

# Eulophidae and Pteromalidae (Hymenoptera: Chalcidoidea) from Vitosha Mountain: New Records for the Fauna of Bulgaria

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**Abstract:** This study presents data on 78 chalcidoid species found in Vitosha Mountain, Bulgaria. All of them, 4 species of the family Eulophidae and 74 species of the family Pteromalidae, are recorded for the first time for the fauna of Bulgaria. Localities in Bulgaria are the most southerly recorded for 2 eulophid species and 9 pteromalid species. One species, *Gastrancistrus clavellatus* Graham, is recorded for the first time in continental Europe. Four plant associations are presented for 5 pteromalid species.

**Keywords:** Eulophidae, Pteromalidae, new records, Bulgaria, distribution, Europe, Vitosha Mountain

## Introduction

Eulophids and pteromalids are taxonomically diverse and widely distributed groups of parasitic wasps, which are among the most species-rich families in the superfamily Chalcidoidea. The species diversity of Eulophidae in Bulgaria, in contrast to Pteromalidae, has been studied more extensively. As a result, 253 eulophid species are known from this country (BOYADZHIEV 2003, 2004, 2006, BOYADZHIEV, TRIAPITSYN 2007, STRAHOVA *et al.* 2011, BOYADZHIEV, TODOROV 2013). On the other hand, the known pteromalid fauna of Bulgaria includes only 134 species; this number is based mostly on fragmentary records by various authors commented in detail by TODOROV (2011, 2013, 2014). Eulophidae and Pteromalidae have not been continuously inventoried in Vitosha Mountain in the past.

Studied area is entirely situated in Vitosha Natural Park, which covers 278 km<sup>2</sup> of open grasslands, beech and coniferous forests and subalpine habitats. Most of the open lands are not cultivated or grazed, but the oak forests, well growing in the near past, have been heavily affected by human activity and now are presented only in some restricted

areas. Silicate composition of the bedrocks and annual rainfalls determine well-developed soils with good water capacity and high humidity. These soils support a vigorous system of various habitats with great insect diversity. Although the mountain has relatively small territory, its average altitude is 1500 m and the highest peak reaches 2295 m. It will not be surprising if some chalcidoids caught in this area would be classified as mountain or boreo-mountain species in the future.

The aim of the present article is to provide new data on the diversity and distribution of the representatives of the families Eulophidae and Pteromalidae from Vitosha Mountain, which are recorded for the first time for the fauna of Bulgaria.

## Material and Methods

All insects were collected by I. Todorov during 2010 and 2011 at 38 localities in 8 habitats (Table 1). A standard sweep-net, three Malaise traps and aspirator were used for the collection of small insects. The wasps were dried using HMDS (HERATY, HAWKS

**Table 1.** Sampling localities and habitats visited in Vitosha Mountain. Abbreviations: **mcf** – meadow in coniferous forest; **mncf** – meadow near coniferous forest; **mdf** – meadow in deciduous forest; **mndf** – meadow near deciduous forest; **mmf** – meadow in mixed forest; **mnmf** – meadow near mixed forest; **ol** – open land; **sam** – subalpine meadow

