



**FIRST RECORD OF THE RARE SPECIES
WIEDEMANNIA PIENINENSIS KRYSIAK *ET* NIESIOŁOWSKI, 2004
(DIPTERA: EMPIDIDAE: CLINOCERINAE) FROM THE POLISH TATRA MOUNTAINS**

**PIERWSZE STWIERDZENIE
WIEDEMANNIA PIENINENSIS KRYSIAK *ET* NIESIOŁOWSKI, 2004, RZADKIEGO
GATUNKU Z PODRODZINY CLINOCERINAE (DIPTERA: EMPIDIDAE) Z POLSKICH TATR**

DOI: 10.5281/zenodo.3588560

IWONA SŁOWIŃSKA

Department of Invertebrate Zoology and Hydrobiology, University of Łódź,
90-237 Łódź, Banacha 12/16, Poland,
e-mail: iwona.slowinska@biol.uni.lodz.pl

ABSTRACT: *Wiedemannia pieninensis* KRYSIAK *et* NIESIOŁOWSKI, 2004 (Diptera: Empididae: Clinocerinae) is a rare empidid fly, originally described from the Pieniny National Park (Pieniny Mountains, Outer Western Carpathians, Poland) in 2004. Then, in 2014 it was recorded in the Małe Pieniny Mts. In the present paper *W. pieninensis* is reported from the Tatra Mts. for the first time. This new record is the third known locality of the species in Poland. Short ecological and phenological notes for that rare empidid fly are given.

KEYWORDS: Diptera, empidid species, *Wiedemannia pieninensis*, Polish Carpathians, Tatra Mountains, new record, distribution, phenology

INTRODUCTION

The empidid subfamily Clinocerinae represents a large group of predacious and long-legged flies in lotic habitats. Currently 18 genera and over 360 described clinocerine species are known worldwide (YANG *et al.* 2007; SINCLAIR *et al.* SHAMSHEV 2014; PALACZYK *et al.* 2015). One of the larger genera belonging to this subfamily is *Wiedemannia* ZETTERSTEDT, 1838. Adults are generally confined to large and relatively clean, cool streams and rivers (SINCLAIR 1997). Members of this genus are common on emergent boulders and stones on which they are standing close to the waterline.

The genus *Wiedemannia* contains more than 110 described species (YANG *et al.* 2007; KUSTOV *et al.* ZHEREBILO 2015). It is very common and diverse in the Palearctic region,

however it also occurs in Nearctic, Oriental and Afrotropical realms. Only one species, *Wiedemannia simplex* (LOEW, 1862), has a Holarctic distribution (SINCLAIR 1997).

The number of known *Wiedemannia* species in the Palearctic region largely depends on the accuracy of faunistic and taxonomic research. Several regions, especially in the Europe, are very well researched, e.g. Pyrenees, European Alps and Balkan Peninsula, however, many new discovered species are still waiting to be described. Currently 96 species of *Wiedemannia* are known from the territories of Europe and Caucasus (KRYSIK *et al.* NIESIOŁOWSKI 2004; KRYSIK 2005a; RAFFONE 2011; IVKOVIĆ *et al.* 2014, 2018; SINCLAIR *et al.* SHAMSHEV 2014; KUSTOV *et al.* ZHEREBILO 2015; CHVÁLA 2018).

In Poland, the subfamily Clinocerinae is represented by 38 species in six genera: *Bergenstammia* MIK, 1881, *Clinocera* MEIGEN, 1803, *Dolichocephala* MACQUART, 1823, *Kowarzia* MIK, 1881, *Phaeobalia* MIK, 1881 and *Wiedemannia* ZETTERSTEDT, 1838. The latter genus has been relatively well studied in the country, especially in mountainous areas (NIESIOŁOWSKI 1990, 2005; KLASA *et al.* 2000; KLASA 2003; KRYSIK 2005b; SŁOWIŃSKA-KRYSIK 2014a; PALACZYK *et al.* 2015; SŁOWIŃSKA 2017). It is the most numerous genus of Clinocerinae represented with 23 species in Poland. Some of them are known only from the type specimens (males only) or at the most from two or three localities.

