

First records of *Bombus haematurus* KRIECHBAUMER, 1870 and *Nomada moeschleri* ALFKEN, 1913 (Hymenoptera: Apidae) for the state of Vienna (Austria)

Silas BOSSERT* & Bernhard SCHNELLER*

Abstract

Bombus haematurus KRIECHBAUMER, 1870 and *Nomada moeschleri* ALFKEN, 1913 were previously unknown from Vienna. This note provides the first records for these species. In addition, their distribution and the spreading pattern of *B. haematurus* are discussed.

Key words: Vienna, Apidae, faunistic records, *Bombus haematurus*, bumblebees, *Nomada moeschleri*.

Zusammenfassung

Die Erstfunde der beiden Bienenarten *Bombus haematurus* KRIECHBAUMER, 1870 und *Nomada moeschleri* ALFKEN, 1913 für das Bundesland Wien werden dokumentiert. Zusätzlich werden die Verbreitung der beiden Arten und die Ausbreitung von *Bombus haematurus* diskutiert.

Introduction

Vienna has a small but active scene of melittologists engaged in the faunistics of bees (Hymenoptera: Apidae) who have published a remarkable number of studies recently (ZETTEL & al. 2002, 2004, 2005, 2006, 2008a, 2008b, 2011, 2013, PACHINGER 2003, 2008, 2010, HÖLZLER 2004, PACHINGER & HÖLZLER 2006, ZETTEL & WIESBAUER 2011, 2014). According to the current checklist of Austria (GUSENLEITNER & al. 2012), the species composition of Vienna comprises more than 60% of the 690 bee species that have been recorded for Austria. The large number of recently published first records for many species (see above mentioned literature) strongly indicates that the checklist is expandable. In the present study, we present our findings on two new bee species for Vienna.

The specimens were captured in Vienna and their identification was verified by experts for the respective groups. The authors are indebted to Johann Neumayer (*Bombus*) and Maximilian Schwarz (*Nomada*).

Bombus (Pyrobombus) haematurus KRIECHBAUMER, 1870

Vienna: Augarten, N48.227152° E 16.375465°, 158 m, 7.IV.2014, on *Lamium maculatum* L., 1 queen, photographed by B. Schneller; Lobau, N48.161944° E 16.552222°, 164 m, 15.V.2014, 1 queen, leg. T. Küpper, coll. J. Neumayer; Donauinsel, N48.211389° E 16.434722°, 164 m, 21.V.2014, 1 worker, leg. T. Küpper, coll. J. Neumayer; Lobau, N48°08'38.42", E 16°33'47.76", 150 m, 22.VI.2014, 1 worker, leg. H. Wiesbauer.

* MSc. Silas BOSSERT & Mag. Bernhard SCHNELLER, Department of Integrative Zoology, University of Vienna, Althanstraße 14, UZA 1, 1090 Vienna, Austria.
E-Mail: silas.bossert@googlemail.com; be.schneller@googlemail.com

Comments: Since the first captured specimen was a pollen collecting queen, only a photograph was taken and the specimen was released to avoid impeding the development of the respective nest. The finding of a worker on the Donauinsel provided evidence for an established nest.

Discussion: By the mid-20th century, *Bombus haematurus* was only known to occur in greater parts of the Balkan, southern Romania, Bulgaria, northern Anatolia and the Caucasus region (e.g., PITTIONI 1938, KNECHTEL 1955, REINIG 1967, 1974, TKALCŮ 1969). REINIG (1974) reported his finding from Serbia as the most northwestern record, indicating the border of distribution at that time.

In the past years, a number of first records for more western and northern countries have been published and reliable data is available from Slovenia (JENIČ & al. 2010), Hungary (JÓZAN 1995, 2001, SÁROSPATAKI & al. 2005), Slovakia (SMETANA & ŠIMA 2005, ŠIMA & SMETANA 2009), and Austria (JÓZAN 1995, NEUMAYER 2004, TEPPNER 2010). Furthermore, the species was recently recorded from the Czech Republic for the first time in Pálava (J. Straka, pers. comm.). The data reveal an extensive migration/spreading to the north and west, reaching the foothills of the Alps (Fig. 1). The spreading pattern corresponds to that described by MAZZUCCO & MAZZUCCO (2007) who hypothesize that most bee species occurring in Lower Austria (which represents the largest part of eastern Austria) originated from Anatolia. According to this theory, the bees followed the expansion of agriculture as it spread over the eastern Mediterranean to the Pannonian plains. This pattern of habitat expansion stands in contrast to the spreading pattern of *Bombus semenoviellus* SKORIKOV, 1910, another currently spreading bumblebee species which was described to occur in the Russian taiga and which has recently expanded into Western Europe (e.g., RASMONT & al. 2005, STREINZER 2010, ŠIMA & SMETANA 2012). However, the specific factors that promote the rapid spreading of *B. haematurus* currently and over recent decades remain uncertain. Furthermore, it is unclear when and where the species began to spread. It seems highly likely that the species was already spreading when REINIG (1974) found it in northwestern Serbia, since the first records for Hungary followed fairly quickly at the beginning of the 1980's (SÁROSPATAKI & al. 2005). However, the current expansion occurs with remarkable speed. Assuming that the findings of REINIG (1974) from northwestern Serbia represent the western border of distribution at that time, *B. haematurus* has spread more than 400 km as the crow flies in four decades, suggesting more than ten kilometers per year.

