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Pherbellia rozkosnyi Verbeke, 1967 new to Belgium

(Diptera: Sciomyzidae)

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Abstract

During a sampling campaign in the nature reserve Heid des Gattes (Aywaille, prov. Liege), *Pherbellia rozkosnyi* Verbeke, 1967 is found new to the Belgian fauna. This is a rare species of which the distribution is poorly known.

Keywords: Snail-killing flies

Samenvatting

Tijdens een staalnamecampagne in het natuureservaat Heid des Gattes (Aywaille, provincie Luik) werd *Pherbellia rozkosnyi* Verbeke, 1967 gevonden. Deze zeldzame soort is nieuw voor de fauna van België en heeft een slecht gekende verspreiding.

Résumé

Pherbellia rozkosnyi Verbeke, 1967 a été trouvé pour la première fois en Belgique lors d'une campagne d'échantillonnage dans la réserve naturelle de la Heid des Gattes (Aywaille, province de Liège). Il s'agit d'une espèce rare dont la répartition est mal connue.

Introduction

Snail-killing flies are one of the ecologically best-known families of dipterans. The fact that their larvae prey on gastropods makes them interesting study organisms in applied ecology as biocontrol agents, as well as in fundamental ecological studies on the evolution of larval feeding behavior. For nearly half of all known species, extensive research has revealed their life cycles, immature stages, and host preference (KNUTSON & VALA, 2011; MURPHY *et al.*, 2012). All species of Sciomyzidae, with few exceptions, have malacophagous larvae that feed on several species of pulmonate terrestrial and aquatic snails (KNUTSON & VALA, 2011).

Pherbellia is the most species-rich genus of snail-killing flies, including 103 valid species, of which 14 are known to Belgium (MORTELMANS, 2013). Many species are similar in appearance and features used to differentiate species are found in the male terminalia, in the setulation of the pro- and anepisternum, and in the shape of the frontal vitta (e.g., ROZKOŠNÝ, 1984, 1991; ORTH & STEYSKA, 1981). BRATT *et al.* (1969) extensively reviewed the biology of *Pherbellia* and described the larvae as obligate snail feeders, preying on species of various families of pulmonate terrestrial and aquatic snails.

Material and methods

A sampling campaign in nature reserve Heid des Gattes (Aywaille, prov. Liege) yielded two specimens of *Pherbellia* by using a sweep net in moist vegetation. To assess the current distribution of *Pherbellia rozkosnyi* in Europe, published records were gathered and digitized from VERBEKE (1967), GREVE & ROZKOŠNÝ (1981), ROZKOŠNÝ (1984), PERRY (1990), COLE (1997), MERZ (1996), KASSEBEER (2000), SPEIGHT (2012) and the Global Biodiversity Information Facility (GBIF, 2020). All records were georeferenced as best as possible and plotted with the open-source software R (RSTUDIOTEAM, 2019). The Royal Belgian Institute of Natural Sciences (RBINS) was visited in order to study the holotype, cotypes and paratypes of *P. rozkosnyi* (currently stored in box 26 of the General Collection).

MATERIAL EXAMINED. *Pherbellia rozkosnyi* Verbeke, 1967; 2 ♂♂; 30.VII.2020; leg. J. Mortelmans & D. Volckaert, det. J. Mortelmans, nature reserve Heid des Gattes, Aywaille (prov. Liege).



Fig. 1. *Pherbellia rozkosnyi* Verbeke, 1967, ♂. Habitus, lateral view. (scale bar = 1 mm).

Discussion

Pherbellia rozkosnyi (Fig. 1) is an uncommon species rarely seen in large numbers, although it is known from a broad European range (Fig. 2): Denmark, Finland, former Czechoslovakia [most likely this record originates from Slovakia as it was studied in ROZKOŠNÝ (1984), but no details on the location of that specimen were given], France, Germany, Great Britain, Ireland,