This paper reports the results of sampling trips to streams in the Polish Tatra Mts. in 2018. *Wiedemannia pieninensis* KRYSIK *et al.* NIESIOŁOWSKI, 2004, originally described from the Pieniny Właściwe Mts. is noted for the first time from the Tatras (Outer Western Carpathians, Poland). Photographs of that species including the male genital structures are presented.

MATERIAL AND METHODS

This study is based on material collected by the author in the Tatra Mts. during several day trips. Adults were caught by entomological hand net slightly above the water surface. Moreover, they were collected with tweezers directly from boulders and stones protruding from water. The material was preserved in 75% ethanol and deposited in the Department of Invertebrate Zoology and Hydrobiology, University of Łódź (Łódź, Poland). The photographs of male terminalia were taken using a Leica M205C stereomicroscope.

RESULTS AND DISCUSSION

FAMILY: EMPIDIDAE

SUBFAMILY: CLINOCERINAE

***Wiedemannia pieninensis* KRYSIK *et al.* NIESIOŁOWSKI, 2004 (FIGS. 1, 3-4)**

MATERIAL EXAMINED: 17 individuals (13♂♂, 4♀♀)

Pieniny Właściwe Mountains, Biały stream, 515 m, 25.IX.1998, 3♂♂, 1♀; 560 m, 2.VI.2000, 1♂; Kirowy stream, 770 m, 22.IX.1998, 1♂; 680 m, 22.IX.1998, 2♂♂, 2♀♀; Małe Pieniny Mountains, Kamionka stream, 20.IX.2012, 635 m, 1♂.

NEW RECORDS: Tatra Mountains, Chochołowski Potok stream, 950 m, 17.X.2018, 1♂, 1♀, 18.X.2018, 2♂♂; 7.XI.2018, 2♂♂.



FIG. 1. *Wiedemannia pieninensis* – male

Wiedemannia pieninensis (FIG. 1) is a rare species, originally described by KRYSIAK *et* NIESIOŁOWSKI (2004) from the Pieniny Właściwe Mts. Besides, it has been recorded from the Małe Pieniny Mts. (SŁOWIŃSKA 2014b). Prior to this study *W. pieninensis* has not been reported outside the Pieniny Mts. and it was considered to be endemic to that massif. All individuals were caught in mid-forest sections of streams: Biały, Kirowy and Kamionka. The species was recorded from altitudes 515–770 m and it seems that it was generally associated with upper stream sections. It is worth noting that *Wiedemannia pieninensis* was mostly found sitting on emergent boulders and stones with *Kowarzia plectrum* (MIK, 1880) which is one of the more abundant clinocerine species in the Pieniny streams. All sampling sites were characterized by similar physiographic conditions: the stream bottoms were mostly rocky, bed material was dominantly boulders and stones, the water moved quite rapidly in

the middle of the channel, and at a slower rate along the banks, and shading reached 80%. However, the sampling site in the Tatra Mts. (the Chochołowski Potok stream) was much larger and bed material was dominantly stones and pebbles (FIG. 2). Moreover, adults of *W. pieninensis* have been found only in the lower stream section at 950 m. Therefore, the upper limit of its occurrence is higher than in the Pieniny Mts. Adults were found sitting on emergent stones with few clinocerine species: *Kowarzia plectrum* (MIK, 1880), *Wiedemannia bohemani* (ZETTERSTEDT, 1838) and *W. mikiana* (BEZZI, 1899).

