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**CONTRIBUTION TO THE KNOWLEDGE
ON PANORPID SCORPIONFLIES (MECOPTERA: PANORPIDAE)
IN SOUTHERN POLAND**

Abstract

The Polish panorpid fauna (Mecoptera: Panorpidae) consists of six species. Both the composition and distribution of the different species of this family in Poland is not sufficiently known. Particularly, there is a lack of data on this group from the area of Upper Silesia. In order to fill this gap, panorpid flies were collected in 2010 and 2012 from 16 sites in the area of Silesian Province. The presence of four species was recorded, the most numerous and common were *Panorpa communis* and *P. vulgaris*. The presence of *P. germanica* was recorded for the first time, furthermore the presence of *P. alpina* was confirmed in the upland areas. The panorpid fauna requires further study, in particular it is necessary to determine the size, condition, structure and conservation status of particular populations of detected species.

Keywords: scorpionflies, Mecoptera, Panorpidae, distribution, Silesia

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Introduction

There are about 500 species of scorpionflies (Mecoptera) spread across the world at present, 21 exist in Europe, and 10 in Poland (Tillier 2006–2012; Czechowska 2007). The order consists of nine families, three of them are present in Poland: Boreidae, Bittacidae and Panorpidae, the latter being the richest in species worldwide. Panorpidae is the family that includes mainly predators with a primarily Holarctic distribution and consists of 300 species spread around the world, with 16 species existing in Europe and 6 in Poland (Tillier 2006–2012; Czechowska 2007). This family is divided into four genera: Leptopanorpa, Neopanorpa, Panorpa and Sinopanorpa (Czechowska 2007). The Polish panorpid fauna composition and species distribution is poorly known and such data are missing completely from the area of Silesia. Therefore, the aim of the study was to conduct a preliminary survey of the distribution of panorpid species in the Silesian Province.

Material and Methods

The specimens of panorpidids were collected in the period from May to August in 2010 and 2012 using entomological nets with a diameter of 35 cm. Insects were collected from a total of 16 sites. All sites were located in the vicinity of forests and thickets, with three sites adjacent to rivers (Mitřęga, Ruda and Liswarta), while the other 13 sites were situated around various water bodies such as ponds and water-dam reservoirs in the Silesian Province (Figure 1). Caught specimens were killed with ethyl acetate and then pinned or preserved in 75% ethyl alcohol. Species were determined using available keys (Tillier 2006–2012, Tillier 2008). Representative specimens were photographed using Olympus Digital Camera C–760 Ultrazoom and Canon EOS 1000D. Collected specimens were deposited in the collection of the Department of Natural History of the Upper Silesian Museum in Bytom, Poland.

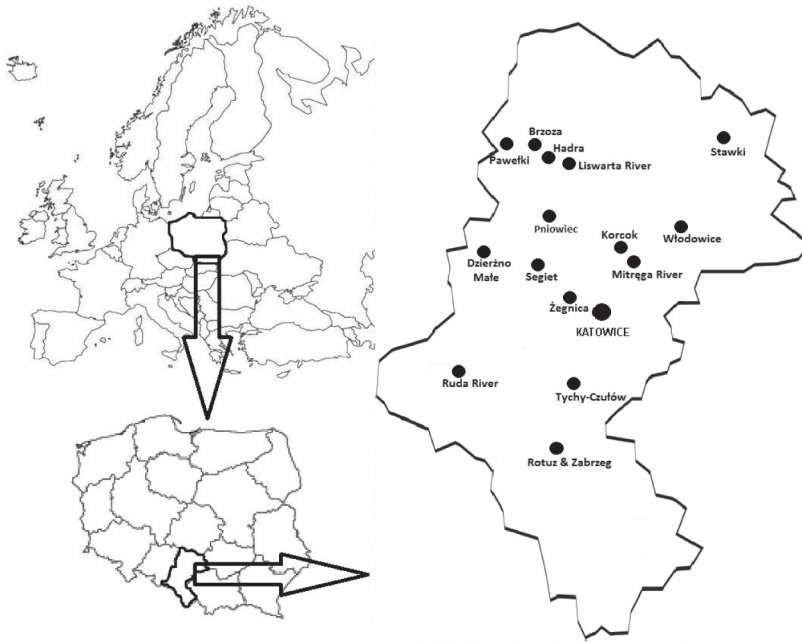


Fig. 1. Map of the investigation area

Results and discussion

Four panorpid species were collected from the 16 sites within the study area: *Panorpa communis* Linnaeus, 1758; *P. vulgaris* Imhoff et Labram, 1845; *P. alpina* Rambur, 1842 and *P. germanica* Linnaeus, 1758. The most abundant species was *P. communis*, (25 specimens collected: 9 female, 16 male), followed by *P. vulgaris* (17 specimens collected: 13 female, 6 male), *P. germanica* (4 specimens collected: all female) and the least abundant was *P. alpina* (4 specimens collected: 3 female, 1 male). The number of specimens collected at each site and the associated habitats are summarized in Table 1.

