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Pallopteridae (Diptera) of the Bieszczady Mountains

Pallopteridae (Diptera) Bieszczadów

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ABSTRACT. The results of faunistical research yielded 10 species of Pallopteridae for Bieszczady Mts. *Eurygnathomyia bicolor* (ZETTERSTEDT), *Palloptera marginata* (MEIGEN), *Toxoneura ambusta* (MEIGEN), *Toxoneura laetabilis* (LOEW), *Toxoneura quinquemaculata* (MACQUART) and *Toxoneura venusta* (LOEW) are recorded in Bieszczady Mts. for the first time. Localities for all specimens and comparison Pallopteridae fauna inhabiting other mountain ranges in Poland are given. Some comments are provided for rarely collected species.

KEY WORDS: Diptera, Pallopteridae, Bieszczady Mts., Poland

INTRODUCTION

Pallopteridae is a small family flies from the superfamily Tephritoidea comprises 68 species distributed in the temperate zones of both north and south hemispheres. The most species are represented in the Palearctic Region whence 38 species have been described, and 23 of which are from Europe. In general Pallopteridae are poorly known in Poland. Most of the older publications provide only scarce information about the presence of a few or single species. In the checklist of Polish flies NOWAKOWSKI (1991) reported 14 species of Pallopteridae (13 based on published data and *Palloptera formosa* FREY, 1930 as new for Poland). Later publications described the Pallopteridae of the Babia Góra massif, Pieniny Mts. and Ojców National Park (KLASA 1993, 2000 & 2002), and listed next new species of the Polish fauna (*Palloptera bimaculata* STROBL, 1910 and *Eurygnathomyia bicolor* (ZEETERSTEDT, 1837). Currently, 16 species of the Pallopteridae are known from Poland (KLASA, PALACZYK 2007), and the occurrence of at least two or three next species is probable. The Pallopteridae are medium-sized flies (3-5 mm in length) of the gray, yellow or brown

color and usually with spotted wings membrane. Members of this family are most common in various types of wet habitats. Some species live in the meadows (*T. quinquemaculata* MACQUART, 1835; *T. modesta* (MEIGEN, 1930), some in the herb communities (*T. saltuum* (LINNAEUS, 1758), *T. trimacula* (MEIGEN, 1826) and the others in the forests both deciduous and coniferous, especially rich in dead tree [*T. usta* (MEIGEN, 1826), *T. venusta* (LOEW, 1858)]. The larvae of Pallopteridae live either in the stems of Apiaceae, Graminae, Juncaceae or in the flowerheads of Asteraceae or under the bark of various trees and feed on bark beetles or dipteran larvae (MERZ 1998). Recently ROTHERAY (2014) gave a detailed description of biology and early stages of seven European Palloptera species.

So far, four species of the Pallopteridae have been recorded from the Bieszczady Mts.: *Palloptera umbellatarum* (FABRICIUS, 1775), *Toxoneura saltuum* (LINNAEUS) (as *Temnosira saltuum*), *T. modesta* and *T. trimacula* (KLASA et AL. 2000). The aim of the study was not only to recognize a species composition of the Pallopteridae in different habitats and show the vertical distribution of species in plant-climatic belts of Bieszczady Mts., but also to compare it with well-studied areas in the Carpathians.

MATERIAL AND METHODS

This study is based on material collected during multi-day trips in the last fifteen years in the Bieszczady Mountains (mainly in the Bieszczady National Park). Part of the field work was carried out during the data collection connected with creating of protection plan of invertebrate fauna of the Bieszczady National Park. The paper also included materials collected at the end of the last century in the Niskie Bieszczady mountains. The boundaries of Polish Eastern Carpathians were adopted in accordance with the phytogeography division of Bieszczady Mts in publication WINNICKI and ZEMANEK (2003). Specimens examined were collected by sweeping over selected vegetation, *T. laetabilis* (LOEW, 1873) obtained from breeding of spruce cones. Most flies are stored as a dry collection and a few conserved in 75% ethanol. The material is deposited in the collection of the Ojców National Park (unless it is marked otherwise), at the Institute of Systematic and Evolution of Animals Polish Academy of Sciences, Krakow (ISEA) and in the Upper Silesian Museum, Bytom (US).