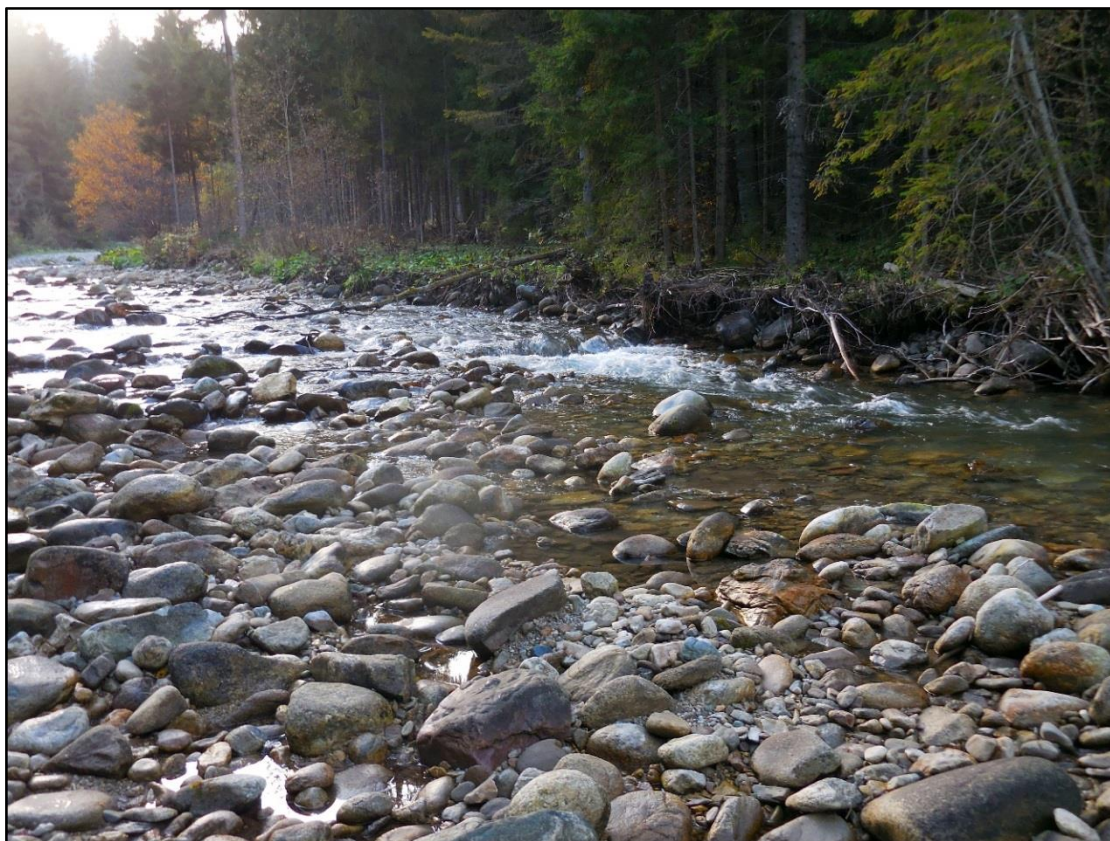


FIG. 2. Chochołowski Potok stream (the Tatra Mts.), 950 m – habitat of *Wiedemannia pieninensis*

Although *Wiedemannia pieninensis* somewhat resembles *Wiedemannia beckeri* (ZETTERSTEDT, 1838), but it may be distinguished by the structure of genitalia (FIGS. 3-4). For a detailed description, see KRYSIAK *et* NIESIOŁOWSKI (2004). Until now, *W. pieninensis* has not been recorded outside Poland and it may be considered to be endemic to the country. Moreover as the locality in the Tatra Mts. is situated near the Polish border, it can be expected that the species will also be found in Slovakia.

Little is known of this species because only few individuals were caught in the field. On the data set gathered in research it can be assumed that *W. pieninensis* is clearly a rare species with only two recent records despite many years of intensively conducted field studies. Prior to this study, the flight period of this species in the Pieniny Mts. was reported from early June to September (SŁOWIŃSKA-KRYSIAK 2014b) and it has two generations per year. In the Tatra Mts. flight period of that species occurs during colder months: October and November. It can be assumed that *W. pieninensis* has only one generation per year in

the Tatras. Therefore, this is the first report of *Wiedemannia* species which have such a late flight period in Poland.