Locality	Coordinates	Altitude, m	Habitat
Barite (1)	42°31'47"N/23°20'47"E	1317	mndf
Barite (2)	42°31'47"N/23°20'42"E	1324	mndf
Barite (3)	42°31'52"N/23°20'36"E	1337	mndf
Barite (4)	42°31'39"N/23°20'22"E	1402	mndf
Barite (5)	42°31'34"N/23°20'17"E	1434	mndf
Barite (6)	42°31'51"N/23°20'12"E	1446	mndf
Barite (7)	42°31'30"N/23°19'41"E	1605	mndf
Belite Brezi	42°37'17"N/23°13'41"E	1280	mdf
Bistrishko Branishte	42°32'55"N/23°18'53"E	1895	ol
Bukata	42°31'35"N/23°11'23"E	1155	mndf
Chuypetlovo village	42°30'58"N/23°15'08"E	1410	mndf
Dain Kladenets	42°32'42"N/23°14'03"E	1387	mdf
Dendrariuma	42°37'47"N/23°13'41"E	1182	mdf
Elovitsa	42°29'25"N/23°15'52"E	1227	ol
Gurgulitsa riverside	42°31'16"N/23°20'25"E	1330	mdf
Karachair	42°32'49"N/23°17'32"E	2160	sam
Kazana (1)	42°31'54"N/23°18'58"E	1730	ol
Kazana (2)	42°32'40"N/23°18'58"E	1900	ol
Malinka hut area	42°36'02"N/23°13'45"E	1532	mncf
Marochki Koshari (1)	42°30'50"N/23°15'32"E	1468	ol
Marochki Koshari (2)	42°30'59"N/23°15'35"E	1492	ol
Mechkata	42°38'16"N/23°13'24"E	1100	mdf
Ostritsa hut area (1)	42°34'57"N/23°12'11"E	1448	mmf
Ostritsa hut area (2)	42°35'14"N/23°12'24"E	1556	mmf
Plachkovitsa	42°32'43"N/23°19'45"E	1595	ol
Selimitsa hut area	42°34'30"N/23°12'07"E	1325	ol
Shevovitsa (1)	42°32'25"N/23°20'54"E	1244	ol
Shevovitsa (2)	42°32'34"N/23°20'15"E	1432	mmf
Shupni Kamak (1)	42°30'08"N/23°15'12"E	1389	mndf
Shupni Kamak (2)	42°30'08"N/23°15'27"E	1416	mndf
Smilyo (1)	42°29'44"N/23°14'29"E	1290	mnmf
Smilyo (2)	42°29'45"N/23°14'45"E	1330	mnmf
Terziyski Dol	42°33'42"N/23°20'50"E	1117	mndf
Trendafila hotel area	42°35'36"N/23°13'18"E	1634	mncf
Tsangovi Koshari	42°31'46"N/23°20'47"E	1321	ol
Tsvetna Polyana	42°35'17"N/23°18'45"E	1542	mcf
Ustrushki Dol riverside	42°32'41"N/23°19'40"E	1603	ol
Zlatni Mostove	42°36'56"N/23°14'13"E	1429	mncf

1998) and mounted on card points. The identification of the species was done by P. Boyadzhiev (Eulophidae) and I. Todorov and R. Askew (Pteromalidae). Specimens are deposited in the entomological collections of the Institute of Biodiversity and Ecosystem Research of the Bulgarian Academy of Science, Department of Zoology of the University of Plovdiv and National Museums of Scotland (Edinburgh). The distributional data follows mainly Chalcidoidea Database (NOYES 2014) except where another source is cited.

## Results

### List of species recorded in the course of the present study

#### Eulophidae

##### Entedoninae

*Chrysocharis mediana* Förster, 1861

**Material:** Barite (1), 13.V.2010 – 1♀, sweeping; Gurgulitsa riverside, 25.VI-17.VII.2010 – 1♂, Malaise trap.

**Distribution:** Europe, Anatolia, Canada.

##### Tetrastichinae

*Aprostocetus zoilus* (Walker, 1839)

**Material:** Dendrariuma, 15.VI.2010 – 2♀, sweeping.

**Distribution:** Western, Central and Eastern Europe, Far East of Russia.

*Oomyzus tanacetii* (Graham, 1985)

**Material:** Ustrushki Dol riverside, 12.VIII.2011 – 1♀, swept from *Mentha x gentilis* Linnaeus, 1753; Gurgulitsa riverside, 3-12.VI.2010 – 1♀, Malaise trap.