LIST OF RESEARCH STANDS:

Bieszczady Wysokie mountains:
EV85: Wola Michowa 560 m
EV96: Bystre n. Baligród 500 m
Bieszczady National Park with protected zone:
FV03: Rabia Skała (peak) 1150 m
FV04: Wetlina 660 m; Połonina Wetlińska – S slope 1000 m; valley of Lutowy stream 813 m; Moczarne 680-800 m; Moczarne: near Beskidnik stream 750 m; Moczarne: at the mouth of the Lutowy stream 720 m; Moczarne: at the mouth of the Szypowaty stream 770 m; Smerek Mt. – N slope 900 m
FV05: Sine Wiry nature reserve n. Kalnica 580 m
FV14: Berehy Górne 735 m; Nasiczne 680 m; Nasiczne – quarry 750 m; Połonina Wetlińska 1000 m; Przysłup Pass 785 m

FV15: Suche Rzeki 650-700 m; Zatwarnica 540 m
FV23: Wołosatka valley - near the trails to Rozsypaniec 800 m; under peak of Rozsypaniec 1000 m; Rozsypaniec (alpine meadows and shrubs) 1020-1280 m; Wołosate 700-750; Wołosate – cemetery 740 m
FV24: Ustrzyki Górne 680 m; Terebowiec valley 694-813
FV33: Kińczyk Bukowski (alpine meadows) 1100-1120 m
Bieszczady Niskie mountains:
FA10: Rybotycze (in valley of Wiar river) 300 m, Posada Rybotycka 320 m
FV29: Suchy Obycz n. Arłamów 520 m
FV19: Wojtowa, Wojtkówka (dist. Przemyśl) 410-420 m

Abbreviation:
BdNP – Bieszczady National Park.
Collectors:
AK – ANNA KLASA, AP – ANDRZEJ PALACZYK, BW – BOGDAN WIŚNIOWSKI, PT – PAWEŁ TRZCIŃSKI, RD – ROLAND DOBOSZ, WK – WIESŁAW KRZEMIŃSKI.

RESULTS

***Eurygnathomyia bicolor* (ZETTERSTEDT, 1837)**
Material examined: 3 specimens (1♂, 2♀♀)
Bieszczady Wysokie mountains:
BdNP: Terebowiec valley 740 m, 10.06.2001, 1♂, 1♀, alder forest *Alnetum incanae,* leg. AK; Wołosatka valley - near the trails to Rozsypaniec 800 m, 28.05.2015, 1♀, herbs communities in *Alnetum incanae*, leg. AK (Fig. 1).

FIG. 1. Alder forest *Alnetum incanae* in Wołosatka valley – habitat of *Eurygnathomyia bicolor*

Distribution. Rare boreal-mountain European species, known in Poland from Babia Góra Range only (KLASA 2002). Biology unknown.

***Palloptera marginata* (MEIGEN, 1826) -** (Fig. 2)

Material examined: 1 specimen (1♀)

Bieszczady Wysokie mountains.

BdNP: Wołosate 750 m, 5.06.1999, 1♀, herbs communities, leg. RD (US).

Distribution. The species is a widely distributed, but rare in Europe, it is also known from Russian Far East (Amur Region) (OZEROV 2009). In Poland, it is known from several localities in the southern part only. In the Babia Góra massif can be found up to 1220 m a.s.l. (KLASA 2002). The biology is still unknown.

FIG. 2. *Palloptera marginata* (MEIGEN, 1826)

***Palloptera umbellatarum* (FABRICIUS, 1775)**

Material examined: 2 specimens (1♂, 1♀)

Bieszczady Wysokie mountains.

