

## Short communication

# First record of *Bombus (Alpigenobombus) wurflenii* Radoszkowski, 1860 in the Kola Peninsula, NW Russia

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In this paper we present the first record of *Bombus wurflenii* from northern Russia. This species was found in the southwestern part of the Kola Peninsula, near the town of Kandalaksha in 2016. The nearest confirmed record of the species is in northern Sweden. In Russia, *B. wurflenii* was known earlier but only from southern Ural. The status of the population of *B. wurflenii* in the Kola Peninsula is unknown and needs further research.

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## INTRODUCTION

*Bombus (Alpigenobombus) wurflenii* Radoszkowski, 1860 is widespread in Europe and is typical of mountain regions of Scandinavia, Central and Eastern Europe, northern Spain, the Balkans, the Caucasus and northern Turkey (Løken 1973; Reinig & Rasmont 1988; Rasmont & Iserbyt 2010). There is one old record from northern Finland (Suomussalmi Municipality, Ruhtinansalmi Village, 30.06.1926, leg. O. Sorsakoski) (Söderman & Leinonen 2003: 286), but it is doubtful, according to the opinions of some authors (Söderman & Leinonen 2003; Rasmont & Iserbyt 2010). In Russia, *B. wurflenii* is only known from southern Ural (Reinig & Rasmont 1988; Rasmont & Iserbyt 2010). It is included in the Red Book of the Russian Federation as a species with decreasing number (category 2) (Panfilov & Berezin 2001).

Until recently, records of *B. wurflenii* from the European North of Russia, and particularly the Kola Peninsula, were not

known. Compared with neighbouring regions (northern parts of Finland, Norway and Sweden), the bumblebee fauna of the Kola Peninsula remains insufficiently studied (Potapov et al. 2015). Most of the collected materials have been collected from the coast of the Barents Sea and from the Khibiny Mountains. Particularly, the southern part of the region has been poorly studied. A review of the bumblebee fauna of the Kola Peninsula and other parts of the Murmansk Region is presented by Paukkunen & Kozlov (2015).

In this paper, we present the first record of *B. wurflenii* from the Kola Peninsula.

## MATERIAL AND METHODS

Bumblebees were collected in the vicinity of the town of Kandalaksha, which is located in the southwestern part of the Kola Peninsula (Figure 1). Bumblebee individuals were

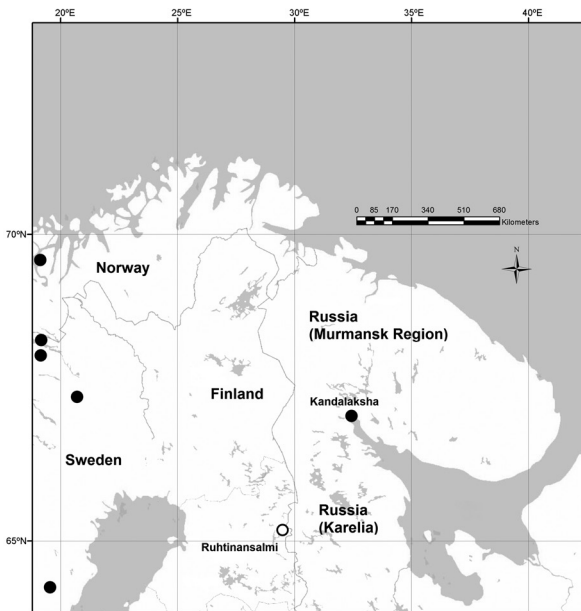


Figure 1. Map of the study region. The sampling localities from Kandalaksha (Russia, Murmansk Region) and Scandinavian countries are shown as a black circles. The unverified localities from Ruhtinansalmi (Finland) is shown as an open circle.

found near a roadside that runs alongside the coniferous forest (67°08'43"N; 32°25'55"E) on the 26<sup>th</sup> and 28<sup>th</sup> of July 2016, and they were caught with an entomological net on *Cirsium arvense* (L.) Scop. The total number of specimens is 6. Three individuals are workers and three are males.

Bumblebees were identified by using the key from Løken (1973). The nomenclature follows Williams (2017). Images of the specimens were taken by using a Leica EZ4D stereomicroscope (Leica Microsystems GmbH, Germany).

All specimens are deposited in the Russian Museum of the Biodiversity Hotspots (RMBH), Federal Center for Integrated Arctic Research (FCIARctic), Russian Academy of Sciences (RAS), Arkhangelsk, Russia.

The map in Figure 1 was produced by using ArcGIS 10.0 software (Environmental Systems Research Institute, ESRI®).