**Distribution:** England, Sweden.

*Tetrastichus clito* (Walker, 1840)

**Material:** Belite Brezi 29.VII.2010 – 1♀, sweeping.

**Distribution:** Europe, China, Canada, USA.

#### Pteromalidae

##### Asaphinae

*Asaphes suspensus* (NEES, 1834)

**Material:** Malinka hut area, 07.VII.2010- 1♀, swept from *Chaerophyllum aureum* L.; Shupni Kamak (2), 13.VIII.2011- 1♂; Trendafila hotel area, 18.VIII.2011- 1♀; Zlatni Mostove, 18.VIII.2011- 1♂; Bistrishko Branishte, 14.IX.2011; sweeping.

**Distribution:** Subcosmopolitan, not recorded only from Afrotropical and Australasian regions.

##### Cleonyminae

*Notanisus versicolor* WALKER, 1837

**Material:** Smilyo (2), 10.VII-08.VIII.2011- 1♀, Malaise trap.

**Distribution:** Central, Southern and Eastern Europe, Caucasus, Kazakhstan, North Africa, India.

#### Miscogasterinae

*Callimerismus fronto* (WALKER, 1833)

**Material:** Barite (2), 14.VI.2011- 1♀, swept from *Campanula sparsa* Friv. subsp. *frivalitskyi* (Stend) Hay.

**Distribution:** United Kingdom (England), Sweden.

*Glyphognathus convexus* (DELUCCHI, 1953)

**Material:** Malinka hut area, 07.VII.2011- 1♀, sweeping.

**Distribution:** Europe.

*Halticoptera aenea* (WALKER, 1833)

**Material:** Ostritsa hut area (2), 09.VI.2011- 1♂, sweeping.

**Distribution:** Europe, Anatolia, Iran, Azerbaijan, Kazakhstan, North America.

*Halticoptera circulus* (WALKER, 1833)

**Material:** Gurgulitsa riverside, 24.V-14.VI.2011- 1♂, Malaise trap.

**Distribution:** Holarctic and Neotropical regions, Ethiopia.

*Halticoptera dimidiata* (Förster, 1841)

**Material:** Selimitsa hut area, 18.VIII.2011- 1♀, sweeping.

**Distribution:** Europe, Anatolia, Kazakhstan.

*Halticoptera laevigata* THOMSON, 1876

**Material:** Plachkovitsa, 10.VIII.2010- 1♂, sweeping.

**Distribution:** Europe, Anatolia, Kazakhstan, China.

*Halticoptera polita* (WALKER, 1834)

**Material:** Marochki Koshari (1), 06.VI.2010- 1♀, sweeping.

**Distribution:** Europe, Anatolia, China.

*Merismus megapterus* WALKER, 1833

**Material:** Karachair, 26.VI.2011- 1♂, sweeping.

**Distribution:** Europe, Middle Asia, China, Korea, Canada.

*Stictomischus groschkei* DELUCCHI, 1953

**Material:** Malinka hut area, 29.VII.2010- 1♂, on *Angelica pancici* Vand.; exhauster.

**Distribution:** Western, Central and Northern Europe, Kazakhstan, China.

*Stictomischus tumidus* (WALKER, 1833)

**Material:** Tsvetna Polyana, 22.VIII.2011- 1♀, sweeping.

**Distribution:** Europe, China.

*Thinodytes cyzicus* (WALKER, 1839)

**Material:** Karachair, 03.VIII.2011- 2♂; Malinka hut area, 22.VI.2011-1♂, 27.VII.2011-2♀, 4♂; Plachkovitsa, 12.VIII.2011-1♂; Shevovitsa (2), 07.IX.2011-1♂; sweeping.

**Distribution:** Europe, Anatolia, Middle East, Caucasus, Middle Asia, China, Japan, Northern India.

### Pireninae

*Gastrancistrus acutus* WALKER, 1834

**Material:** Plachkovitsa, 10.VII.2011-1♀; sweeping.

**Distribution:** Europe, Kazakhstan.

*Gastrancistrus affinis* GRAHAM, 1969

**Material:** Malinka hut area, 20.VII.2011-1♀; Marochki Koshari (1) – 10.VII.2011- 2♀; Ostritsa hut area (2), 17.VI.2011- 1♀, 22.VI.2011- 3♀; Selimitsa hut area, 07.VII.2011-1♀; sweeping.

