGUIEV & BUNALSKI 2004). New records: Western Rhodopes, Bachkovo Town., near Bachkovo Monastery, 13.07.1963, 1 ex., leg. S. Bocharov (NMNHS); Sredna gora Mts., near railway station Vakarel, 28.04.1963, 1 ex., leg. S. Bocharov (NMNHS);



Fig. 1. a) *Cucujus cinnaberinus*; b) *Propomacrus bimucronatus*; c) *Sinodendron cylindricum*.

Verila Mts., Klisura Village, 03.06.2012, 1 ex., leg. R. Bekchiev (NMNHS). Natura 2000 sites: BG0000113 Vitosha; BG0001030 Rodopi–Zapadni; BG0001389 Sredna gora. Conservation status: IUCN Red List of European saproxylic beetles (LC). Rare in Bulgaria.

***Sinodendron cylindricum* (Linnaeus, 1758) (Fig. 1c)**

Known localities: Sredna gora, Western, Central and Eastern Stara Planina, Vitosha, Rila, Western Rhodope, Maleshevska, Pirin and Belasitsa Mts., Black Sea Coast: Maslen Nos Cape (GUÉORGUIEV & BUNALSKI 2004). New records: Belasitsa Mts., near Belasitsa Hut, *Fagus sylvatica* L. and *Castanea sativa* Mill., forest, 14.08-02.09.2008, 1 ex., leg. R. Bekchiev (NMNHS); Kongura Reserve, near Kongura Hut, 1670 m a.s.l., soil traps, 09.07.-03.09.2008, 1 ex. leg. R. Bekchiev (NMNHS); between Belasitsa and Kongura Huts, 12-13. 06. 2010, 1. ex., leg. B. Guéorguiev, E. Chehlarov (NMNHS); Lozenska Mts., 07. 2015, 1 ex., leg. R. Kostova;

Central Stara planina Mts., Eho Hut, N42.773056 E24.480000, 1580 m a.s.l., 14.08.1995, 1 ex., on *Fagus* sp. rotten stump, leg. O. Sivilov; Belasitsa Mts., near Varshiloto place, N41.335364 E23.180611, 1605 m a.s.l., 17.07.2012, 1 ex., on *Fagus* sp. rotten stump, leg. O. Sivilov, B. Zlatkov & Ts. Ganeva; 08.08.2012, 1 ex., on *Fagus* sp. rotten stump, leg. O. Sivilov & B. Zlatkov; south-east of Pirin Village, N41.521558 E23.579575, 910 m a.s.l., 19.07.2012, 1 ex., at night using head lamp, leg. O. Sivilov & B. Zlatkov; Osogovo Mt., near Tri buki Hotel, N42.174722 E22.625833, 1560 m a.s.l., 26.07.2014, 1 ex., leg. A. Lapeva-Gjonova; 27.07.2014, 1 ex., leg. A. Lapeva-Gjonova; 28.07.2014, 1 ex., leg. A. Lapeva-Gjonova (BFUS). Natura 2000 sites: BG0001389 Sredna gora; BG0001030 Rodopi – Zapadni, BG0001040 Zapadna Stara planina i Predbalkan, BG0000494 Tsentralen Balkan, BG0000113 Vitosha, BG0000495 Rila, BG0000209 Pirin, BG0001030 Rodopi – Zapadni, BG0000224

Ograzhden – Maleshevo; BG0000167 Belasitsa, BG0001028 Sreden Pirin-Alibotush, BG0000165 Lozenska planina, BG0001011 Osogovska planina, BG0001001 Ropotamo. Conservation status: IUCN Red List of European saproxylic beetles (LC). Rare in Bulgaria.

Discussion

The new data confirmed the presence of the studied beetle species at some of the known localities but also enlarged the known range of their distribution in Bulgaria. All exemplars of these species were sporadically collected, always in small number, which is probably due to their poorly known biology and ecology as well as the decrease of their habitat availability and their low dispersal capability. The presented localities have not got only pure scientific significance; the obtained data could give important information for future ecological management decisions, biodiversity assessments and environmental protection projects. The species of community interest (like *Carabus hungaricus*, *Probatibus subrugosus* and *Cucujus cinnaberinus*), included in the list of protected species under the Habitat Directive, ensure the natural service capacity of the protected sites. The beetles *Cucujus cinnaberinus*, *Propomacrus bimucronatus*, *Triplax russica* and *Triplax lacordaire* are included in the list for assessment of old forest with conservation value in Bulgaria (BEKCHIEV et al. 2017). *Omoglymmius germari*, *Prostomis mandibularis*, *Platycerus caraboides*, *Platycerus caprea* and *Sinodendron cylindricum* are rare species and proven indicators for old growth forests. Because of the value of all beetle species mentioned above, their range, biology and ecology should be thoroughly studied in Bulgaria. At the same time, strict protection of their habitats is needed.

Acknowledgements: We thank our colleagues Dr. Ognian Todorov (RNHM) for the data of *Cucujus cinnaberinus* and Dr. Ilija Gjonov (Sofia University “St. Kliment Ohridski”) for the photo of the same species.

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Received: 10.04.2018

Accepted: 25.06.2018