

## First record of *Wiedemannia ljerkae* Ivković et Sinclair, 2017 (Diptera: Empididae) from Albania with an updated checklist of aquatic dance flies occurring in the country

by

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### Abstract

*Wiedemannia ljerkae* Ivković et Sinclair, 2017 is recorded from Albania for the first time (Sarandë District). The updated checklist of aquatic Empididae (Clinocerinae and Hemerodromiinae) from this country is provided. The potential diversity of the Albanian fauna of dance flies is discussed based on a comparison with faunas of neighboring countries.

**Key words:** Balkan Peninsula, Albania, Diptera, Empididae, Clinocerinae, Hemerodromiinae, first record, species richness

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## Introduction

The subfamilies Hemerodromiinae and Clinocerinae, known as aquatic dance flies, belong to Empididae, which with over 3,000 described species worldwide, is one of the largest dipteran family (Yang et al. 2007). The monophyletic subfamily Hemerodromiinae is divided into two tribes: Chelipodini and Hemerodromiini (Sinclair & Cumming 2006), although the taxonomic position of some genera has not been definitively clarified (Plant 2011). The immature stages of Chelipodini probably live in moist soils of damp habitats, while Hemerodromiini 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). Adults of these flies live and usually prey on other smaller insects while sitting on vegetation along stream and river banks. Hemerodromiinae are distributed around the world, except the Antarctic. More than 480 described species are known worldwide, of which over 50 occur in Europe (Yang et al. 2007; Câmara et al. 2014; 2015; Ivković et al. 2014; 2017; Plant 2015). Members of Clinocerinae are most often found sitting on rocks, boulders and stones protruding from water in large fast-flowing creeks, streams and rivers. Sometimes they sit on moss growing on boulders (Sinclair 2008; Słowińska-Krysiak 2014). The immature stages of these flies live in lentic and lotic freshwater habitats. This subfamily has worldwide distribution and includes more than 360 described species, of which almost 170 occur in Europe (Krysiak & Niesiołowski 2004; Krysiak 2005; Yang et al. 2007; Raffone 2011; Ivković et al. 2012; 2014; 2017; Sinclair & Shamshev 2014; Kustov & Zhrebilo 2014; 2015); the greatest diversity is known from mountainous regions (Palaczyk & Słowińska-Krysiak 2013; Ivković & Plant 2015; Palaczyk et al. 2015; Oboňa et al. 2016; Słowińska 2019; Słowińska et al. 2020).

The fauna of aquatic dance flies in Albania has not been regularly researched, hence the knowledge about Clinocerinae and Hemerodromiinae is very limited and there are hardly any related data in the literature. There are only two relevant references dealing with Albanian aquatic Empididae, both containing data on species classified into the Clinocerinae subfamily (so far no Hemerodromiinae species have been recorded in Albania). Only *Kowarzia barbatula* (Mik, 1880) and *Phaeobalia penicissa* Becker, 1889 were included in the Catalogue of Palaearctic Diptera (Chvála & Wagner 1989). One additional species was added to the list of the Albanian subfamily Clinocerinae by Wagner (1993), who described

*Bergenstammia albanica* on the basis of only one male collected in Korab (the Dinarides) in 1918. As a consequence, Yang et al. (2007) listed only three species of these flies from Albania.

The current work is the seventh part of the research that focuses on the insects collected during scientific expeditions to Albania, organized by the Department of Invertebrate Zoology and Hydrobiology, University of Lodz (Jaskuła 2007; 2014; Przewoźny et al. 2008; 2010; Devetak et al. 2012; Jaskuła et al. 2012).

## Materials and methods

A single male was collected using an entomological hand net from wet emergent stones in the Bistricë (Bistrica) River, about 150 m from the river mouth, Sarandë Distr., Albania, 39°50'996"N; 20°01'279"E; 1 m, 07.09.2006, leg. R. Jaskuła (Fig.1). The river is 25 km long and starts from Syri i Kälter (the "Blue Eye" spring) in Mount Mali i Gjerë (SE Albania). After passing through the Delvina depression, the Bistrica River empties into the Ionian Sea, close to the border with Greece. The river bank at the sampling site was covered with stones and dense vegetation; the water current was rapid and aquatic vegetation was represented by pondweed (*Potamogeton* sp.).



**Figure 1**

Habitat of *Wiedemannia ljerkae* (phot. M. Grabowski)

The photographs of the male head and hypopygium (Fig. 2, Fig. 3) were taken using the Leica DFC295 digital camera and the Leica M2050 stereomicroscope.

