

Pteromalidae (Hymenoptera: Chalcidoidea) from Vitosha Mountain: New Records for Bulgarian Fauna

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Abstract: This study presents information about twenty pteromalid species distributed in mountain habitats. Nineteen of them are new to Vitosha Mountain. Sixteen species are new for Bulgarian fauna and eight are new for Balkan Peninsula. A new host for *Mesopolobus sericeus* (FORSTER, 1770) was established - *Andricus mitratus* (Cynipidae). One species – *Coelopisthia caledonica* ASKEW, 1980 was recorded for first time from South-Eastern Europe and together with *Pteromalus temporalis* (GRAHAM, 1969) and *Semiotellus fumipennis* THOMSON, 1876 are discussed as probable boreo-montane species. Four plant associations are also presented.

Key words: Pteromalidae, Vitosha Mountain, new records, distribution, Bulgaria, Europe

Introduction

Vitosha Mountain is situated in Western Bulgaria. It is one of the highest mountain in the Balkans with maximum elevation of 2290 m a. s. l. Furthermore, Vitosha covers only 278 sq. km and these results in very high average altitude, which reaches to 1500 m. Almost the whole area of the mountain is included in Vitosha Natural Park and the most habitats are just partly affected by human activities.

The pteromalid fauna of the mountain is poorly known. Twenty-one species were recorded at all – nine of them by THURÓCZY (1990), one by GEORGIEV & TAKOV (2005), three by GEORGIEV & STOJANOVA (2006) and eight species by TODOROV (2011). The last author briefly discusses the previous studies on Pteromalidae for Bulgaria.

Materials and methods

Almost all specimens were caught by sweeping and Malaise traps by the author in the years 2010 and 2011. *Mesopolobus sericeus* (FORSTER, 1770)

was reared from a single host gall by Dr. Lilyana Vasileva-Samnalieva during her work on Cynipidae in the early 1980s. Collected material was dried following HERATY & HAWKS (1998) and mounted according to some classic techniques (NOYES 1982). Identification of the species was done using works of ASKEW (1980), BOUČEK & RASPLUS (1991), DZHANOKMEN (1996), GRAHAM (1969), GRAHAM (1992), HEYDON (1995), MITROIU (2010) and RIZZO & MITROIU (2010). The examined material is deposited in the entomological collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences.

The species considered as new for Balkan Peninsula are marked with one asterisk. Previously recorded from Bulgaria are *Chlorocytus spicatus*, *Mesopolobus morys*, *Pteromalus elevatus* and *Pteromalus vibulenus* (THURÓCZY, 1990). Among the presented 20 species, *C. spicatus* is the only one, recorded from Vitosha Mountain since this publication.

Distributional data for each species follows mostly NOYES (2011).

Results

Miscogasterinae

**Rhcnocoelia constans* (WALKER, 1836)

Material examined: Shupni kamak area (42°30'19"N/23°15'27"E), 1446 m, 19. IX. 2010, 1♂; Smilyo area (42°29'46"N/23°14'48"E), 1335 m, 19. IX. 2010, 2♀, 2♂; Leva reka riverside (42°32'46"N/23°21'00"E), 1183 m, 23. IX. 2010, 1♀; All specimens were collected by sweeping in meadows.

Distribution: Holarctic.

Seladerma geniculatum (ZETTERSTEDT, 1838)

Material examined: Mecha chesma spring (42°32'06"N/23°14'04"E), 1507 m, 18. VII. 2011, 1♀, coll. by sweeping in meadow.

Distribution: Probably Holarctic, from Europe to China, but also recorded from Greenland (BAUR 2005).

Ormocerinae

**Semiotellus fumipennis* THOMSON, 1876

Material examined: Gurgulitsa riverside (42°31'16"N/23°20'25"E), 1330 m, 25. V.-03. VI. 2010, 2♀; 03-12. VI. 2010, 1♀, 1♂; Coll. by Malaise trap.

Distribution: United Kingdom, Netherlands, Sweden and Romania.

Systasis encyrtoides WALKER, 1834

Material examined: Kazana area (42°32'13"N/23°18'36"E), 1810 m, 17. VII. 2010, 1♀; Barite area (42°31'27"N/23°20'21"E), 1397 m, 14. VI. 2011, 1♂; 1418 m, 05. VII. 2011, 1♀, swept from *Geranium sanguineum* L.; Belite Brezi hut area (42°37'17"N/23°13'41"E), 1280 m, 07. VII. 2011, 1♀; Mecha chesma spring (42°32'10"N/23°14'23"E), 1493 m, 08. VIII. 2011, 1♀; Ostritsa hut area (42°35'14"N/23°12'24"E), 1556 m, 31. V. 2011, 1♂; 07. VI. 2011, 1♀; 22. VI. 2011, 1♀; The specimens were collected by sweeping in meadows.

