

New Records of an Extremely Rare Aquatic Empidid Fly *Chelifera polonica* Wagner and Niesiolowski, 1987 (Diptera: Empididae: Hemerodromiinae) from Poland

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ABSTRACT

Chelifera polonica Wagner and Niesiolowski, 1987 (Diptera: Empididae) is a rare empidid fly, originally described from the Gorce Mountains (Outer Western Carpathians, SE Poland) in 1987. The species has not been recorded there since then. In the present paper *C. polonica* is reported from two streams from the Bieszczady Mts. (Outer Eastern Carpathians). These two new records are the other known localities of the species in Poland and in Europe. The distribution of *C. polonica* is discussed. Photographs of the whole male and its genital structures are presented.

Key words: Empididae, Hemerodromiinae, *Chelifera polonica*, Poland, Bieszczady Mts., new records.

INTRODUCTION

The Empididae subfamily Hemerodromiinae is recognized worldwide, divided into two monophyletic tribes: Chelipodini and Hemerodromiini (Sinclair and Cumming, 2006). Plant (2011) has recently found, that some of the basal group (e. g. *Afrodromia* Smith, 1969 and *Drymodromia* Becker, 1914) do not fit within monophyletic tribes Chelipodini or Hemerodromiini.

The Hemerodromiinae contains 18 extant genera with more than 450 described species of small flies, characterized by raptorial forelegs (Plant *et al.*, 2012). Immature stages of Hemerodromiini are aquatic, and they are adapted to living in lentic and lotic freshwaters biotopes (MacDonald and Harkrider, 1999). They usually require well oxygenated water for their development (Vaillant, 1981). The adults usually sit on or below the leaves of bushes and trees in the vicinity of rivers and streams where they prey on small insects, mainly Diptera (Wagner, 1997).

One of the genera classified among the tribe Hemerodromiini is *Chelifera* Macquart, 1823. It contains 77 described species (Yang *et al.*, 2007). Most species belonging to this genus have European or Palearctic distribution. They occur mostly in mountainous areas and up to now thirty species have been reported from Europe. Usually only single adult *Chelifera* specimens are caught in the field and thus they are quite rare in collections (Horvat, 2002).

The genus *Chelifera* has been relatively well studied in Poland (Niesiołowski, 1990, 1992, 2005; Klasa *et al.*, 2000; Krysiak, 2004; Palaczyk and Klasa, 2003; Krysiak *et al.*, 2010). The relatively up to date distributional data of *Chelifera* species were given by Niesiołowski (2005), unfortunately this author overlooked one taxon - *C. monostigma* (Meigen, 1822), which was recorded from Poland by Chvála and Wagner (1989). In total, 16 species of *Chelifera* are now known from Poland (Chvála and Wagner, 1989; Niesiołowski, 2005; Yang *et al.*, 2007). Two species, *C. perlucida* Niesiołowski, 1986 and *C. polonica* Wagner and Niesiołowski, 1987 (Diptera: Empididae) were originally described from Poland and both are considered to be endemic to that country. *C. polonica* was collected only once, in August 1986 in the Gorce Mountains (Outer Western Carpathians). For a detailed description, see Wagner and Niesiołowski, 1987.

The present paper gives two new localities for *C. polonica* from the Bieszczady Mountains (Outer Eastern Carpathians, Poland). Photographs of the species including the male genital structures are presented.

MATERIAL AND METHODS

The material was collected in the Bieszczady Mountains (SE Poland) in 1994. Two specimens of *C. polonica* were caught by the author with a hand-net, from the leaves of bushes in the vicinity of two streams, and were subsequently preserved in 75% alcohol. They are deposited in the Department of Invertebrate Zoology and Hydrobiology, University of Łódź (Łódź, Poland). The specimens were identified by reference to the original description. The photographs were taken using a Nikon DS-Fi1 digital camera and Nikon SMZ 1500 stereomicroscope.

The localities of this species are given as standard geographical coordinates, and as UTM grid codes (Universal Transverse Mercator).

RESULTS

Chelifera polonica Wagner and Niesiołowski, 1987 (Fig. 1)

Material examined: **Poland**, Bieszczady Mountains:

- Prowcza stream, about 830 m., 49°07'52"N/22°33'14"E, 25.VII.1994, UTM: FV14, 1♂ (leg. and det. I. Słowińska-Krysiak); measurements: body length - 4.3 mm, wing length - 3.7 mm.
- Caryńczyk stream, about 870 m., 49°08'50"N/22°36'12"E, 21.VII.1994, UTM: FV14, 1♂ (leg. and det. I. Słowińska-Krysiak); measurements: body length - 4.8 mm, wing length - 4.2 mm.

DISCUSSION AND CONCLUSION

Although *C. polonica* somewhat resembles *C. flavella* (Zetterstedt, 1838), but it may be distinguished by more greyish yellow colour, while *C. flavella* is rather brownish yellow. Male hypopygium also differs in the shape of cerci in lateral view. The cercus of *C. polonica* is wider than in *C. flavella* and it has a deep and narrow excision between upper and lower lobe (Fig. 2), while the cercus of *C. flavella* has a shallow and obtuse excision between both lobes.

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Fig. 1. Male of *Chelifera polonica*, lateral view.



Fig. 2. *Chelifera polonica* - male hypopygium, lateral view.

The new records of *C. polonica* presented in this paper are the first from the Bieszczady Mts. and from the Eastern Carpathians. Since the original description, no further data on the distribution of *C. polonica* in Europe have been published. The species has hitherto been known from only two sites in the Gorce Mountains from 1♂ and 1♀ collected on 6 August 1985 near the source of the River Konina (49°33'08"N/20°07'12"E; UTM: DV38; 1200 m), and 2♂♂ caught in the same day near the source of the River Kamienica (49°32'52"N/20°07'04"E; UTM: DV38; 1150 m) (Niesiołowski, 1990).

In total, the species has thus been recorded from just four montane localities, at altitudes 830 and 1200 m and is clearly very rare. The currently known distribution of *C. polonica* in Poland is presented in Fig. 3.

The new records are from locations more than 180 km east from the previous ones which demonstrates that *C. polonica* is not restricted to the Western Carpathian Mountains. Moreover as localities in the Bieszczady Mountains are only about 10 km from the Polish border, it can be expected that the species will also be found in Slovakia and Ukraine too.

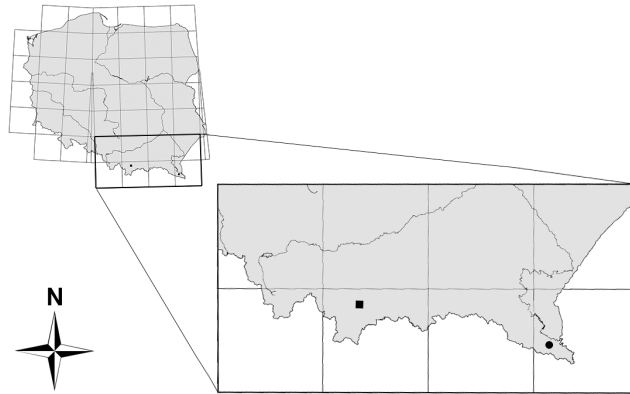


Fig. 3. Current distribution of *Chelifera polonica* in Poland; ■ - Gorce Mountains (locus typicus), ● - Bieszczady Mountains.

Although the field studies on Hemerodromiinae of the Polish Carpathians were undertaken for many years during the whole vegetation seasons, all records (6 specimens) were collected between the third decade of July and the first decade of August. Therefore, it is suggested, that this rare species has only one generation per year in the northern Carpathian region.

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