

First record of *Choerades mouchai* HRADSKÝ, 1985 (Diptera: Asilidae: Laphriinae) in Austria

Alexssandro CAMARGO & Isis Sá MENEZES

Abstract

The robber fly *Choerades mouchai* HRADSKÝ, 1985 is reported from Austria for the first time. A male specimen was collected in the Perchtoldsdorfer Heide, Mödling District, Lower Austria, confirming its distribution at the easternmost edge of the Alps. Images of the specimen are provided together with an updated distribution map and a brief discussion.

Key words. Distribution, Laphriini, Perchtoldsdorfer Heide, robber fly, survey, taxonomy.

Zusammenfassung

Die Raubfliege *Choerades mouchai* HRADSKÝ, 1985 wird zum ersten Mal aus Österreich gemeldet. Ein männliches Exemplar wurde auf der Perchtoldsdorfer Heide, Bezirk Mödling, Niederösterreich, gesammelt. Der neue Fund belegt die Verbreitung am Ostrand der Alpen. Bilder des Exemplars werden zusammen mit einer aktualisierten Verbreitungskarte und einer kurzen Diskussion bereit gestellt.

Introduction

Choerades WALKER, 1851 is a genus of 75 species occurring in all biogeographic regions except the Neotropics (LONDT & DIKOW 2017). More than 30 species have been already reported for the Palearctic region (BAEZ & WEINBERG 1981, HRADSKÝ 1985, LEHR 1988, 1991, YOUNG & HRADSKÝ 2007, DE BREE & VAN DEN BROEK 2024), with at least 15 species already reported in its European portion. In Austria, nine species have been recorded, including two taxonomically doubtful species, *Choerades dioctriaeformis* (MEIGEN, 1820) and *Choerades fulva* (MEIGEN, 1804) (LEHR 1988).

Throughout its complicated taxonomic history, *Choerades* has either been treated as a separate genus or combined with *Laphria* MEIGEN, 1803 (LONDT 2015) or with *Epholkiolaphria* HERMANN, 1914, originally a subgenus of *Laphria*, later synonymized with *Choerades* (HULL 1962). Despite their characteristic appearance, no distinctive character has been found upon which the group can be rigidly defined (OLDROYD 1975). As a result, the total number of assigned species might vary depending on which source is being followed. Furthermore, some obscurity lies in a few species which have been treated arbitrarily, either as synonyms or retained as valid species by different authors. A comprehensive revisionary work of the genus is lacking.

The representatives of this robber fly genus are medium-sized (1–2.5 cm), with a face that usually bears a few, long, wiry macrosetae, a scutum with usually short, appressed setae, and terminalia with gonopods often possessing spatulate extensions and tufts of stout, long macrosetae, characteristically coalesced in several species (HULL 1962).

They mostly inhabit forests, commonly found along forest and trail edges, along small clearings, or even in open areas where at least a few shrubs or trees stand. Some species seem to prefer drier oak and beech forests while others seem to prefer pine forests where they perch on a variety of structures at different levels, like broad leaves, grasses, branches of trees and shrubs, fallen wood, dead logs, and woodpiles. In those *Choerades* species for which records of oviposition or immature stages are recorded, development occurs in decaying wood, similar as in other Laphriinae. The larvae of some species develop under shallow root barks or in beetle galleries where they feed on beetle larvae (LEHR 1991, LONDT & DIKOW 2017, WOLFF et al. 2018).

In this work, *Choerades mouchai* HRADSKÝ, 1985 is reported for the first time in Austria. The record is based on a male specimen recently collected at Perchtoldsdorfer Heide, Mödling district, near Vienna. Images of the specimen are provided together with an updated distribution map.

Material and methods

Between May and August of 2024, a Diptera survey was carried out in the area of the Perchtoldsdorfer Heide, which is a part of the Vienna Woods Biosphere Reserve. This natural area of ca. 30 hectares is located in the market town of Perchtoldsdorf, district of Mödling, Lower Austria, and its northeast part borders the southwest portion of Vienna's outskirts. It consists of two main parts, the "Kleine Heide", a small area in the south, and the "Große Heide", the biggest portion, in the north. The park is located on the "Thermenlinie", a thermal fault line separating the Alps and the Vienna Basin. This area is at the transition zone between Alpine, Pannonian and sub-Mediterranean biogeographic regions, and among the most species-rich and diverse in Austria and Europe. The landscape of the park includes dry and semi-dry grasslands mainly surrounded by pine forests with residual oak and beech trees and smaller shrubs on the north and west flanks (FREUNDE DER PERCHTOLDSORFER HEIDE 2024).