**Distribution:** The Netherlands, Sweden, United Kingdom (England).

*Gastrancistrus clavellatus* GRAHAM, 1969

**Material:** Plachkovitsa, 03.VIII.2011- 1♀, sweeping.

**Distribution:** United Kingdom.

*Gastrancistrus glabellus* (NEES, 1834)

**Material:** Malinka hut area, 07.VII.2010 – 1♀, 27.VII.2011 – 1♀; Marochki Koshari (1), 26.VI.2011 -3♀; Ostritsa hut area (2), 04.VIII.2011 -1♀; Plachkovitsa, 26.VI.2011 – 1♀, 03.VII.2010 – 1♀, 03.VIII.2011 -1♀; Chuypetlovo village, 08.VIII.2011 -1♀; Shevovitsa (2), 27.VI.2010 -1♀; Shupni Kamak (1), 16.VII.2011 – 1♀, 25.VII.2011 -1♀; sweeping.

**Distribution:** Europe, Anatolia, Kazakhstan.

*Gastrancistrus laticornis* WALKER, 1834

**Material:** Shupni Kamak (1), 07.VI.2011- 1♀, sweeping.

**Distribution:** Europe.

*Gastrancistrus puncticollis* (Thomson, 1876)

**Material:** Ostritsa hut area (2), 14.VII.2010- 1♀, 04.VIII.2011-1♂, 23.VIII.2011 – 1♀; Plachkovitsa, 03.VIII.2011-1♀; Shevovitsa (2), 10.VII.2011-2♀; sweeping.

**Distribution:** Europe.

*Gastrancistrus vulgaris* WALKER, 1834

**Material:** Barite (3), 14.VI.2011-3♀, 5♂, swept from *Vicia villosa* Roth subsp. *varia* (Host) Corb. (Fabaceae).

**Distribution:** Europe.

*Macroglenes conjungens* (GRAHAM, 1969)

**Material:** Zlatni Mostove, 17.VIII.2010-2♀, 22.VI.2011-1♀; Malinka hut area, 29.VII.2010-1♀; Ostritsa hut area (2), 04.IX.2010-1♀, 04.VIII.2011-1♀; sweeping.

**Distribution:** Europe.

*Macroglenes penetrans* (KIRBY, 1800)

**Material:** Zlatni Mostove, 22.VI.2011-1♂, sweeping.

**Distribution:** Europe, Middle Asia, China, Canada, USA.

### Pteromalinae

*Anogmus strobilorum* (THOMSON, 1878)

**Material:** Malinka hut area, 29.VII.2010-1♂, sweeping.

**Distribution:** Europe, Kazakhstan.

*Chlorocyclus polichna* (WALKER, 1848)

**Material:** Mechkata, 02.VIII.2010- 1♀, sweeping.

**Distribution:** Europe, Kazakhstan, China.

*Chlorocyclus ultonicus* GRAHAM, 1965

**Material:** Dendrariuma, 15.VI.2010-1♀; Zlatni Mostove, 18.VIII.2011-1♀, 04.VIII.2011-1♀; Mechkata, 07.VII.2011-1♀; sweeping.

**Distribution:** Europe, Anatolia.

*Coruna clavata* WALKER, 1833

**Material:** Gurgulitsa riverside, 17.VII-04.VIII.2010-1♂, Malaise trap.

**Distribution:** Europe, Middle Asia, Northern India, Japan, Korea and Nearctic region.

*Cyrtogaster vulgaris* WALKER, 1833

**Material:** Karachair, 03.VII.2010-1♀, 26.VI.2011-1♀; Malinka hut area, 14.IX.2010-1♂; 17.VI.2011-1♀; sweeping.

**Distribution:** West Palearctic and Nearctic regions.

*Euneura lachni* (ASHMEAD, 1887)

**Material:** Malinka hut area, 29.VII.2010-1♀, on *Angelica pancici*; Gurgulitsa riverside, 17.VII-04.VIII.2010-1♀, Malaise trap.