## RESULTS

All of the six specimens of bumblebees belong to *B. wurflenii* ssp. *brevigena* Thompson, 1870 (Reinig & Rasmont 1988; Söderman & Leinonen 2003). General views of specimens of worker and male with its genital capsule are shown in Figure 2. This subspecies is dark coloured, while females have black

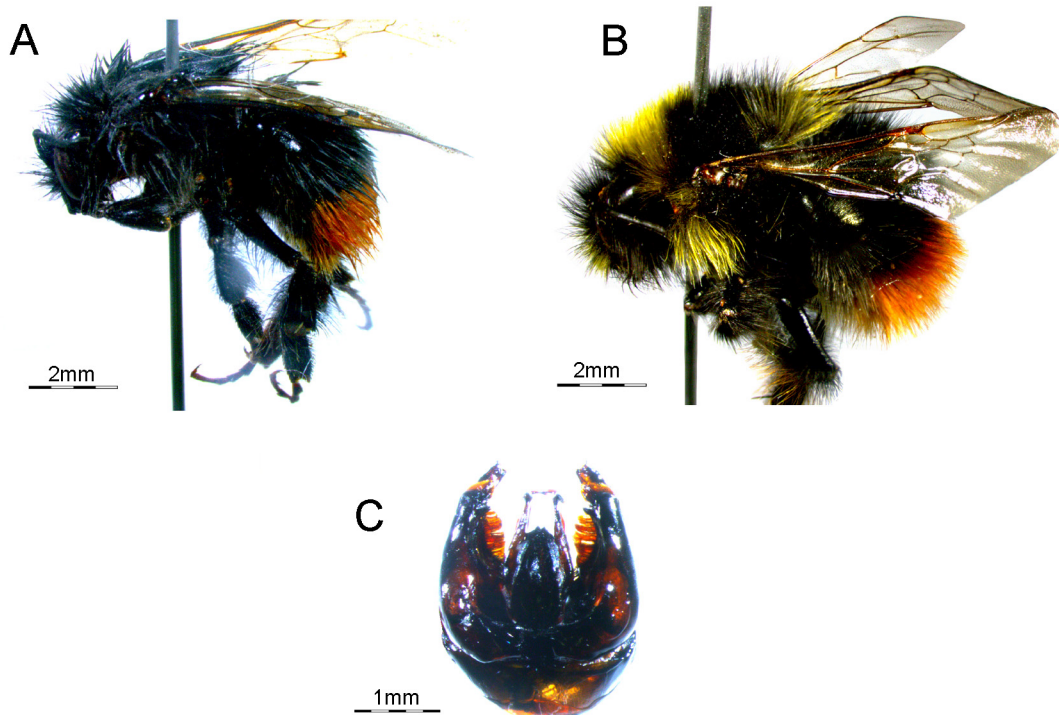


Figure 2. Morphological patterns of the studied specimens of *Bombus wurflenii*: general view of worker (a), male (b), and genital capsule (c). Photo: Grigory Potapov.

thorax and black three first tergites with very slight admixture of yellow hairs (Løken 1973; Reinig & Rasmont 1988). This subspecies inhabits Scandinavia. The nominate subspecies occurs in the Caucasus and northern Turkey (Reinig & Rasmont 1988).

## DISCUSSION

To the best of our knowledge, our finding of *B. wurflenii* is the first for northern Russia. In the Kola Peninsula and other parts of the Murmansk Region, this species has not been recorded earlier (Paukkunen & Kozlov 2015; Potapov 2015). This species has not been found in other regions of northern Russia, i.e. either Karelia or Arkhangelsk Region (Söderman & Leinonen 2003; Potapov & Kolosova 2016). The nearest confirmed record of *B. wurflenii* has been made in northern Sweden (Rasmont & Iserbyt 2010).

If we assume that *B. wurflenii* appeared in the Kola Peninsula recently, the possible migratory pathways of this species can pass from northern Sweden and Norway through northern Finland. On the other hand, there is a possibility that the species has been overlooked in the Murmansk Region. It is noteworthy that the colouration of workers of *B. wurflenii* bears some resemblance to *B. lapidarius* L., 1758, and the colouration of males of this species bears some resemblance to *B. pratorum* L., 1761. However, *B. lapidarius* is unknown from the Murmansk Region and northern Karelia (Rasmont & Iserbyt 2010). *B. pratorum* and *B. wurflenii* have distinctly different male genitalia (Løken 1973), hence it is unlikely that these species would be wrongly identified. Some authors, who based their findings on large collections and summarised the materials of the bumblebee fauna for the different districts of the Murmansk Region, have never recorded *B. wurflenii* in the region (Potapov 2015; Paukkunen & Kozlov 2015). It is more likely that the finding of *B. wurflenii* is caused by insufficient knowledge of the bumblebee fauna in the Murmansk Region.

In support of the first assumption, it is noteworthy that in recent decades some bumblebee species have expanded their distribution northwards in Fennoscandia (Martinet et al. 2015). With respect to *B. lapidarius* (Linnaeus, 1758) and *B. terrestris* (Linnaeus, 1758), both species dispersed to the North above latitude 68°N (Martinet et al. 2015). Also, *B. wurflenii* has expanded its distribution in Scandinavia, and “now occurs 200 km north of its 1973 limits”, which is above latitude 69°N (Martinet et al. 2015: 305). The eastwards expansion of *B. wurflenii* is also quite possible. According to the models of the suitable areas for *B. wurflenii* with respect to the future (Rasmont et al. 2015), the areas adjacent to the Kola Peninsula can be considered as future areas of occurrence for this species.

Further research is necessary in order to assess the status of the population of *B. wurflenii* in the Kola Peninsula and adjacent areas.

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