BdNP: Rozsypaniec 1280 m, 19.07.1999, 1♀, leg. AP; Wołosate – cemetery 740 m, 18.06.2015, 1♂, on trunk, leg. AP.

Bieszczady Niskie mountains: Suchy Obycz n. Arłamów 520 m, 5.07.1993 1♀, leg. AP.

Distribution. The species is widely distributed in Europe. In Poland, one of the most common species of Pallopteridae, occurs both in the forests and on meadows (KLASA 1993, 2000). In the Bieszczady Mts. recorded from Rozsypaniec (KLASA et AL. 2000).

Larvae are probably saprophagous (MARTINEK 1977). Data on the development of the larvae of this species in flower heads of Asteraceae are incorrect and refer to *T. modesta*.

***Toxoneura ambusta* (MEIGEN, 1826)**

Material examined: 4 specimens (3♂♂, 1♀)

Bieszczady Wysokie mountains.

BdNP: Moczarne 750 m, 11.06.2010, 2♂,1♀, leg. AP (ISEA); Terebowiec valley 740 m, 19.06.2015, 1♂, leg. AP (ISEA).

Distribution. European species, also known from Japan, relatively rare in the lowlands, more frequent in the highlands and in the mountains. In Poland known from a few localities, mainly occurs in herb communities. Species new to the Bieszczady Mts. Biology unknown.

***Toxoneura laetabilis* (LOEW, 1873)**

Material examined: 6 specimens (3♂♂, 3♀♀)

Bieszczady Wysokie mountains: Bystre n. Baligród 500 m, 27.06.2008, 2♂, 3♀, the breeding in spruce cones *Picea abies*, adults emerged: 2.05.2009, leg. AK.

Bieszczady Niskie mountains: Suchy Obycz n. Arłamów 520 m, 5.07.1993, 1♂, leg. AP.

Distribution. Species known from central and northern Europe and Russian Far East (OZEROV 2009). Everywhere rarely caught. In Poland, known from several localities in the north and south of the country. Species new to the Bieszczady Mts. Larvae develop in spruce cones of *Picea abies* (KOZIOŁ 2007, 2007a).

Toxoneura modesta (MEIGEN, 1830)

Material examined: 4 specimens (2♂♂, 2♀♀)

Bieszczady Wysokie mountains: BdNP: Wołosate: - 700-720 m: 7.06.1999, 1♀, leg. BW; - 750 m: 7.07.2004, 1♀, leg. AK; 740 m: 17.06.2005, 1♂, leg. AP.

Bieszczady Niskie mountains: Rybotycze 300 m, 2.07.1993, 1♂, leg. AP (ISEA).

Distribution. A common European species, occurring in the meadows, widespread in Poland, recorded from Wołosate (KLASA et AL. 2000). Its larvae develop in flower heads of some Asteraceae, in Poland mainly in *C. scabiosa* (KLASA 2002), also in *Carlina acaulis* and *Cirsium vulgare*.

Toxoneura quinquemaculata (MACQUART, 1835)

Material examined: 1 specimen (1♀)

Bieszczady Niskie mountains: Wojtkówka dist. Przemyśl 410-420 m, 3.06.1993, 1♀leg. AP (ISEA)

Distribution. The species known from Europe and Asia (OZEROV 2009), occurring in the meadows. In Poland, known from localities in the north and south of the country. Species new to the Bieszczady Mts. Its larvae develop in grass tillers of Aira (BALACHOWSKY et MESNIL 1935) and *Arrhenatherum* (NYE 1958); one puparium was found in the soil and under bark of conifer stump (ROTHERAY 2014).