Our findings in Vienna indicate that the trend of spreading toward the northwest should continue. This is in accordance with the observations of P. Šima (pers. comm.), who described an even more northern record of *B. haematurus* from the Tribeč mountain range in Slovakia.

Bombus haematurus occurs in a variety of different habitats. Previously described as a species related to woodlands (REINIG 1967, 1970, TKALCŮ 1969, BAKER 1996, ŠIMA & SMETANA 2009), *B. haematurus* is likely able to cope with more anthropogenically

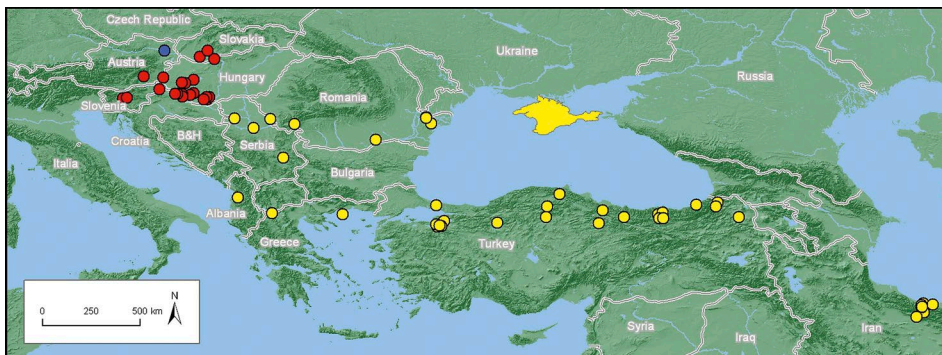


Fig. 1: Distribution map of *Bombus haematurus* from JENIČ & al. (2010). The red circles indicate the collection sites northwestern to the Fruška Gora, where REINIG (1974) conducted the most northwestern record at this time. The blue circle represents the record from this study. New findings from Slovenia (A. Jenič, pers. comm.), Austria (J. Neumayer, pers. comm.), Czech Republic (J. Straka, pers. comm.) and Slovakia (P. Šima, pers. comm.) are not included in the map. The map was kindly provided by Aljaž Jenič. A regularly updated distribution map of *B. haematurus* can be found on the website of the Atlas of the European Bees (RASMONT & ISERBYT 2010–2013).

influenced habitats as well. Aljaz Jenič (pers. comm.) supposes that in Slovenia *B. haematurus* is more common in cultivated areas than in more natural environments. The recent records from Austria correspond to his assumption, since the species was collected in fallow land (NEUMAYER 2004), gardens (J. Neumayer, pers. comm.) and in an abandoned quarry (J.F. Gokcezade, pers. comm.). TEPPNER (2010) even observed specimens in a greenhouse of the Botanic Garden of the University of Graz (Styria). We captured the first specimen in the Augarten, a highly frequented park in the city centre of Vienna.

In conclusion, the variety of different habitats indicates that *B. haematurus* is an euryoecious-hylophilous species rather than a stenoecious-hylophilous species, as described previously (TKALCŮ 1969, REINIG 1970).

Nomada moeschleri ALFKEN, 1913

Vienna: Höhenstraße, N48.269562 E16.307250, 393 m, 9.VI.2013, 1 ♀, leg. & coll. S. Bossert.

Comment: The specimen was hovering above the ground and probably searching for a host nest.

Discussion: *Nomada moeschleri* has been described to be boreo-alpine (EBMER & al. 1994) and seems to have its main distribution in Central and Eastern Europe. Among other regions, it has been reported from Germany (e.g., WESTRICH 1990, VAN DER SMISSEN 1991, 1995, WOLF 1994, BURGER 2005), Switzerland (NEUMEYER 1995, AMIET & al. 2007), Czech Republic (STRAKA & al. 2004), the Netherlands (SMIT & MEGENS 2006), and Scandinavia (NILSSON 2003, MADSEN & CALABUIG 2012). According to GUSENLEITNER & al. (2012), *N. moeschleri* is present in six Austrian states, but not in Vienna, Carinthia and Burgenland. According to the literature, the species was col-

lected in a number of different habitats, but the majority of captures were reported from woodlands and clearings. This also applies to the collected specimen from this study, which was caught in a clearing of a beech-dominated forest in the northern Vienna Woods near the Vienna Höhenstraße. Over the past years, there has been a lively debate about the potential host species of *N. moeschleri* (see SAURE 1995 for a review). Unfortunately, no observations of nest visits could be made when conducting fieldwork for the study at hand. Consequently, we cannot contribute anything new to the identification of a host species. However, recent observations by DUBITZKY & al. (2005) indicate that *Andrena lathyri* ALFKEN, 1899 may be a host species of *N. moeschleri*.

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