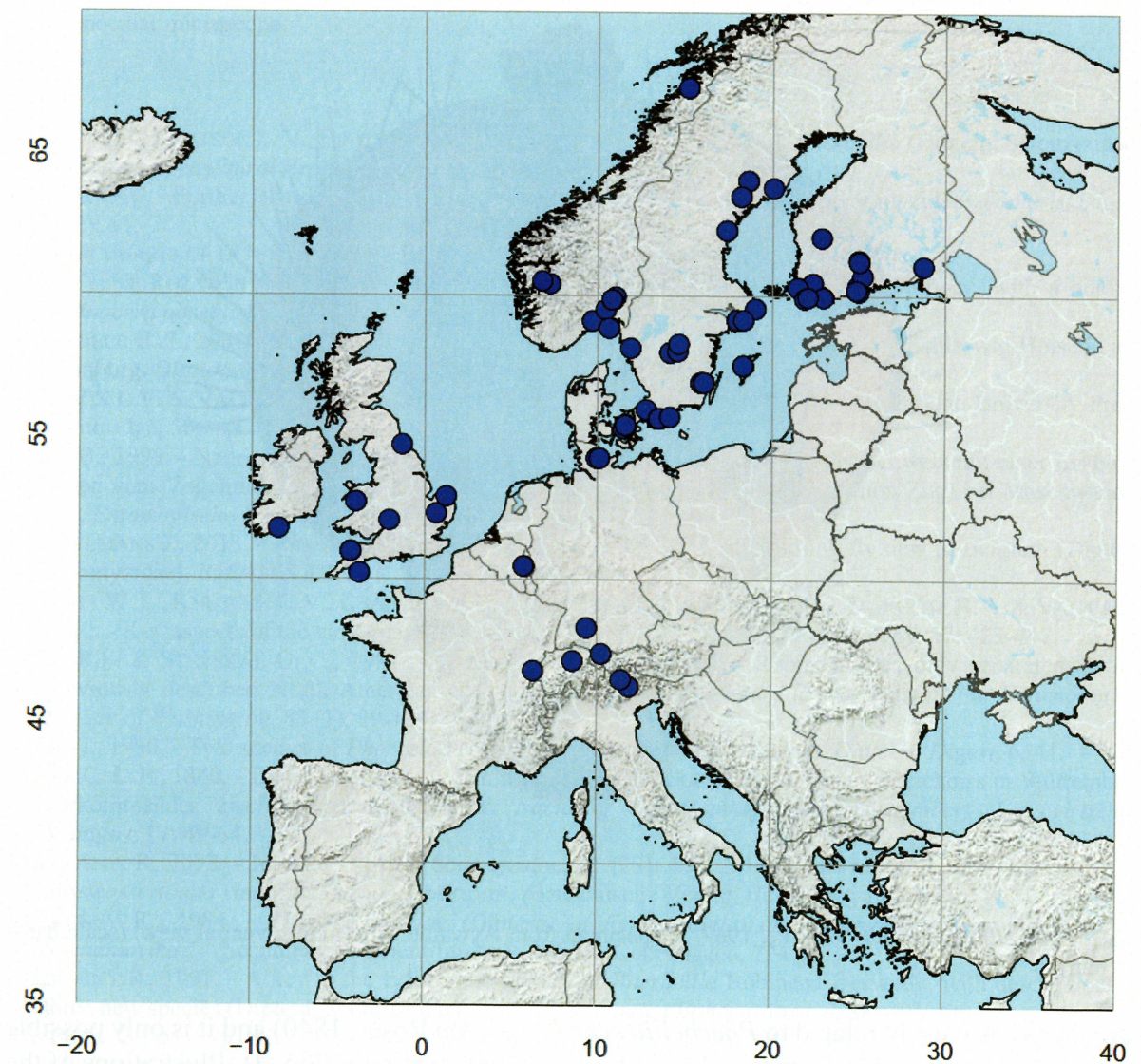


Fig 2. *Pherbellia rozkosnyi* Verbeke, 1967. Distribution map.

Italy, Norway and Sweden. Due to this distribution, the species was expected to occur in Belgium (see MORTELMANS, 2013).