Toxoneura saltuum (LINNAEUS, 1758)

Material examined: 143 specimens (43♂♂, 100♀♀)

Bieszczady Wysokie mountains: Bystre n. Baligród 500 m, 28-29.06.2008,1♀, leg. PT. BdNP with protected area: Wołosate: - 740-750 m, 5.06.1999, 4♂,4♀, herbs communities near Wołosatka stream, leg. BW; - near stream, 5.06.1999, 3♂,1♀leg. RD (US); - 750 m, 1.07.2004, 1♂, 1♀, leg. AK; - 16.06.2005, 2♀, leg. AK; 26.07.2007, 3♀, leg. AK; - 700 m, 24.06.2008, 1♂, leg. AK; 29.05.2015, 9♂,13♀, leg. AK; Wetlina 660 m: -14.07.1999, 3♀, herbs communities near Wetlina stream (*Cirsium, Angelica, Chaerophyllum*), leg. BW; - 680-700 m, 26.07.2000, 1♀, leg. BW; Suche Rzeki, 650-700 m , 17.07.1999, 3♀, leg. AK; Połonina Wetlińska: - 18.07.1999, 1♀, on *Rumex*, near tourist trails, leg. AK; - 950 m,1.07.2000, 1♀, leg. AK; herbs communities with *Trollius altissimus* 1125 m, 30.06.2010, 1♀, leg. AK; Wołosatka valley – near the trails to Rozsypaniec - 800 m: 19.07.1999, 1♀, leg. AK; 30.06.2000, 2♂, 5♀, leg. AK; 8.06.2001, 1♂, 1♀, leg. AK; 17.06.2005, 1♀, leg. AK; 19.06.2005, 1♂, 3♀, leg. AK; - 750 m, 8.06.2010, 2♂, leg. AK; 10.06.2010, 1♀, leg. AK; 28.05.2015, 2♂, 1♀, leg. AK; 18.06.2015, 3♀, leg. AK; 8.06.2016, 2♂, 5♀, leg. AK; - 900 m, 30.06.2000, 1♀, herbs communities, leg. AK; Nasiczne 680 m, 7.07.2000, 1♀, leg. AK; Moczarne: - 750-800 m, 25.07.2000, 1♂,1♀, herbs communities, leg. BW; - 720 m, 28.05.2015, 2♀, leg. AK; 17.06.2015, 1♀, leg. AK; - 800 m, 7.06.2016, 1♂, leg. AK; - at the mouth of the Lutowy stream 720 m, 26.06.2002, 1♂, leg. AK; - near Beskidnik stream, 10.06.2016, 1♀, leg. AK; Ustrzyki Górne 680 m, 7.06.2001, 2♀, leg. AK; Terebowiec valley 740 m: 10.06.2001, 12♀, alder forest *Alnetum incanae*, leg. AK; 5.07.2004, 1♀, leg. AK; 18.06.2005, 2♂, 3♀, leg. AK; 10.06.2010, 2♂, 3♀, leg. AK; Rozsypaniec: - 1020 m, 4.07.2004, 1♀, leg. AK; - 950 m, 25.06.2008, 1♀, leg. AK; - 1025 m, 3.07.2010, 1♀, leg. AK; Kińczyk Bukowski: - 1120 m, 6.07.2004, 1♀, leg. AK; - 1110 m, 25.06.2008, 3♀, leg. AK; below the Rozsypaniec 1000 m, 20.06.2005, 1♂, leg. AK; Smerek – N slope 900 m, 7.06.2010, 1♂, 2♀, leg. AP; Zatwarnica 540 m, 24.05.2013, 1♀, leg. AK; Rabia Skała 1150 m, 7.06.2016, 1♂, leg. AK; Berehy Górne 735 m, 9.06.2016, 2♀, leg. AP.

FIG. 3. Herb communities in Suche Rzeki – habitat of *Toxoneura saltuum*

Bieszczady Niskie mountains: Posada Rybotycka 320 m, 22.05.1989, 1♂, leg. WK (ISEA); Wojtkówka dist. Przemyśl , 3.06.1993, 1♂,1♀, leg. AP (ISEA); Wojtkowa 410 m, 3.06.1993, 2♂, 4♀, leg. AP (ISEA).