FIG. 3. *Wiedemannia pieninensis* – male hypopygium, lateral view

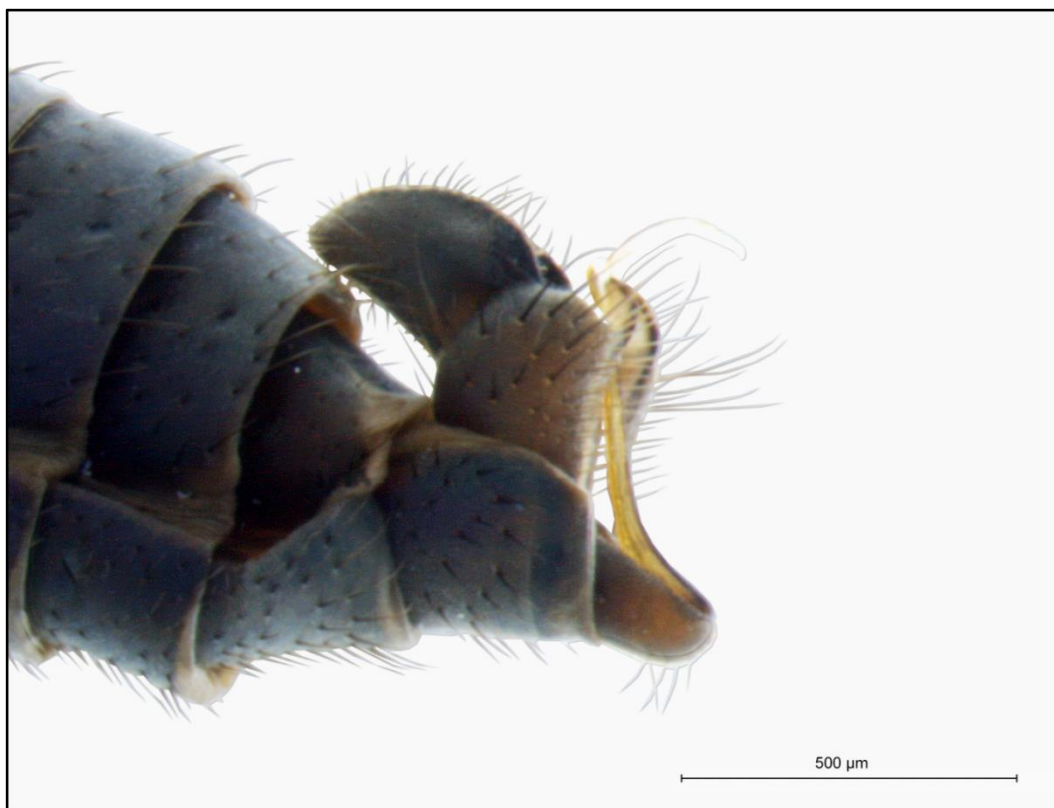


FIG. 4. *Wiedemannia beckeri* – male hypopygium, lateral view

Phenological data from the Pieniny Mts. revealed that emergence of *Wiedemannia* species starts in May and lasts until September. However a few species, like *W. bistigma* (CURTIS, 1834), *W. braueri* (MIK, 1880), *W. fallaciosa* (LOEW, 1873), *W. phantasma* (MIK, 1880), *W. pirata* (MIK, 1880), *W. thienemanni* WAGNER, 1982, *W. tricuspidata* (BEZZI, 1905) and *W. zetterstedti* (FALLÉN, 1826) were active from May until early October (KRYSIK 2005b). None of the species was presented throughout the entire year, despite detailed field studies in recent years. For that reason, it would be worth monitoring the sampling site in the Chochołowski Potok stream from the end of September at least once a month in order to confirm the presence of *W. pieninensis* during late autumn and winter. On the other hand, in future studies, more species can be expected to be found, especially in springtime and wintertime. There are still some species that have not been recorded in the Tatra Mts. This is due to the fact that there is a lack of entomological surveys in colder months, when those species are probably more common.

ACKNOWLEDGEMENTS

I would like to thank the Tatra National Park for sampling permits and IZABELA SZELĄG for her invaluable assistance during the field work in the Tatra Mts.