**Distribution:** Europe, Middle East, Southern India, Central and Northeastern Asia and Nearctic region.

*Holcaeus gracilis* (WALKER, 1836)

**Material:** Malinka hut area, 31.V.2011-1♀, sweeping.

**Distribution:** Western, Northern and Central Europe.

*Homoporus arestor* (WALKER, 1848)

**Material:** Shevovitsa (1), 26.VI.2011-1♂, sweeping.

**Distribution:** Palaearctic (not recorded from North Africa).

*Homoporus febriculosus* (GIRAULT, 1917)

**Material:** Kazana (2), 24.VIII.2011-1♀, sweeping;

**Distribution:** Europe, Middle Asia and Nearctic region.

*Homoporus fulviventris* (WALKER, 1835)

**Material:** Bukata, 30.VIII.2011-1♀; Shevovitsa (1), 09.IX.2010- 1♀; sweeping.

**Distribution:** Palaearctic (but not recorded from North Africa).

*Homoporus nypsius* (WALKER, 1839)

**Material:** Shevovitsa (1), 09.IX.2010-1♀, sweeping.

**Distribution:** Holarctic, but found also in New Zealand (BOUČEK 1988). – njama go v References

*Homoporus subniger* (WALKER, 1835)

**Material:** Terziyski Dol, 22.VIII.2011-1♀, sweeping.

**Distribution:** Palaearctic (but not recorded from North Africa).

*Lampoterma bianellatum* GRAHAM, 1969

**Material:** Smilyo (1), 11.VII.2010- 1♀, sweeping.

**Distribution:** Europe.

*Leptomeraporus nicaeae* (WALKER, 1839)

**Material:** Elovitsa, 10.IX.2011-1♀, 18.IX.2011-1♀, 1♂, 25.IX.2011-1♀, 1♂; Shevovitsa (1), 14.IX.2011-1♂; sweeping.

**Distribution:** Europe.

*Meraporus graminicola* WALKER, 1834

**Material:** Malinka hut area, 07.VII.2010-1♀, 14.VII.2010-1♀; Trendafila hotel area, 29.VII.2010-2♀, 1♂; sweeping.

**Distribution:** Europe, Caucasus, North Africa.

*Mesopolobus aequus* (WALKER, 1834)

**Material:** Zlatni Mostove, 02.VIII.2010-1♀, sweeping.

**Distribution:** West Palearctic and USA.

*Mesopolobus aspilus* (WALKER, 1835)

**Material:** Marochki Koshari (2), 08.VIII.2010-1♀, sweeping.

**Distribution:** Europe, Kazakhstan.

*Mesopolobus fuscipes* (WALKER, 1834)

**Material:** Ostritsa hut area(1), 07.VII.2011-1♂, sweeping.

**Distribution:** Europe.

*Mesopolobus incultus* (WALKER, 1834)

**Material:** Belite Brezi, 29.VII.2010 – 1♂; Elovitsa, 29.VIII.2010 – 7♂, 09.IX.2010 – 2♂, 27.VIII.2011–1♀, 1♂; Karachair, 08.VIII.2010–1♀, 1♂, 15.VIII.2010 – 1♂, 25.VII.2011 – 1♀; Malinka hut area, 07.VII.2010 – 4♀, 7♂, 07.VII.2011 – 1♀; Marochki Koshari (1), 10.VII.2011 – 2♂; Marochki Koshari (2), 16.VII.2011 – 2♂; Ostritsa hut area (2), 17.VI.2011 – 1♀; Plachkovitsa, 26.VI.2011 – 1♂; Selimitsa hut area, 14.VII.2010 – 1♂, 29.VII.2010 – 4♂, 20.VIII.2010 – 7♂, 04.IX.2010 – 6♂, 04.VIII.2011 – 5♀, 4♂, 18.VIII.2011 – 7♂; Shevovitsa (1), 15.VIII.2010 – 1♂, 29.VIII.2010 – 1♀, 1♂, 03.VIII.2011 – 2♀, 12.VIII.2011 – 2♂; Shupni Kamak (1), 11.VII.2010 – 1♀, 4♂, 19.IX.2010 – 1♂; Zlatni Mostove, 23.VI.2010 – 1♀;