Distribution. The species is a widespread in Europe, also known from the Asian part of Russia (OZEROV 2009). It is the most common species of Pallopteridae in Western Carpathians, in the lowlands much rarer collected. In the Bieszczady Mts. recorded from Wołosate, Wetlina, Suche Rzeki, Rozsypaniec, Nasiczne, Moczarne and Wetlińska polonina (KLASA et AL. 2000).
It occurs in herb communities (Fig. 3), the larvae develop in stems of *Angelica sylvestris* i *Heracleum* spp. (Rotheray 2014).

Toxoneura trimacula (Meigen, 1826)
Material examined: 40 specimens (21♂♂, 19♀♀)
Bieszczady Wysokie mountains: Sine Wiry res. n. Kalnica 580 m, 5.07.1988, 1♂, leg. WK (ISEA); Wola Michowa 560 m, 12.06.2010, 1♀, leg. AP (ISEA).
BdNP with protected area: Suche Rzeki 700 m: 17.07.1999, 1♂, 1♀, leg. AK; 09.06.2010, 1♀, leg. AP (ISEA); Zatwarnica 540 m, 18.07.1999, 1♀, in the orchard, leg. AK; near Wołosatka stream 800 m,19.07.1999, 1♂, leg. AK; Moczarne 750-800 m, 25.07.2000, 1♂, 2♀, leg. BW; Przysłup Pass 785 m, 26.07.2000, 1♂, 1♀, herbs communities, leg. BW; Terebowiec Valley, 10.06.2001, 1♂, leg. AK; 02.08.2010, 1♀, leg. AP; Moczarne: - at the mouth of the Lutowy stream 720 m: - 26.06.2002, 1♂, 2♀, on the leaves of *Carduus personata*, leg. AK; - 28.06.2002, 2♂, leg. AK; - at the mouth of the Szypowaty stream 740 m, 30.06.2002, 1♂, leg. AK; Wołosate – near Wołosatka stream - 750 m: 1.07.2004, 1♀, leg. AK; 16.06.2005, 2♂, 1♀, leg. AK; 26.07.2007, 5♂, 4♀, alder forest *Alnetum incanae*, leg. AK; – near Wołosatka stream – near tourist trails to Rozsypaniec 800 m, 26.07.2007, 1♂, 1♀, leg. AK; Nasiczne – quarry 750 m, 25.07.2007, 1♂, leg. AK; Moczarne 680 m, 11.06.2010, 1♂, leg. AK; Połnina Wetlińska – S slope 1000 m, 30.06.2010, 1♀, leg. AK
Bieszczady Niskie mountains: Rybotycze (in the valley of Wiar river) 300 m, 2.07.1993, 1♂, leg. WK (ISEA); Wojtkówka 420 m, 3.06.1993, 1♀, leg. AP (ISEA)

Distribution. Species known from Europe and Asia (OZEROV 2009), occurring in the meadows and herb communities. In Poland, known from localities in the north and south of the country. In the Bieszczady Mts. recorded from Suche Rzeki, Zatwarnica, Wołosate, Przysłup Pass and Moczarne (KLASA et AL. 2000). Larvae develop in steam of *Heracleum* sp. (CHANDLER 1991) and *Angelica sylvestris* (ROTHERAY 2014).