Table 1. Species of panorpids recorded at particular sites

Site	<i>P. alpina</i>	<i>P. germanica</i>	<i>P. communis</i>	<i>P. vulgaris</i>
	No. of specimens	No. of specimens	No. of specimens	No. of specimens
	Habitat	Habitat	Habitat	Habitat
Pawelki	0	1	9	2
	—	forest, shady area with lush vegetation	forest, shady area with lush vegetation	opened area with sparse vegetation, exposed to the sun
Brzoza	0	0	6	0
	—	—	forest path, shady area with lush undergrowth	—
Hadra	0	0	1	1
	—	—	the edge of forest, shady area with dense undergrowth	opened area with sparse bushes and single trees at the dike between ponds
Liswarta River	0	0	0	1
	—	—	—	forest, shady river bank with lush vegetation
Stawki	1	0	2	0
	sparse forest, shady area	—	sparse forest, shady area	—
Pniowiec	0	0	0	2
	—	—	—	forest path with low vegetation, rather exposed to the sun
Korcok	0	0	0	2
	—	—	—	the edge of pit bog, exposed to the sun
Włodowice	0	0	1	2
	—	—	forest path, shady area with lush vegetation	sparse bushes along the path
Dzierżno Małe	0	0	0	1
	—	—	—	opened area exposed to the sun
Segiet	0	1	0	0
	—	forest, shady area with lush vegetation	—	—

Site	P. alpina	P. germanica	P. communis	P. vulgaris
	No. of specimens	No. of specimens	No. of specimens	No. of specimens
	Habitat	Habitat	Habitat	Habitat
Mitrega River	0	0	0	1
	—	—	—	opened area, a river bank exposed to the sun
Zegnica	2	0	1	1
	forest, shady area with lush vegetation	—	forest, shady area with lush vegetation	opened area exposed to sun
Ruda River	0	0	0	1
	—	—	—	opened area among fields, exposed to the sun
Tychy Czulów	1	1	0	3
	forest, shady area with lush vegetation	forest, shady area with lush vegetation	—	the edge of the forest, exposed to the sun
Zabrzeg	0	0	5	0
	—	—	forest, shady area with lush vegetation	—
Rotuz	0	1	0	0
	—	forest path, sparse vegetation, but the area shaded by ambient trees	—	—
Total	4	4	25	17

Most of the specimens were collected in rather shady, humid environments, amidst dense vegetation and/or in forests (Tab. 1). A few specimens were collected in areas more exposed to the sun, but still presenting high levels of humidity due to the proximity of reservoirs or rivers. Only *P. vulgaris* was found in drier habitats exposed to the sun, confirming the habitat preferences previously reported for this species (Czechowska 1982, 1990, 2007). *Panorpa vulgaris* is thought to be very closely related to *P. communis* and its status as a valid species is still uncertain (Sauer and Hensle 1975; Willman 2005). The coexistence of both species was recorded at four sites, although as previously mentioned at habitats of different character.

The distribution of most panorpid species in Poland is poorly understood, with only a few papers published on this subject to date (Czechowska 1982, 1990, 2007; Dobosz 2000, 2001), none of which have surveyed the Upper Silesia. The most common species in the investigated area was *P. vulgaris* (found at 11 sites), followed by *P. communis* recorded at seven sites. These are the most numerous and the most common species found in Poland and more generally in Europe. The presence of *P. alpina* was confirmed in the areas of the Silesian Highland, being found at three sites. The occurrence of this species in mountain and upland areas has been previously reported (Czechowska 2007). The presence of *P. germanica* was recorded for the first time in the study area, being present at four sites.

The species composition of panorpid fauna requires further studies on the size, structure and condition of particular populations of the recorded species. It is also necessary to determine their conservation status. *P. hybrida* and *P. cognata*, which have been previously recorded from Poland, were absent from this survey. Although further sampling may discover them in the Upper Silesia, due to the presence of favourable environmental conditions in this area. Furthermore, besides panorpid future surveys of the Upper Silesia should include the other families of scorpionflies: Boreidae and Bittacidae. This is especially relevant as a new species to Polish fauna has recently been detected – *Bittacus hageni* (Przybyłowicz 2006). This species was found in the vicinity of Cracow, so its presence in the Silesia is highly possible, due to small distance and similar habitats between these areas (Przybyłowicz 2006).

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Streszczenie

Fauna wojsiłkowatych w Polsce (Mecoptera: Panorpidae) składa się z sześciu gatunków. Zarówno udział, jak i rozmieszczenie poszczególnych gatunków z tej rodziny w Polsce dotąd niedostatecznie zbadano. W szczególności brakuje danych na temat tej grupy z obszaru Górnego Śląska. W celu uzyskania informacji, w roku 2010 i 2012 dokonano zbioru wojsiłkowatych siatką entomologiczną (metodą na upatrzonego) z szesnastu stanowisk na obszarze województwa śląskiego. Wykazano obecność czterech gatunków, z których najliczniej i najpowszechniej występowały *Panorpa communis* i *P. vulgaris*. Po raz pierwszy wykazano obecność *P. germanica*, potwierdzono także obecność *P. alpina* na obszarach wyżynnych. Skład fauny wojsiłkowatych wymaga jednak dalszych badań, konieczne jest określenie stanu i stopnia zagrożenia poszczególnych populacji wykrytych gatunków.

Słowa kluczowe: wojsiłki, Mecoptera, Panorpidae, romieszczenie, Śląsk

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