**Distribution:** Europe, Anatolia, North Africa, Syria, Canada. Probably introduced in New Zealand (BOUČEK 1988). – njama go v References

*Mesopolobus laticornis* (WALKER, 1834)

**Material:** Marochki Koshari (1), 03.VII.2010 – 1♂, 1♂, 19.VI.2011 – 1♀, 1♂, 10.VII.2011 – 2♀, 1♂;

Plachkovitsa, 03.VII.2010 – 1♀, 26.VI.2011 – 1♀, 1♀, 10.VII.2011 – 10♀, 2♂, 16.VII.2011 – 1♀, 4♂; Selimitsa hut area, 07.VII.2011 – 1♀; Shevovitsa (1), 10.VII.2011 – 1♂, 03.VIII.2011 – 1♀; Shevovitsa (2), 10.VII.2011 – 1♀; sweeping.

**Distribution:** Europe, Anatolia.

*Metastenus concinnus* WALKER, 1834

**Material:** Gurgulitsa riverside, 04-28.VIII.2010 – 1♀, Malaise trap.

**Distribution:** Western Palearctic. Probably introduced into southern India (FAROOQI, SUBBA RAO, 1986, SURESHAN, NARENDRAN 2002) and Argentina (RICCI 1986). – njama gi v references

*Micradelus acutus* GRAHAM, 1969

**Material:** Ostritsa hut area (2), 31.V.2011 – 1♀, sweeping.

**Distribution:** Europe.

*Micradelus rotundus* WALKER, 1834

**Material:** Shevovitsa (2), 07.VI.2011 – 1♂, sweeping.

**Distribution:** Europe.

*Pachyneuron formosum* WALKER, 1833

**Material:** Dain Kladenets, 18.VII.2011 – 1♀, sweeping; Gurgulitsa riverside, 14.VI.-05.VII.2011 – 1♀, 05.VII.-03.VIII.2011 – 1♀, Malaise trap; Malinka hut area, 23.VI.2010 – 1♀; Marochki Koshari (1), 10.VII.2011 – 1♀; sweeping.

**Distribution:** Palearctic.

*Pachyneuron groenlandicum* (HOLMGREN, 1872)

**Material:** Elovitsa, 26.VI.2011 – 1♀, sweeping; Gurgulitsa riverside, 05.VII.-03.VIII.2011 – 2♀, 03-24.VIII.2011 – 1♀, 24.VIII.-29.IX.2011 – 1♂; Smilyo (2), 10.VII.-08.VIII.2011 – 1♀; Malaise trap; Selimitsa hut area, 20.VII.2011 – 1♀, sweeping.

**Distribution:** Palearctic zone, India, Greenland.

*Panstenon oxylus* (WALKER, 1839)

**Material:** Karachair, 13.VI.2010, 1♀, sweeping.

**Distribution:** Palearctic, but also found in southern China (XIAO, HUANG 2000).

*Peridesmia discus* (WALKER, 1835)

**Material:** Zlatni Mostove, 15.VI.2010 – 4♂, sweeping;

**Distribution:** Western Palearctic. Introduced in the USA (GRAHAM 1969). – njama go v References

*Platygerrhus ductilis* (WALKER, 1836)

**Material:** Barite (5), 13.V.2010 – 1♂, sweeping.

**Distribution:** Europe.

*Psilonotus adamas* WALKER, 1834

**Material:** Belite Brezi, 18.VIII.2011 – 1♀, sweeping.

**Distribution:** Europe, Anatolia, Kazakhstan.

*Pteromalus altus* (WALKER, 1834)

**Material:** Plachkovitsa, 03.VII.2010 – 1♀;

Dain Kladenets, 18.VII.2011 – 1♀; Malinka hut area, 14.VII.2010 – 1♀; sweeping.