Toxoneura venusta (LOEW, 1858) - (Fig. 4)
Material examined: 3 specimens (3♀♀)
Bieszczady Wysokie mountains.
BdNP: Terebowiec valley: - 740 m 02.08.2010, 1♀, leg. AP; - 694 m ($49^0$5'55" N $22^0$39'48" E) 10.08.2010, 1♀, *Alnetum incanae*, leg. AK; valey of Lutowy stream 813 m ($49^0$7'15" N $22^0$28'37" E), 11.08.2010, 1♀, beech wood *Dentario glandulosae- Fagetum*, female lays eggs on the trunk of a fallen beech, leg. AK

FIG. 4. *Toxoneura venusta* (LOEW, 1858)

Distribution. In Europe rare boreal-mountain species, outside Europe known only from northwestern Russia. In Poland it is known from the Carpathians (Beskid Sądecki Mts.), the Sudetes and Kraków-Częstochowa Upland only (KLASA 2002). Species new to the Bieszczady Mts. Females were observed on dead trunks of beech infested by Lymexylonidae (KLASA 2000), larva was found under bark of fallen *Picea* (ROTHERAY 2014).

TABLE 1. Distribution of Pallopteridae species recorded in Bieszczady Mountains with references to the vegetation zones.

Species	Distribution of Pallopteridae in Bieszczady Mts.		
	Foothils	Forest montane zone	Alpine zone (Poloninas)
Eurygnathomyia bicolor		+	
Palloptera marginata		+	
Palloptera umbellatarum		+	+
Toxoneura ambusta	+		
Toxoneura laetabilis	+	+	
Toxoneura modesta	+	+	
Toxoneura quinquemaculata	+		
Toxoneura saltuum	+	+	+
Toxoneura trimacula	+	+	
Toxoneura venusta		+	
number of species	**6**	**8**	**2**

TABLE 2. Distribution of Pallopteridae species in the investigated regions - the Carpathian ranges and the Cracow Upland (in the Ojców National Park).

Species	Eastern Carpathians		Western Carpathians			Kraków Upland
	Bieszczady Mts. (Poland)	Bukovské Hills (Slovakia)	Pieniny Mts. (Poland)	Poľana Mts. (Slovakia)	Babia Góra Massif (Poland)	Ojców National Park (Poland)
Eurygnathomyia bicolor	**3**	+			5	
Palloptera bimaculata					2	12
Palloptera marginata	**1**	+	4	+	14	29
Palloptera flava				1		
Palloptera umbellatarum	**3**	+	16	+	13	26
Palloptera ustulata		+	4	+	2	24
Toxoneura ambusta	**4**	+	1	+	5	2
Toxoneura laetabilis	**6**		1	1		1
Toxoneura modesta	**4**		110		26	14
Toxoneura quinquemaculata	**1**		8	+	23	24
Toxoneura saltuum	**143**	+	18	+	75	37
Toxoneura trimacula	**40**	+	8	+		
Toxoneura usta		+		+	2	
Toxoneura venusta	**3**	+				10
number of species	**10**	**9**	**9**	**10**	**10**	**10**
number of specimens	**208**	**?**	**170**	**?**	**167**	**187**

+ the number of specimens is not given

REMARKS

More than 200 specimens of Pallopteridae belonging to 10 species were collected during the research on Diptera conducted in the Bieszczady Mts. Four of them (*Palloptera umbellatarum, Toxoneura saltuum, T. modesta* and *T. trimacula*) were reported from this area in the study on Diptera of the Bieszczady Mts. (KLASA et AL. 2000). The other species: *Eurygnathomyia bicolor*, *Palloptera marginata*, *Toxoneura ambusta*, *T. laetabilis*, *T. quinquemaculata* and *T. venusta* are recorded for the first time in the Polish Eastern Carpathians. Pallopteridae occur most frequently at the lower altitudes. Six species were found on the foothills and valleys (up to about 700-750 m a.s.l.), eight in the forest montane zone (up to 1150 m a.s.l.), and two species in the alpine zone (the poloninas - above 1150 meters a.s.l.).

T. saltuum is the most common and most abundant species in the Bieszczady Mts. occurs in this area from the foothills to the alpine zone (poloninas). *T. trimacula* is also

common species in the study area, which has been found up to 1000 m a.s.l. Both species are characteristic in the herb communities, where larvae were found in the stems of *Angelica sylvestris* and *Heracleum* spp. In Bieszczady Mts., herb communities are present in all altitude zones, from the foothills to the alpine zone, therefore the above mentioned species occur in a wide range of altitude. Other species in the study area were found in few places only, and in the small number of specimens, almost exclusively in the lower parts of the massif.