REFERENCES

- CHVÁLA M. 2018. Fauna Europaea: Empididae. [In:] PAPE T. & BEUK P. 2017. Fauna Europaea: Empididae. Fauna Europaea version 2017.06, <https://fauna-eu.org>.
- IVKOVIĆ M., ZAMORA-MUÑOZ C., SAINZ-BARIAÍN M., SINCLAIR B.J. 2014. Aquatic Empididae (Diptera: Hemerodromiinae and Clinocerinae) of the Sierra Nevada, Spain, with the description of five new species. *Zootaxa* **3786**(5): 541-556.
- IVKOVIĆ M., ČEVID J., HORVAT B., SINCLAIR B. 2018. Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae) of Greece: species richness, distribution and description of five new species. *ZooKeys* **724**: 53-100.
- KLASA A., PALACZYK A., SOSZYŃSKI B. 2000. Muchówki (Diptera) Bieszczadów. Monografie Bieszczadzkie **8**(2): 305-369.
- KRYSIK I. 2005a. *Wiedemannia jakubi* a New Species of Aquatic Empidid (Diptera: Empididae) from Poland. *Annales Zoologici* **55**(1): 75-76.
- KRYSIK I. 2005b. "Muchówki z podrodzin Hemerodromiinae i Clinocerinae (Diptera, Empididae) Pienin". (PhD diss., Uniwersytet Łódzki, 2005). Pp. 1-229.
- KRYSIK I., NIESIOŁOWSKI S. 2004. *Wiedemannia pieninensis* a New Species of Aquatic Empidid (Diptera, Empididae) from Poland. *Aquatic Insects* **26**(3-4): 143-146.
- KUSTOV S., ZHEREBILO D. 2015. New data on the genus *Wiedemannia* ZETTERSTEDT (Diptera: Empididae) from the Caucasus with description of four new species. *Zootaxa* **4032**(4): 351-369.

- NIESIOŁOWSKI S. 1990. Morfologia, biologia i występowanie w Polsce wodnych Empididae (Diptera, Brachycera). Acta Universitatis Lodzensis, Wydawnictwo Uniwersytetu Łódzkiego, Łódź. Pp. 1-169.
- NIESIOŁOWSKI S. 2005. Wujkowate (Empididae: Hemerodromiinae, Clinocerinae). Fauna Śłodkowodna Polski, zeszyt **11B**: 1-205.
- PALACZYK A., KLASA A. 2003. Muchówki (Diptera) masywu Babiej Góry. [W:] WOŁOZYN B. W., WOŁOZYN D., CELARY W. (RED.): Monografia fauny Babiej Góry. Publikacje Komitetu Ochrony Przyrody PAN, Kraków. Pp. 305-357.
- PALACZYK A., SŁOWIŃSKA I., KLASA A. 2015. The Genus *Bergenstammia* MIK, 1881 (Diptera: Empididae: Clinocerinae) in Poland with Description of *Bergenstammia glacialis* sp. nov. from the Tatra Mts. Annales Zoologici **65**(1): 53-64.
- RAFFONE G. 2011. On some specimens of *Wiedemannia* ZETTERSTEDT, 1838, with description of *Wiedemannia (Philolutra) plavensis* sp. nov. (Insecta, Diptera, Empididae). Lavori della Societa Veneziana Scienze Naturali **36**: 19-22.
- SINCLAIR B.J. 1997. Review of the Nearctic species of *Wiedemannia* ZETTERSTEDT (Diptera: Empididae: Clinocerinae). Studia dipterologica **4**(2): 337-352.
- SINCLAIR B.J., SHAMSHEV I.V. 2014. Review of Clinocerinae (Diptera: Empididae) from the Caucasus, with description of three new species. Proceedings of the Zoological Institute RAS **318**(1): 40-47.
- SŁOWIŃSKA I. 2017. Hemerodromiinae i Clinocerinae (Diptera: Empididae) Małych Pienin. Dipteron **33**: 143-156.
- SŁOWIŃSKA-KRYSIAK I. 2014a. New Distributional Data for the Rare Polish Empidid Flies (Empididae: Hemerodromiinae, Clinocerinae) in the Pieniny Mountains with Notes on Ecology and Phenology. Journal of the Entomological Research Society **16**(2): 127-140.
- SŁOWIŃSKA-KRYSIAK I. 2014b. Nowe stanowisko *Wiedemannia pieninensis* KRYSIAK et NIESIOŁOWSKI, 2004 (Empididae: Clinocerinae) w Pieninach. Pieniny – Przyroda i Człowiek **13**: 63-66.
- YANG D., ZHANG K., YAO G., ZHANG J. 2007. World Catalog of Empididae (Insecta: Diptera). China Agricultural University Press, Beijing. Pp. 1-599.

* **Editorial remarks:**

* Papers of the 35th volume of Dipteron are dedicated to the late AGNIESZKA DRABER-MOŃKO.