**Distribution:** Europe.

*Pteromalus bifoveolatus* Förster, 1861

**Material:** Shupni Kamak (1), 30.V.2010 – 1♀, sweeping.

**Distribution:** Western Palearctic.

*Pteromalus cionobius* (ERDÖS, 1953)

**Material:** Elovitsa, 08.VIII.2011 – 2♀; Kazana (1), 14.IX.2011 – 1♀; Selimitsa hut area, 14.VII.2010 – 1♀, 04.VIII.2011 – 1♀; Shevovitsa (1), 12.VIII.2011 – 1♀, 07.IX.2011 – 1♂; sweeping.

**Distribution:** Europe, Anatolia.

*Pteromalus dispar* (CURTIS, 1827)

**Material:** Selimitsa hut area, 05.IX.2011 – 1♀, sweeping.

**Distribution:** Europe, Kazakhstan.

*Pteromalus intermedius* (WALKER, 1834)

**Material:** Shevovitsa (1), 07.IX.2011 – 1♀; Marochki Koshari (1), 08.VIII.2011 – 1♂; sweeping.

**Distribution:** Europe, Madeira, Anatolia, Kazakhstan, Siberia.

*Pteromalus musaeus* WALKER, 1844

**Material:** Elovitsa, 10.IX.2011 – 1♀; Selimitsa hut area, 18.VIII.2011 – 1♀; Shupni Kamak (1), 18.IX.2011 – 1♀; sweeping.

**Distribution:** Balearics, Europe.

*Pteromalus myopitae* (GRAHAM, 1969)

**Material:** Selimitsa hut area, 15.VI.2010 – 1♀, sweeping.

**Distribution:** England, Sweden, France, Italy, Balearics.

*Pteromalus ochrocerus* (THOMSON, 1878)

**Material:** Elovitsa, 27.VIII.2011 – 1♀, 10.IX.2011 – 1♀; Barite (6), 28.VIII.2010 – 1♀; Shupni Kamak (1), 19.IX.2010 – 1♀; sweeping.

**Distribution:** Europe.

*Pteromalus procerus* GRAHAM, 1969

**Material:** Shevovitsa (1), 19.VI.2011 – 1♀, sweeping.

**Distribution:** England, Sweden, Romania, China.

*Sphegigaster nigricornis* (NEES, 1834)

**Material:** Barite (4), 05.VII.2011 – 1♀, sweeping.

**Distribution:** Europe, Kazakhstan.

*Sphegigaster pedunculiventris* (SPINOLA, 1808)

**Material:** Kazana (2), 24.VIII.2011 – 1♂, sweeping.

**Distribution:** Europe, Anatolia, Kazakhstan.

*Sphegigaster stepicola* BOUCEK, 1965

**Material:** Elovitsa, 25.VII.2011 – 1♀, sweeping.

**Distribution:** Palearctic, but probably introduced into southern China (HUANG, XIAO 2005),

Ethiopia (ABATE 1991), India (SURESHAN, NARENDRAN 2002) and Thailand (SURESHAN 2007).

*Stenomalina epistena* (WALKER, 1835)

**Material:** Gurgulitsa riverside, 24.V.-14.VI.2011 – 1♀, Malaise trap; Malinka hut area, 15.VI.2010 – 1♀; Mechkata, 31.V.2011 – 1♀; Karachair, 10.VII.2011 – 1♀; sweeping.