Only one male of *P. umbellatarum* was collected at 1280 m (on top of Rozsypaniec) in alpine zone. Five of them (*E. bicolor*, *P. marginata*, *P. umbellatarum*, *T. laetabilis*, and *T. venusta*) are typical forest species, and three (*T. modesta*, *T. quinquemaculata* and *T.trimacula*) occur on moist and mesophilic meadows. *E. bicolor* and *T. venusta* are species of boreal-mountain, rarely found in the mountains of Central Europe. The first one is known in Poland, outside the Bieszczady Mts. occurring only in the Babia Góra Range, and it has also been found in the Slovak part of the Eastern Carpathians (ROHÁCEK et AL. 1995: Bukovské Hills). *T. laetabilis* and *T. venusta*, both in Poland and Slovakia are also known from single or few localities.

The data included in the Table 2 summarizes the occurrence of Pallopteridae species found in the Bieszczady Mountains and other better examined ranges of the Carpathians on the basis of data from the literature (Bukovské Hills – ROHÁCEK et AL. 1995; Poľana Mts. - Rohácek, Heřman 2009; Babia Góra Massif and Pieniny Mts. – PALACZYK, KLASA 2003, KLASA 2002). It also includes the species found in the Ojców National Park (Cracow Upland), the area adjacent to the foothills of the Carpathians from the north (KLASA 2000, 2002).

In each area, mentioned above, we found a similar number of species (9 or 10), but only four (*P. marginata*, *T. ambusta*, *P. umbellatarum, T. saltuum*) in all investigated areas. *T. saltuum* is the most abundant representative of Pallopteridae in almost all respondent Carpathian ranges.

Only in Pieniny Mts., the most abundant species is *T. modesta*. The main host plant of this species in Poland is *Centaurea scabiosa*, very common in Pieniny mountains. Most of the specimens of *T. modesta* (92 out of 110) were obtained by rearing from flower heads of this plant species (KLASA 2002). This species occurs much less frequently (at least in the southern Poland) on other host plants (*Cirsium vulgare, Carlina acaulis*). *C. scabiosa* was found in the Bieszczady National Park at one locality only, and probably for this reason, *T. modesta* is a rare species in the area.

In Bukovské Hills located on the south side of the Polish-Slovak border were found two species of Pallopteridae not reported from Bieszczady Mts. so far: *P. ustulata* and *T. usta*. Their occurrence in the Bieszczady Mts. is very probable.

Two species found in the Bieszczady National Park are included on the "Red List of threatened animals in Poland": *E. bicolor*, in the category DD (data deficient) and *T. venusta* (VU - vulnerable) (PALACZYK et AL. 2002).

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REFERENCES

BALACHOWSKY A., MESNIL L. 1935. Les insectes nuisibles aux plantes cultivéetes 1. Paris, 1137 pp.

CHANDLER P.J. 1991. Attraction of *Palloptera usta* MEIGEN (Diptera: Pallopteridae) to recently cut conifer wood and other notes on Pallopteridae. British Journal of Entomology and Natural History **4**: 85-87.

KLASA A. 1993. *Pallopteridae* (*Diptera*) of the Babia Góra range (Polish Western Carpathians). Roczniki Muzeum górnośląskiego, Entomologia **4**: 173-178.

KLASA A. 2000. *Pallopteridae (Diptera)* Ojcowskiego Parku Narodowego. Wiad. entomol. **19**(2): 109-117.

KLASA A. 2002. *Tephritoidea* (*Platystomatidae*, *Ulidiida*e, *Tephritida*e, *Pallopteridae*) (*Diptera*) Ojcowskiego Parku Narodowego, Pienin i Babiej Góry. Roczniki Muzeum górnośląskiego (Przyroda) **16**: 1-142.

