



New records of the rare species *Chelifera aperticauda* Collin, 1927 (Diptera: Empididae: Hemerodromiinae) from Poland

Nowe dane dotyczące występowania *Chelifera aperticauda* Collin, 1927 - rzadkiego gatunku z podrodziny Hemerodromiinae (Diptera: Empididae) w Polsce

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ABSTRACT. The very rare European species *Chelifera aperticauda* COLLIN, 1927 (Diptera: Empididae: Hemerodromiinae) is reported from two new localities in the Pieniny Mts. and the Beskid Niski Mts. Photographs of the male habitus and its genital structures are presented. Short ecological and phenological notes are presented.

KEY WORDS: Empididae, Hemerodromiinae, *Chelifera aperticauda*, Poland, Western Carpathians, new records, distribution, phenology

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INTRODUCTION

The monophyletic subfamily Hemerodromiinae (Diptera: Empididae) is distributed around the world, except the Antarctic. It contains 18 extant genera and more than 480 described species of small predatory flies with raptorial forelegs. Hemerodromiinae divided into two tribes: Chelipodini and Hemerodromiini (SINCLAIR & CUMMING 2006), although the systematic position of some genera has not been definitively clarified (PLANT 2011). The immature stages of Chelipodini live probably in moist soils in damp habitats, while Hemerodromiini, which have aquatic larvae and pupae, are associated with lentic and lotic freshwater biotopes and they usually require well oxygenated water for their development (VAILLANT 1981, VAILLANT & GAGNEUR 1998, MACDONALD & HARKRIDER 1999). In Europe

50 species had been recorded, while in Poland 25. In the country, Chelipodini are represented by the genus *Chelipoda* MAQUART, 1823 and *Phyllodromia* ZETTERSTEDT, 1837, while Hemerodromiini are represented by *Chelifera* MAQUART, 1823 and *Hemerodromia* MEIGEN, 1822.

The genus *Chelifera* MAQUART is distributed almost worldwide except the Afrotropical Region. It contains 79 described species (YANG *et al.* 2007, WANG *et al.* 2014). Most of them have Palaearctic or European distribution. They occur predominantly in mountainous areas, along streams and rivers, especially sitting on or below the leaves of trees and bushes overhanging flowing water.

The genus *Chelifera* has been characterized by COLLIN (1961) and HORVAT (2002). In Poland it is the most numerous genera of Hemerodromiini (16 species) (CHVÁLA & WAGNER 1989, CHVÁLA 2017), although one taxon – *C. monostigma* (MEIGEN, 1822) requires confirmation. The genus *Chelifera* has been relatively well studied in Poland, especially in mountainous areas (KLASA *et al.* 2000; KRYSIAK 2005; NIESIOŁOWSKI 1990, 1992, 2005; PALACZYK & KLASA 2003; SŁOWIŃSKA-KRYSIAK 2013, 2014; SŁOWIŃSKA & PALACZYK 2015, 2016). Some of *Chelifera* species, including *Chelifera aperticauda* COLLIN, 1927, are known only from the type specimens (males only) or at the most from two or three localities. In Poland there were only some specimens in museums' collections dating from the 19th century, but without more precise data on the sites and dates of capture (SŁOWIŃSKA-KRYSIAK 2014).

The present work summarises current knowledge of its distribution and discusses aspects of its phenology.

MATERIAL AND METHODS

This study is based on material collected by the author in the Pieniny Mountains and the Beskid Niski Mts. (Outer Western Carpathians, Southern Poland) during several day trips.

Adults were collected using sweep net in bushes overgrowing the streams. All material was preserved in 75% ethanol and deposited in the Department of Invertebrate Zoology and Hydrobiology, University of Łódź (Łódź, Poland).

RESULTS AND DISCUSSION

FAMILY: EMPIDIDAE

SUBFAMILY: HEMERODROMIINAE

Chelifera aperticauda COLLIN, 1927 (Fig. 1)

Material examined: 6 males.

Pieniny Mts.: Krośnica stream, Krościenko village, 440 m, 23.VI.2002, 1♂, N 49°26'22", E 20°24'43" (SŁOWIŃSKA-KRYSIAK 2012).