## Results and discussion

With the finding of *Wiedemannia ljerkae* Ivković et Sinclair, 2017, the number of aquatic Empididae known from Albania increases to four species classified only

**Figure 2**

*Wiedemannia ljerkae* – male head (phot. I. Słowińska)

into the Clinocerinae subfamily. The updated Albanian checklist of this group is presented in Table 1. The newly recorded species was previously known as a Greek endemic taxon reported only from five localities in the mainland of Greece (Ivković et al. 2017). Our record from south-eastern Albania is the westernmost locality of this species in the Balkan Peninsula. Although *W. ljerkae* is similar to *W. braueri* (Mik, 1880) and *W. tricuspidata* (Bezzi, 1905), but is distinguished mainly by the clasping cercus with two slender and long finger-like processes that are of equal size (see Ivković et al. 2017; Fig. 3).

It is worth noting that in Greece, all specimens of *Wiedemannia ljerkae* were collected in April, while in Albania in September, which may suggest that the

**Figure 3**

*Wiedemannia ljerkae* – male terminalia (phot. I. Słowińska)

species is likely to have more than one generation per year, as is the case with many other *Wiedemannia* species in the Balkans (Ivković et al. 2013a).

The Albanian fauna of aquatic dance flies is still very poorly researched. Compared to the number of aquatic Empididae reported from the neighboring countries, at least several species new to Albania can be expected, as 42 species were found in the mainland of Greece, 34 in FYR Macedonia and 35 in Montenegro (Becker 1889; Wagner & Horvat 1993; Horvat 1995; 1997; Wagner 1995; Ivković et al. 2012; 2013a,b; 2017; Table 1). Among taxa that most likely occur in Albania and may be recorded in this country in the future, there are, for example, 11 species widely distributed in the Balkan Peninsula and already known from all three neighboring countries, including seven classified to Clinocerinae [*Clinocera stagnalis* (Haliday, 1833), *Dolichocephala guttata* (Haliday, 1833), *Kowarzia plectrum* (Mik, 1880), *Wiedemannia andreevi* Joost, 1982, *W. fallaciosa* (Loew, 1873), *W. microstigma* (Bezzi, 1904), *W. zetterstedti* (Fallén, 1826)], and four to Hemerodromiinae [*Chelifera precabunda* Collin, 1961, *C. precatória* (Fallén, 1816), *C. stigmatica* (Schiner, 1862), *C. trapezina* (Zetterstedt, 1838)].

New data are needed for all other species previously reported from Albania [*Bergenstammia albanica* Wagner, *Kowarzia barbatula* (Mik) and *Phaeobalia penicissa* Becker] as only old material is available.

An important aspect is the fact that Albania is a mountainous country with 28.5% of the area located at an altitude of over 1000 m. It is one of the most mountainous countries in Europe. The area of Albania is characterized by large heterogeneity of mountain landscapes interspersed with high peaks and deep valleys, featuring many streams and rivers. These types of habitats are typical for many aquatic Empididae species (Sinclair 2008; Słowińska-Krysiak 2012; 2014), which occur on wet stones and rocks in small streams and waterfalls, often in areas that are difficult to access for exploration, including habitats limited to high mountain ranges, frequently above the timber line (Palaczyk & Słowińska-Krysiak 2013; Palaczyk et al. 2015). Such habitat diversity, including altitudinal isolation, strongly promotes species diversity and endemism, which is reflected in many other taxonomical groups throughout the Balkans (e.g. Blonden & Aronson 1999; Deltshv 1999; 2000; Kryštufek & Reed 2004; Thompson 2005; Jaskuła 2011, Ivković & Plant 2015). The example of the recently described species *Wiedemannia ljerkae* (Ivković et al. 2017) clearly proves that future exploration of the area of Albania can bring discoveries of aquatic empidid species new to science.

Table 1

Checklist of Albanian aquatic dance flies compared to aquatic Empididae (Hemerodromiinae and Clinocerinae) fauna of neighboring countries