**Distribution:** Europe, Kazakhstan, China.

*Stenomalina favorinus* (WALKER, 1839)

**Material:** Gurgulitsa riverside, 12-25.VI.2010 – 1♂, Malaise trap; Elovitsa, 27.VIII.2011 – 1♂, 19.IX.2010 – 1♂; Plachkovitsa, 24.VIII.2011 – 1♂; Marochki Koshari (2), 15.VIII.2010 – 1♂; sweeping.

**Distribution:** Europe, Anatolia.

*Stenomalina fontanus* (WALKER, 1839)

**Material:** Plachkovitsa, 11.VII.2010 – 1♂, sweeping.

**Distribution:** Western and northern Europe (NOYES 2013). One record from China (XIAO, HUANG 1999).

*Synedrus transiens* (WALKER, 1835)

**Material:** Gurgulitsa riverside, 25.V.-03.VI.2010 – 1♀, Malaise trap; Malinka hut area, 14.IX.2010 – 1♀, sweeping;

**Distribution:** Britain, Sweden, The Netherlands and Czech Republic.

*Syntomopus incisus* THOMSON, 1878

**Material:** Barite (7), 03.VIII.2011 – 1♂; Selimitsa hut area (1), 18.VIII.2011 – 1♀, 20.VIII.2010 – 1♀; Tsangovi Koshari, 24.V.2011 – 1♂; Shevovitsa (1), 24.VIII.2011 – 1♀; sweeping.

**Distribution:** Europe, Anatolia, Middle Asia, China.

*Tomicrobia promulus* (WALKER, 1840)

**Material:** Gurgulitsa riverside, 25.V.-03.VI.2010 – 1♀\*, 14.VI.-05.VII.2011 – 1♀, Malaise trap; Malinka hut area, 15.VI.2010 – 1♀, sweeping.

**Distribution:** Europe, Anatolia.

*Toxeuma fuscicorne* WALKER, 1833

**Material:** Shevovitsa (2), 11.VII.2010 – 1♂, sweeping.

**Distribution:** Europe.

*Trichomalus annulatus* (FÖRSTER, 1841)

**Material:** Malinka hut area, 07.VII.2011 – 1♂; Ostritsa hut area (2), 07.VII.2011 – 1♂; sweeping.

**Distribution:** Northern and Central Europe.

*Trichomalus nanus* (WALKER, 1836)

**Material:** Gurgulitsa riverside, 05.VII.-03.VIII.2011 – 1♀, 2♂, 17.VII.-04.VIII.2010 – 1♂, 04-28.VIII.2010 – 1♂, 04-28.VIII.2010 – 2♂, 03-24.VIII.2011 – 1♂, 24.VIII.-29.IX.2011 – 1♀, Malaise trap; Ostritsa hut area (2), 20.VIII.2010

– 1♀, 05.IX.2011 – 1♀, sweeping; Smilyo (2), 03-24.VII.2010 – 1♀, 3♂, 24.VII-15.VIII.2010 – 1♂, 15.VIII-19.IX.2010 – 1♂, 10.VII-08.VIII.2011 – 1♀, 3♂, Malaise trap; Shevovitsa (2), 08.V.2011 – 1♀; Shupni Kamak (1), 16.VII.2011 – 1♀, 08.VIII.2011 – 1♀; sweeping.

**Distribution:** Europe, Anatolia, Kazakhstan.

*Trichomalus perfectus* (WALKER, 1835)

**Material:** Malinka hut area, 07.VII.2011 – 1♂, sweeping.

**Distribution:** Europe, Canada, USA.

*Trichomalus pexatus* (WALKER, 1835)

**Material:** Ostritsa hut area (2), 17.VI.2011 – 1♂, sweeping.

**Distribution:** Europe, Kazakhstan.

## Discussion

As a result of this study, the number of the known species of Eulophidae and Pteromalidae in Bulgaria increase to 257 and 208 species, respectively.

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