KLASA A., PALACZYK A., SOSZYŃSKI B. 2000. Muchówki (*Diptera*) Bieszczadów. Monografie Bieszczadzkie **8**: 305-369.

KLASA A., PALACZYK A. 2007. Pallopteridae. [W:] BOGDANOWICZ W., CHUDZICKA E., PILIPIUK I. i SKIBIŃSKA E. (red.). Fauna Polski. Charakterystyka i wykaz gatunków. T. **II**., Muzeum i Instytut Zoologii PAN: 115-117; 202-202.

KOZIOŁ M. 2007. Cone investation of Norway Spruce, *Picea abies* (L.) Karst., in selected stands the Tatra National Forest in Poland. Electronic Journal of Polish Agricultural Universities **10**(4):1-18.

KOZIOŁ M. 2007a. Zróżnicowanie entomofauny szyszek świerka pospolitego *Picea abies* (l.) Karst.w aspekcie zmiennego obradzania drzewostanów świerkowych w Tatrzańskim Parku Narodowym. Leśne Prace Badawcze **4**: 29–46.

MERZ B. 1998: 3.14. Family Pallopteridae. vol. 3. Higher Brachycera: pp. 201-210. [In:] PAPP L. and DARVAS B.(eds). Manual of Palaearctic Diptera. Science Herald. Budapest.

MARTINEK V. 1977. Species of genus *Palloptera* FALLÉN, 1820 (Dipt., Pallopteridae) in Czechoslovakia. Studia entomologica forestalia 2, **12**: 203-220.

NOWAKOWSKI J.T. 1991. Pallopteridae. [W:] J. RAZOWSKI (red.). Wykaz zwierząt Polski. T.2, Wrocław, Warszawa, Kraków: 189-189.

NYE I.W.B. 1958. The external morphology of Dipterous larvae occuring in the Graminae of Britain. Transactions Royal Entomological Society London **110**: 411-487.

OZEROV A.I. 2009. Review of the family Pallopteridae (Diptera) of the fauna of Russia. Russian Entomological Journal 18, **2**: 129-146.

PALACZYK A., KLASA A. 2003. Muchówki (Diptera) Masywu Babiej Góry. [W:] B.W. Wołoszyn, D. Wołoszyn, W. Celary (red.). Monografia fauny Babiej Góry. Publikacje Komitetu Ochrony Przyrody PAN, Kraków. ss: 305-357.

PALACZYK A., SOSZYŃSKI B., KLASA A., BYSTROWSKI C., MIKOŁAJCZYK W., KRZEMIŃSKI W. Diptera Muchówki. 2002. [W:] Z. GŁOWACIŃSKI (red.). Czerwona lista zwierząt ginących i zagrożonych w Polsce: 38-44.

ROHÁČEK J., HEŘMAN P. 2009. Pallopteridae. [In:] Roháček J. & Ševčík J. (eds). Diptera of the Poľana Protected Landscape Area - Biosphere Reserve (Central Slovakia). 340 pp. (pp. 192-193), SNC SR, Administration of 2020 the PLA – BR Poľana, Zvolen.

ROHÁCEK J., STARÝ J., MARTINOVSKÝ J., VÁLA M. (eds). 1995. Diptera Bukovských yrchov (Diptera of Bukovské Hills). SAŹP- Správa CHKO aBR Východné Karpaty, Humenné, 232 pp.

ROTHERAY G.E. 2014. Development sites, feeding modes and early stages of seven European *Palloptera* species (Diptera, Pallopteridae). Zootaxa **3900**(1): 50-76.

WINNICKI T., ZEMANEK B. 2003. Przyroda Bieszczadzkiego Parku Narodowego. XXX lat Bieszczadzkiego Parku Narodowego 1973-2003. Ustrzyki Dolne.