The material studied in this work is deposited in the Natural History Museum Vienna (NHMW), Austria. The specimen was identified with the aid of a stereomicroscope Leica M165C with a coupled white light ring LED. For the identification, the original description of HRADSKÝ (1985) and the redescription, comparative table, and images provided by PÉTREMAND & BOSÁK (2024) were used. Images of the specimen were taken using a Canon-EOS R5 with an MP-E 65mm lens coupled to a manual macro-metric rail and using external white light. Stacked images were combined using Helicon Focus (v8.2.2) applying method C, smoothing 3. The map was generated with QGIS 3.22 Białowieża (long-term release) software. Shapefiles of territorial limits and raster were obtained at NATURAL EARTH (2024). Image plates were prepared and edited with Adobe Photoshop CS6 software.

Taxonomy

***Choerades* WALKER, 1851**

Choerades WALKER, 1851: 109. Type species: *Choerades aurigena* WALKER, 1851 (= *Laphria vulcanus* WIEDEMANN, 1828) (by subsequent monotypy).

Laphria (*Epholkiolaphria*) HERMANN, 1914: 89. Type species: not designated. HULL (1962) mistakenly reported *Laphria egregia* WULP, 1898 (listed as pertaining to *Laphria* (*Pagidiolaphria*))

HERMANN, 1914: 89) as the type species. HERMANN (1914: 89) listed a group of seven species – including *Laphria vulcanus* WIEDEMANN, 1828, currently considered a senior synonym of the type species of *Choerades* – as typical for *Epholkiolaphria*.

***Choerades mouchai* HRADSKÝ, 1985 (Figs 1–9)**

Choerades mouchai HRADSKÝ, 1985: 13–15, figs 1, 2. Type locality: Slovakia: Nizké Tartry, Lomnístá dolina; PÉTREMAND & BOSÁK 2024: 82 (new record for Switzerland, redescription).

Material examined. AT, NÖ, Mödling, Perchtoldsdorfer Heide, 48°07'43"N, 16°14'46"E, 320 m, 29.V.2024, leg. A. Camargo & I. Menezes / NHMW-ZOO-DIP-0001665 (1 ♂, NHMW).

Distribution. Austria (new record), Romania, Slovakia, and Switzerland (HRADSKÝ 1985, PÉTREMAND & BOSÁK 2024) (Fig. 9).

Phenology. Based on the material examined in the present work and also on data from literature (HRADSKÝ 1985, PÉTREMAND & BOSÁK 2024), this species was collected from mid-May to August, corresponding to late spring and summer seasons in the northern hemisphere.

Discussion

The type material of this species was collected more than 60 years ago and included two males from Slovakia and two males from Romania (north-western and south-eastern Carpathians, respectively) (HRADSKÝ 1985). Recently, three additional males were found in Switzerland (PÉTREMAND & BOSÁK 2024). The eighth male specimen is reported from Austria in the present study, reinforcing the assumption that this is a rare species, scarcely represented in collections.

The specimen was collected in the northern portion of the Perchtoldsdorfer Heide, in an area denominated “Saugraben”. It was sitting on a large leaf of a shrub illuminated by a ray of sunshine. The specimen was collected inside of a pine forest (*Pinus* sp.), about ten meters from the forest edge, with a more or less open understory with a few shrubs and sparse grass covering the ground. Some oak and beech trees are mixed at the edge of this pine forest. The pine forest is surrounded on its south and southeast flanks by a dry grassland with smaller and sparser shrubs along the forest border.

The specimens collected by PÉTREMAND & BOSÁK (2024) in the Alps were also found in a dry *Pinus sylvestris* forest mixed with *Quercus pubescens* (Ononido-pinion) and in old and dry *Fagus* slope forest. In the same work, based on a personal communication with Milan Hradský, it is reported that this species was found in *Pinus mugo* forests in the Carpathians.

Since there are no keys to encompass all currently known Palaearctic and European species of *Choerades*, PÉTREMAND & BOSÁK (2024) presented an additional table of characters together with their redescription of *Choerades mouchai*, to distinguish it from the more closely related, morphologically similar species, i.e. *Choerades femorata* (MEIGEN, 1804) and *Choerades marginata* (LINNAEUS, 1758). Some of these characters include the mystax with mixed, long, black and white-yellow macrosetae and setae (Figs 1, 3, 4); face with white setae on sides (Figs 1, 3, 4); scutum with paramedian stripes and pre- and post-sutural spots apruinose with bluish reflections; areas between stripes and spots, and posterior margin of scutum brownish pruinose; scutum with long yellow setae (undulate distally) at posterior margin (Figs 1, 2); scutellum with long yellow macrosetae at posterior margin



Figs 1–2. *Choerades mouchai*, male. Habitus, lateral (1), and dorsal (2). Scale bars: 1 mm.