Only few details are known on larval or adult ecology. PERRY (1990) mentions *P. rozkosnyi* from damp shaded woodland, a mixture of pines and mature deciduous woodland. COLE (1997) adds that the larvae are probably parasitoids of terrestrial snails and that adults are detected in broad-leaved woodlands, from damp limestone gorge to acid sandy soil. Finally, ecological notes are found in SPEIGHT (2012), quoted here: “the species is mentioned from forest, deciduous forest (acidophilous *Quercus* and *Betula*); subalpine coniferous forest of *Pinus uncinata*, humid grassland with tall-herb communities and suburban gardens”. The Belgian record largely agrees to these ecological notes, as the exact location in Heid de Gattes is in fact a damp, shady location with much *Filipendula ulmaria*; within a patch of forest consisting of *Alnus glutinosa* and *Betula* sp. There is a small stream in this patch, of very good water quality. The specific patch is surrounded by a xerophile quarry habitat. Other Sciomyzidae recorded from the site are *Trypetoptera punctulata* (Scopoli, 1763), *Pherbellia ventralis* (Fallén, 1820) and *Sepedon spinipes* (Scopoli, 1763).

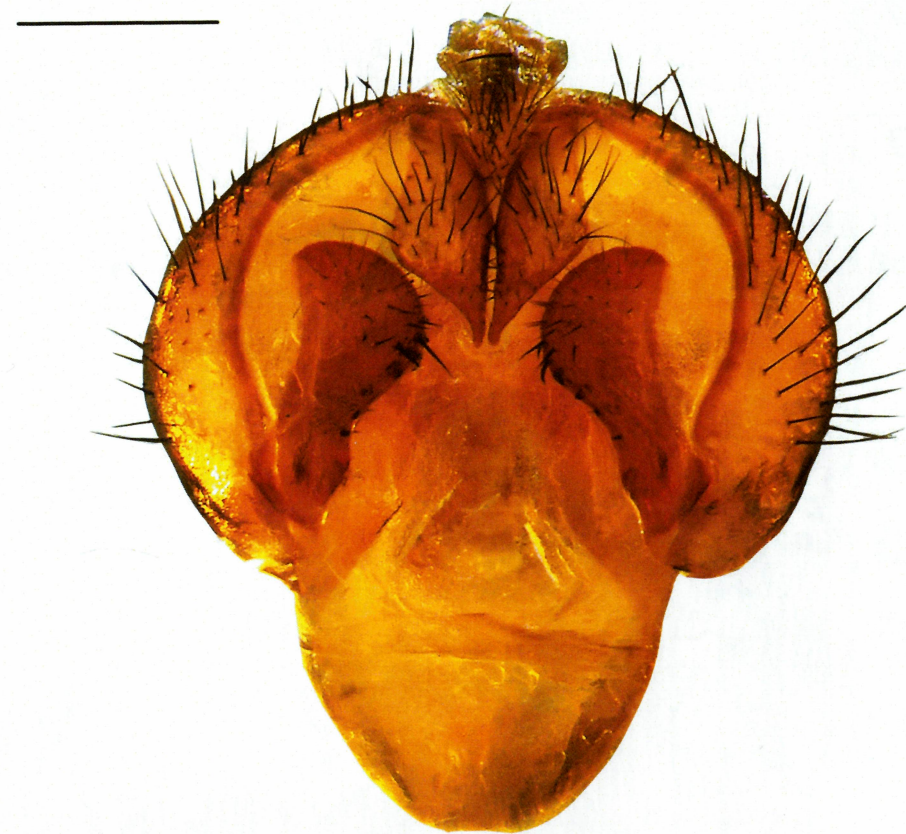


Fig 3. *Pherbellia rozkosnyi*, Verbeke, 1967, ♂ specimen from Aywaille. Andrium in ventral view. (scale bar = 0.5 mm).

The species is closely related to *Pherbellia scutellaris* (von Roser, 1840) and it is only possible to distinguish between both species by studying the male genitalia (Fig. 3). Illustrations of the male terminalia are published in VERBEKE (1967), ROZKOŠNÝ (1984), ROZKOŠNÝ (1991), VALA (1989) and ROZKOŠNÝ (2002). Other key characteristics are the mid-frontal strip which nearly reaches the middle of the frons, the short pubescent arista, the dense grey pubescence on the scutum, the yellow scutellum [contrasting to the scutum], the bare mesopleuron, the pteropleuron with two strong setae and 4-6 hairs and finally, the hind femur, which is yellow with dark brown spots at apex [posteriorly and anteriorly] (Fig. 1). Male specimens are therefore easily identified.

With the discussed discovery included, the genus *Pherbellia* now counts 15 species within Belgium but more are to be expected (see MORTELMANS, 2013). *Pherbellia rozkosnyi* is one of the rarer species of *Pherbellia* found in Belgium.

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