Distribution: Holarctic.

**Systasis parvula* THOMSON, 1876

Material examined: near Aslanov rid peak (42°30'34"N/23°13'29"E), 1358 m, 18. VII. 2011,

1♂; near Bukata area (42°32'04"N/23°11'48"E), 1090 m, 16. VIII. 2011, 3♀; Selimitsa hut area (42°34'30"N/23°12'07"E), 1325 m, 20. VII. 2011, 1♂;

Distribution: The species has been recorded from Nearctic, Oriental and Palearctic regions.

Pireninae

Macroglenes chalybeus (HALIDAY, 1833)

Material examined: Marochki koshari area (42°30'50"N/23°15'32"E), 1468 m, 10. VII. 2011, 2♂, coll. by sweeping in meadow.

Distribution: Probably West Palearctic, recorded from Erope, Marocco and Central Kazakhstan.

Macroglenes gramineus (HALIDAY, 1833)

Material examined: Matnitsa riverside (42°32'49"N/23°13'07"E), 1262 m, 18. IX. 2011, 1♀, coll. by sweeping in meadow.

Distribution: Europe.

Pteromalinae

Chlorocytus spicatus (WALKER, 1835)

Material examined: Zlatni Mostove area (42°36'56"N/23°14'13"E), 1429 m, 07. VII. 2010, 1♀, 1♂, swept from *Chaerophyllum aureum* L. Recorded from Vitosha Mts. by THUROCZY (1990).

Distribution: Palearctic.

**Coelopisthia caledonica* ASKEW, 1980

Material examined: Marochki koshari area (42°30'50"N/23°15'32"E), 1468 m, 27. VIII. 2011, 4♀, 1♂, coll. by sweeping in meadow.

Distribution: United Kingdom, Finland, Sweden, Switzerland and Eastern Turkey.

Euneura sopolis (WALKER, 1844)

Material examined: Malinka hut area (42°36'02"N/23°13'45"E), 1532 m, 07. VII. 2010, 1♀, coll. by sweeping in meadow.

Distribution: Palearctic.

Mesopolobus morys (WALKER, 1848)

Material examined: Kazana area (42°32'13"N/23°18'36"E), 1810 m, 17. VII. 2010, 1♀, coll. by sweeping in high mountain grass associations; Malinka hut area (42°36'02"N/23°13'45"E), 1532 m, 07. VII. 2010, 3♀, 2♂, coll. by sweeping in meadow; Trendafila hotel area (42°35'36"N/23°13'18"E), 1634 m, 29. VII. 2010, 1♀, swept from *Filipendula ulmaria* L.; Zlatni mostove area (42°36'56"N/23°14'13"E), 1429 m, 07.

VII. 2010, 2♂, coll. by sweeping in meadow.

Distribution: Holarctic.

Mesopolobus sericeus (FÖRSTER, 1770)

Material examined: near Byalata voda area, 17.X.1981, 4♀, 11♂ (L. Vasileva-Samnalieva), em. XII.1981 from gall of *Andricus mitratus* (MAYR 1870).

Distribution: Europe, Turkey, Israel, Central Kazakhstan.

Norbanus obscurus (MASI, 1922)

Material examined: near Bukata area (42°32'04"N/23°10'58"E), 1090 m, 16. VIII. 2011, 1♂; Bukata area (42°31'51"N/23°11'43"E), 1108 m, 30. VIII. 011, 1♂; specimens were collected by sweeping in grasslands.

Distribution: Europe, Azerbaijan, Kazakhstan and Turkey.

**Psilocera concolor* (THOMSON, 1878)

Material examined: near Bosnek vill. (42°31'23"N/23°11'08"E), 1176 m, 30. VIII. 2011, 1♀, swept from grasses in karst region.

Distribution: Netherlands, Sweden, Italy, Czechoslovakia (GRAHAM, 1992) and Hungary.

Psilocera crassispina (THOMSON, 1878)

Material examined: near Bosnek vill. (42°31'23"N/23°11'08"E), 1176 m, 16. VIII. 2011, 1♀, 1♂, swept from grasses in karst region; near Bukata area (42°32'04"N/23°10'58"E), 1090 m, 16. VIII. 2011, 1♂, coll. by sweeping in grassland.