Figs 3–8. *Choerades mouchai*, male. Head, frontal (3), and lateral (4). Terminalia, ventral (5), dorsal (6), lateral (7), and dorsolateral (8). Scale bars: 1 mm.

(undulate distally) (Figs 1, 2); anepisternum with thin black setae dorsally and thin yellow setae ventrally (Figs 1, 2); terminalia with gonopods dark reddish (Figs 5–8); inner ventral margin of gonopods with several black macrosetae with a group of three unaligned black macrosetae sub-apically (Figs 6, 8); epandrium black setose with three black macrosetae at each posterior corner (Fig. 5); cercus with yellow setae (Figs 5, 7).

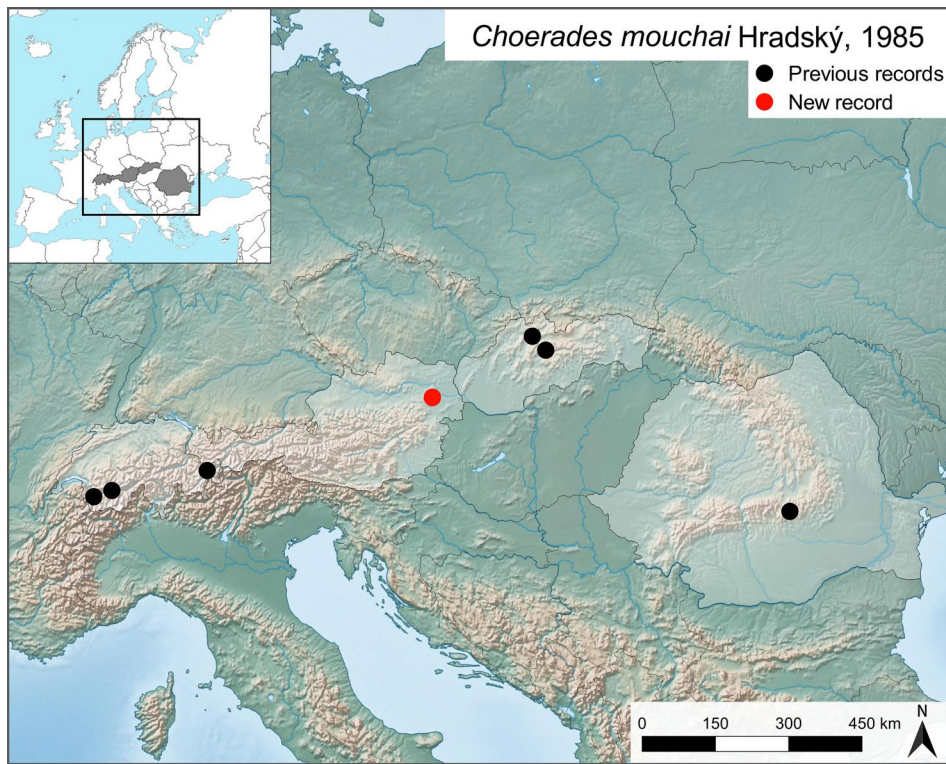


Fig. 9. Distribution map of *Choerades mouchai*.

Furthermore, other *Choerades* species are also expected to be found within the Austrian territorial limits, for example, *Choerades amurensis* (HERMANN, 1914) which was reported from South Germany, in localities close to the Austrian border (WOLFF et al. 2021); and *Choerades castellanii* (HRADSKÝ, 1962) which was also described from Slovakia and was already found in Germany (GELLER-GRIMM et al. 2003) and Hungary (BOERAEVE et al 2019).

The present record increases the number of *Choerades* species in Austria to ten (including the taxonomically problematic species *Choerades dioctriaeformis* (MEIGEN, 1820) and *Choerades fulva* (MEIGEN, 1804)). About 100 species of robber flies occur in Austria, however, several species are of doubtful status and some old literature records are difficult to confirm as well. At this moment, an updated checklist of the Austrian robber fly species is in preparation and a more comprehensive list of species will be available in the next years.

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Authors' address: Alexssandro CAMARGO &
 Isis Sá MENEZES (Associate Researcher),
 Natural History Museum, 2nd Zoological Department,
 Burgring 7, 1010 Vienna, Austria
 E-mail: alexssandro.camargo@nhm.at, Isis.sa.menezes@gmail.com
<https://orcid.org/0000-0001-7408-7223> (Camargo)
<https://orcid.org/0000-0002-4212-367X> (Menezes)