Subfamily	Albania	Greece (mainland)	Macedonia	Montenegro
<b>Hemerodromiinae</b>				
<i>Chelifera angusta</i> Collin, 1927		+		
<i>Chelifera aperticauda</i> Collin, 1927				+
<i>Chelifera barbarica</i> Vaillant, 1981		+		
<i>Chelifera concinnicauda</i> Collin, 1927				+
<i>Chelifera flavella</i> (Zetterstedt, 1838)				+
<i>Chelifera horvati</i> Ivković et Sinclair, 2017		+		
<i>Chelifera macedonica</i> Wagner et Niesiołowski, 1987			+	
<i>Chelifera pectinicauda</i> Collin, 1927			+	
<i>Chelifera precabunda</i> Collin, 1961		+	+	+
<i>Chelifera precatoria</i> (Fallén, 1816)		+	+	+
<i>Chelifera pyrenaica</i> Vaillant, 1981			+	+
<i>Chelifera siveci</i> Wagner, 1984				+
<i>Chelifera stigmatica</i> (Schiner, 1862)		+	+	+
<i>Chelifera trapezina</i> (Zetterstedt, 1838)		+	+	+
<i>Chelifera wagneri</i> Horvat, 1990			+	
<i>Chelipoda vocatoria</i> (Fallén, 1816)				+
<i>Hemerodromia laudatoria</i> Collin, 1927				+
<i>Hemerodromia melangyna</i> Collin, 1927		+		
<i>Hemerodromia oratoria</i> (Fallén, 1816)		+		
<i>Hemerodromia raptoria</i> Meigen, 1830				+
<i>Hemerodromia unilineata</i> Zetterstedt, 1842		+	+	
<i>Phyllodromia melanocephala</i> (Fabricius, 1794)			+	
<b>Clinocerinae</b>				
<i>Bergentammia albanica</i> Wagner, 1993	+			
<i>Clinocera appendiculata</i> (Zetterstedt, 1838)			+	
<i>Clinocera megalatlantica</i> (Vaillant, 1957)		+		
<i>Clinocera nigra</i> Meigen, 1804		+	+	
<i>Clinocera stagnalis</i> (Haliday, 1833)		+	+	+
<i>Clinocera wesmaeli</i> (Macquart, 1835)			+	+
<i>Clinocerella siveci</i> (Wagner et Horvat, 1993)		+		
<i>Clinocerella sorex</i> (Engel, 1918)				+
<i>Dolichocephala guttata</i> (Haliday, 1833)		+	+	+
<i>Dolichocephala irrorata</i> (Fallén, 1816)			+	
<i>Dolichocephala ocellata</i> (Costa, 1854)		+		
<i>Kowarzia barbatula</i> (Mik, 1880)	+	+	+	+
<i>Kowarzia bipunctata</i> (Haliday, 1833)		+		
<i>Kowarzia madicola</i> (Vaillant, 1964)		+		
<i>Kowarzia plectrum</i> (Mik, 1880)		+	+	+
<i>Kowarzia tenella</i> (Wahlberg, 1844)			+	
<i>Phaeobalia dimidiata</i> (Loew, 1869)		+	+	
<i>Phaeobalia penicissa</i> Becker, 1889	+			+
<i>Roederiodes macedonicus</i> Wagner et Horvat, 1993			+	+
<i>Roederiodes montenegrinus</i> Wagner et Horvat, 1993				+
<i>Wiedemannia aequilobata</i> Mandaron, 1964		+	+	
<i>Wiedemannia andreevi</i> Joost, 1982		+	+	+
<i>Wiedemannia angelieri</i> Vaillant, 1967		+		+
<i>Wiedemannia aquilex</i> (Loew, 1869)				+
<i>Wiedemannia artemisa</i> Ivković et Plant, 2012		+		+
<i>Wiedemannia balkanica</i> Wagner, 1981				+
<i>Wiedemannia beckeri</i> (Mik, 1889)		+		



Table 1 continuation

Subfamily	Albania	Greece (mainland)	Macedonia	Montenegro
<i>Wiedemannia bilobata</i> Oldenberg, 1910		+		
<i>Wiedemannia chvalai</i> Joost, 1981		+		
<i>Wiedemannia czernyi</i> (Bezzi, 1905)		+		
<i>Wiedemannia dinarica</i> Engel, 1940		+	+	
<i>Wiedemannia dyonysica</i> Wagner, 1990		+	+	
<i>Wiedemannia fallaciosa</i> (Loew, 1873)		+	+	+
<i>Wiedemannia graeca</i> Vaillant et Wagner, 1990		+		
<i>Wiedemannia hygrobica</i> (Loew, 1858)			+	+
<i>Wiedemannia iphigeniae</i> Ivković et Sinclair, 2017		+		
<i>Wiedemannia kacanskae</i> Horvat, 1993				+
<i>Wiedemannia lamellata</i> (Loew, 1869)		+	+	
<i>Wiedemannia ljerkae</i> Ivković et Sinclair, 2017	+	+		
<i>Wiedemannia longicornis</i> (Mik, 1887)			+	+
<i>Wiedemannia lota</i> Walker, 1851		+	+	
<i>Wiedemannia microstigma</i> (Bezzi, 1904)		+	+	+
<i>Wiedemannia nebulosa</i> Ivković et Sinclair, 2017		+		
<i>Wiedemannia pseudoberthelemyi</i> Ivković et Sinclair, 2017		+		
<i>Wiedemannia queyarasiana</i> Vaillant, 1956				+
<i>Wiedemannia stylifera</i> Mik, 1889			+	+
<i>Wiedemannia tricuspudata</i> (Bezzi, 1905)		+	+	
<i>Wiedemannia wachtli</i> (Mik, 1880)				+
<i>Wiedemannia zetterstedti</i> (Fallén, 1826)		+	+	+
Total	4	42	34	35

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