Distribution: Europe and Central Kazakhstan.

Pteromalus elevatus (WALKER, 1834)

Material examined: Barite area (42°31'27"N/23°20'21"E), 1397 m, 27. IX. 2011, 3♀, 1♂; 29. IX. 2011, 5♀, 2♂, swept from *Centaurea phrygia* L.; 2♀, 3♂, reared on 18, 22 and 30. IX. 2011 from flower heads of *C. phrygia* L. Recorded from Bulgaria by THUROCZY (1990).

Distribution: Holarctic region and Hawaii.

**Pteromalus temporalis* (GRAHAM, 1969)

Material examined: Kazana area (42°32'13"N/23°18'36"E), 1810 m, 17. VII. 2010, 2♀, coll. by sweeping in high mountain grass associations; Mechkata area (42°38'16"N/23°13'24"E), 1100 m, 20. VIII. 2010, 2♀, coll. by sweeping in meadow; 04.VIII.2011, 2♀, at the same habitat;

Distribution: Netherlands, Spain, Sweden.

Pteromalus vibulenus (WALKER, 1839)

Material examined: Barite area (42°31'27"N/23°20'21"E), 1397 m, 29. IX. 2011, 2♀, coll. by sweeping; 4♀, reared on 25. IX. and 03. X. 2011 from flower heads of *C. phrygia* L.; Shupni kamak area (42°30'08"N/23°15'27"E), 1416 m, 27.VIII.2011, 3♀, reared on 21. IX. 2011 from flower heads of *C. rhenana* BOREAU. Recorded for Bulgaria by THUROCZY (1990).

Distribution: Europe.

**Stenomalina dives* (WALKER, 1835)

Material examined: Marochki koshari area (42°30'59"N/23°15'35"E), 1492, 15. VIII. 2010, 1♀; Shevovitsa area (42°32'25"N/23°20'54"E), 1244 m, 03. VIII. 2011, 1♀; near Zheleznitsa vill. (42°32'18"N/23°20'58"E), 1207 m, 01. VII. 2010, 1♀; coll. by sweeping.

Distribution: Europe.

**Stenomalina liparae* (GIRAUD, 1863)

Material examined: Matnitsa riverside (42°32'52"N/23°13'42"E), 1338 m, 27.V.2011, 2♂, coll. by sweeping.

Distribution: Europe, China.

Discussion

Among the listed pteromalids above, more detailed distributional analysis is needed for *Coelopisthia caledonica*, *Pteromalus temporalis* and *Semiotellus fumipennis*. These species have populations with clearly North European range of distribution but some others obviously exist in the mountains of South Europe or even Turkey (Fig. 1). For example, *C. caledonica* was recorded from Finland (LEI *et al.* 1997), Northern England (KEY 1987), Sweden (HEDQVIST 2003), Switzerland (BAUR 2000) and Erzurum province in Eastern Turkey (DOGANLAR 1985). ASKEW (1980) has described this species using material from the highlands and western islands of Scotland and he supposes that *C. caledonica* may replace *C. extenta* in these areas. The second species, *P. temporalis*, was recorded only from three European countries – the Netherlands, Sweden (GRAHAM 1969) and from Guadarrama Mountains in Spain (GARRIDO & NIEVES ALDREY 1992). The ormozerine *S. fumipennis* has a similar distribution – Netherlands (GIJSWIJT 2003), Carpathians in