New records: Pieniny Mts.: Krośnica stream, Tylka village, 462 m, 19.VI.2009, 2♂♂, N 49°26'20", E 20°23'45"; Beskid Niski Mts.: Hucianka stream, Polany village, 400 m, 29.V.2017, 3♂♂, N 49°28'34", E 21°33'28".

Chelifera aperticauda is a rare species, described from British Islands by COLLIN (1927). It was reported in Austria, Belgium, Germany, Montenegro, Poland, Slovenia and Slovakia (HORVAT 1990, YANG *et AL.* 2007, OBOŃA *et AL.* 2016, CHVÁLA 2017). In Poland previously known from old 19th century collections and one location in the Pieniny Mountains (KRYSIK 2005, SŁOWIŃSKA-KRYSIK 2014). In this massif *Chelifera aperticauda* is recorded only in Krośnica stream which is a left tributary of the Dunajec River and occur along an altitudinal gradient between 440 m and 460 m. Both sampling sites were characterized by comparable physiographic features of stream: gravel bottom, 4 to 5 m of width, quite fast running water. Stream banks were covered mainly by butterbur (*Petasites hybridus*). The sampling site in the Beskid Niski Mts. was similar to those from the Pieniny Mts. (Fig. 2). Adults were found along both Krośnica and Hucianka streams on the leaves of riverine vegetation together with *Chelifera precatória* (FALLÉN, 1816), *C. stigmatica* SCHINER, 1862, *Hemerodromia oratoria* (FALLÉN, 1815), *H. unilineata* ZETTERSTEDT, 1842 and *Dolichocephala irrorata* (FALLÉN, 1816).



FIG. 1. *Chelifera aperticauda* – male.



FIG. 2. Hucianka stream (the Beskid Niski Mts.), 400 m - habitat of *Chelifera aperticauda*.

Chelifera aperticauda is clearly distinguished from other species by the structure of genitalia (Fig. 3). For detailed description see COLLIN (1927, 1961) and HORVAT (2002).



FIG. 3. *Chelifera aperticauda* – male hypopygium, lateral view.

Little is known of this species because only single individuals are caught in the field. Based on data from Poland it can be assumed that *C. aperticauda* is clearly a very rare species

with only two recent records despite many years of intensively field studies. It occurs in riverine vegetation along stream banks. In Poland it has narrow altitudinal range between 400 m and 462 m, while in Slovakia it was recorded at 630 m only (OBOŃA *et al.* 2016). In contrast, in Montenegro and Slovenia *C. aperticauda* is associated with rivers, and it has been found between 350 m (Slovenia) and 1030-1200 m (Montenegro) (HORVAT 1990, 2002). Therefore, the upper limit of its occurrence is higher than in Poland.

Until recently, the flight period of *Chelifera aperticauda* in Poland was reported during June only (SŁOWIŃSKA-KRYSIAK 2014). Current data suggest that the flight period of this species extends from May to June. These observations are similar to those from the British Isles, where *C. aperticauda* was also found in the same months (COLLIN 1961). In Slovenia and in Slovakia it was found in June only (HORVAT 2002, OBOŃA *et al.* 2016). In contrast, in Montenegro in September only (HORVAT 1990).

The small extent of occurrence combined with very few records indicates that this species may be endangered in Poland. It seems that the most likely threats for this species are destruction or degrading of riverside vegetation, excessive trampling of banks, and pollution such as may be caused by agricultural run-off.

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STRESZCZENIE

Nowe dane dotyczące występowania *Chelifera aperticauda* Collin, 1927 – rzadkiego gatunku z podrodziny Hemerodromiinae (Diptera: Empididae) w Polsce

Chelifera aperticauda COLLIN, 1927 (Diptera: Empididae: Hemerodromiinae) jest rzadkim gatunkiem występującym zaledwie w kilku europejskich krajach. Z Polski gatunek ten wykazywany był dotąd na podstawie okazów pochodzących z XIX-wiecznych kolekcji, niestety bez danych na temat miejsc i dat połowów oraz jednego samca stwierdzonego w Pieninach. W niniejszym artykule podano dwa nowe stanowiska występowania *C. aperticauda*: w Pieninach i Beskidzie Niskim. Przedstawiono również dane dotyczące ekologii oraz pojawu tego gatunku w Polsce.