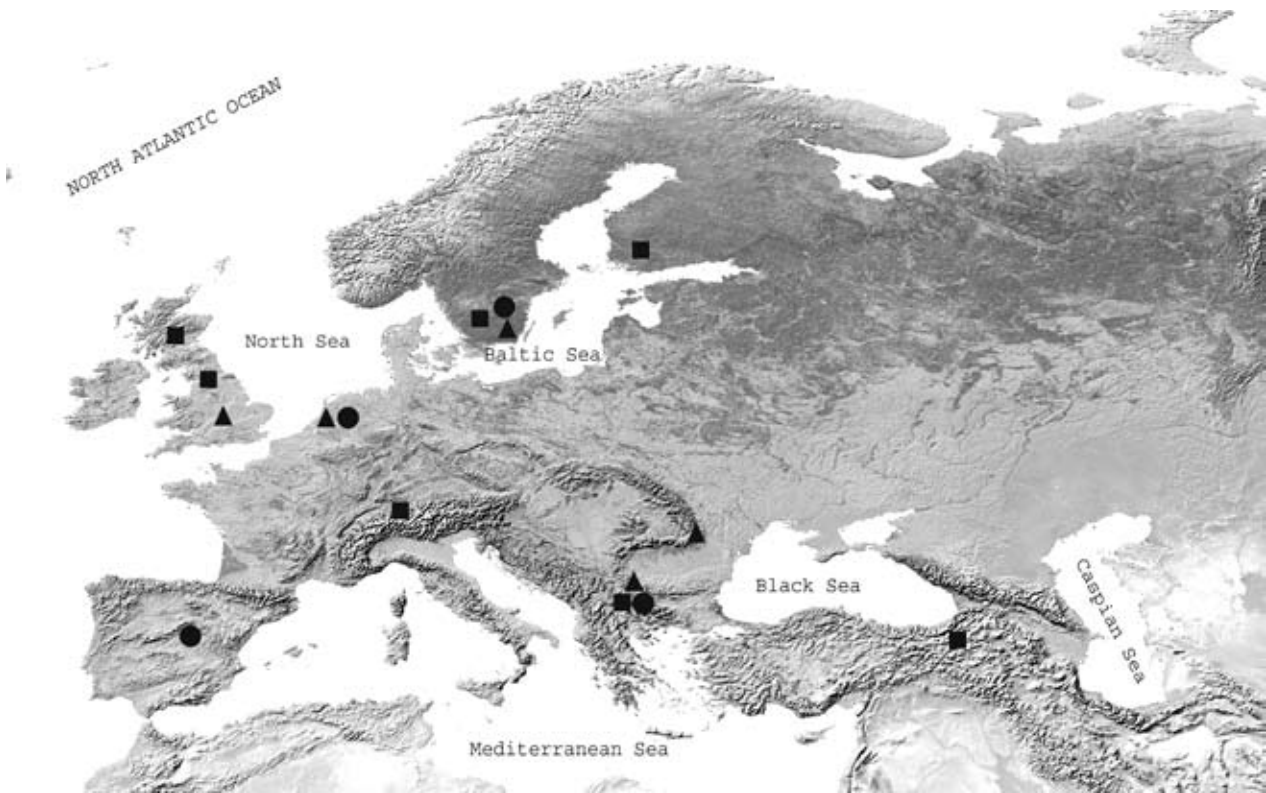


Fig. 1. Known localities of *C. caledonica* (■), *P. temporalis* (●) and *S. fumipennis* (▲).

Romania (LÁSZLÓ 2007), Sweden (GRAHAM 1969) and England (ASKEW & KENNAUGH 1992). Presence of these pteromalids in Vitosha Mountain supports an assumption that their ranges might be boreo-montane. Moreover, the females of *S. fumipennis* from Vitosha are not clearly conspecific with the specimens described by Graham and Askew (GRAHAM 1969; ASKEW & KENNAUGH 1992). Females from Gurgulitsa riverside have relatively shorter marginal veins, being 2.31, 2.5 and 2.83 times as long as the stigmal vein in the three specimens respectively, not 'just more than three times' like these collected from Fletcher Moss Gardens by Askew or 'about 3.5 times' as mentioned in Graham's key. Additional morphometric measurements of the females shows also relatively shorter gaster - 0.93, 1.39 and 1.10 times as long as head plus thorax, not 'hardly 1.5 times' as indicated for the single female, collected by Graham at Wytham Wood, Berkshire, England. The differences above may be considered as a result of geographic isolation, but more material should be examined for assessment of their taxonomic importance. The male specimen from Vitosha Mountain is conspecific with the description of the lectotype, noted by Graham.

Biological data presented in this work reveals one new host and six plant associations. The establishing of *Andricus mitratus* (Cynipidae) as a host of *Mesopolobus sericeus* is not surprising because this pteromalid attacks mainly cynipids of *Andricus* sp., *Cinips* sp. and *Synergus* sp. (NOYES, 2011). The most plant associations were found by sweeping. Catching of *Systasis encyrtoides* on *Geranium sanguineum*, *Chlorocytus spicatus* on *Chaerophyllum aureum* and *Mesopolobus morys* on *Filipendula ulmaria* could be either accidental or related to some host-parasitoid relationships with phytophagous insects, living into the plant tissues. The emergence of *Pteromalus elevatus* and *P. vibulenus* from *Centaurea phrygia* and *C. rhenana* respectively clearly corresponds to the well known associations of these pteromalins with flower heads of many *Centaurea* species (NOYES 2011).

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