

***Bombus (Cullumanobombus) semenoviellus* (Hymenoptera: Apidae: Bombini)
new species for the bumble bee fauna of Slovakia**

***Bombus (Cullumanobombus) semenoviellus* (Hymenoptera: Apidae: Bombini)
nový druh pre faunu čmeľov Slovenska**

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Abstract. The first records of *Bombus (Cullumanobombus) semenoviellus* Skorikov, 1910 from Slovakia are summarized. This bumble bee species has been recorded from localities in the foothills of the High Tatras (Podtatranská kotlina, Slovakia) at elevations between 670–850 m a.s.l. Faunistic data are described in detail, and a description of localities and a distribution map is given. The recent expansion of *B. semenoviellus* is also briefly discussed.

INTRODUCTION

Bombus (Cullumanobombus) semenoviellus Skorikov, 1910 is a widely distributed Palaearctic bumble bee species. Its distribution area is rather extensive, and lies mainly in a strip between latitudes 52° and 58° North. The distribution area of this species extends from Central Europe, which is now the westernmost border (Van der Smissen & Rasmont 2000), through the entire territory of Russia to the Sea of Okhotsk. Originally, *B. semenoviellus* was known from Russia as a typical species of the Taiga. The type material originates from localities east-southeast of Moscow (Přidal & Tkalců 2003). Data on the distribution of *B. semenoviellus* from Russia can be found in number of publications (e.g. Skorikov 1922, Popov 1923, Kazanskii 1925, Panfilov 1957, Panfilov et al. 1961, Sysoletina 1970, Konusova & Yaniushkin 2000, Konusova et al. 2005, Dolgin & Filippov 2006, Bolotov & Kolosova 2006, Adakhovskiy 2008, Lykov 2008, Levchenko 2009, Proshchalykin & Kupianskaya 2009, Kolosova 2010, Potapov 2010, Eremeeva et al. 2011).

In the last decades, a considerable expansion of *B. semenoviellus* into Central Europe has been observed. The species has spread in a western direction through areas alongside the Baltic Sea. In the second half of the 20th century, the first record from Finland was recorded and published (Elfving 1965). The first record from Lithuania was confirmed in the 1980s, and the territory of Lithuania became for a time the westernmost border of the distribution area of *B. semenoviellus* (Monsevičius 1993, 1995). In 1988, the first specimen of *B. semenoviellus* was found and collected in eastern Poland. Unfortunately, the specimen was misidentified as *B. hortorum*, and was deposited in one of the bumble bee collections in Poland (W. Celary,

pers. comm. 2011). About 15 years later, during the revision of several Polish bee collections, W. Celary found this specimen and identified it correctly as *B. semenoviellus* (Celary 2007, W. Celary, pers. comm. 2011). In the meantime, another specimen had been collected close to Warsaw. This new finding resulted in the publication of the first record of *B. semenoviellus* from Poland in 1995 (Plewka 1995). Today it is possible to find this species all over Poland (Banaszak et al. 2006a, Banaszak 2006b, Kosior et al. 2008, Banaszak 2009). The first discovery of the species from Germany was published by Smissen & Rasmont (2000). Subsequent records have been well documented in several faunistic works (Burger & Poller 2003, Přidal & Tkalců 2003, Kornmilch 2005, Körner 2006, 2007, Lange 2008). The first publication mentioning *B. semenoviellus* in Ukraine (north-eastern part of the country) is from 2001 (Sheshurak & Matiushenko 2001), however T. Pawlikowski was aware of its presence in Ukraine earlier (Pawlikowski 1996). According to I. Konovalova (pers. comm. 2011), this species belongs to the bumble bee fauna of the boreal zone of Ukraine and was present there much earlier than its first published record in the present century. The situation in Western Ukraine is different; *B. semenoviellus* was not present in the past and has only recently been confirmed for this part of the country (Konovalova 2002, 2007). Konovalova's publications document the spread of *B. semenoviellus* in a western direction in Ukraine. The discovery and collection of a small worker of *B. semenoviellus* at "Stráně u splavu" Nature Reserve allowed the documentation of the presence of this species in the Czech Republic (Přidal & Tkalců 2003). Additional recent records are known today from other parts of the Czech Republic (Hovorka et al. 2006, Přidal & Komzáková 2009, A. Přidal, pers. comm. 2011). Expansion in a southwestern direction is demonstrated by the record from Austria, where a male specimen of *B. semenoviellus* was caught in July 2009 near Sachsendorf (Streinzer 2010). The species is not yet known from Hungary (M. Sárospataki, pers. comm. 2011), but its future presence there cannot be excluded. In this paper, we present the first records from Slovakia.

MATERIAL AND METHODS

Bumble bees were collected and observed, and determined using Přidal & Tkalců (2003). Each locality of collection or observation contains these data: the number of the faunistic code of the Central European mapping grid system (Ehrendorfer & Hamann 1965), date of collection or observation, number of specimens collected or observed, sex (female, worker(s)) of the specimens listed, a short description of the collection/observation site, altitude, plant species on which the specimen was observed or collected, name of the collector (leg.), observer (obs.), determinator (det.), and deposition of the collected specimen(s) (PS = coll. P. Šima, Nové Zámky, Slovakia; TML = coll. Tekovské múzeum, Levice, Slovakia).

RESULTS

Bombus semenoviellus Skorikov, 1910

Material examined. Slovakia: Podtatranská kotlina: Tatranská Lomnica (6887), 31.vii.2011, 2 workers, ruderalised meadow at autocamp Tatraneč, 740 m a.s.l., *Angelica sylvestris*, V. Smetana leg. et det., TML; same data, 3 workers, P. Šima leg. et det., PS; Tatranská Lomnica (6887), 1.x.2011, 1 ♀, forest edge in the urbanized part of Tatranská Lomnica town, 850 m a.s.l., *Centaurea phrygia*, P. Šima leg. et det., PS; **Podtatranská kotlina:** Belianske lúky National Natural Reserve (6788), 1.viii.2011, 4 workers, damp meadow, 670–710 m a.s.l., *Angelica*

sylvestris, V. Smetana leg. et det., TML.; same data, 1 worker, *Cirsium arvense*, TML.; same data, 1 worker, *Geranium palustre*, TML.; same data, 2 workers, peatbog, *Valeriana officinalis*, TML.; same data, 2 workers, damp meadow, *Angelica sylvestris*, P. Šima leg. et det., PS.

The current distribution of *B. semenoviellus* in Slovakia is mapped using the Central European mapping grid system (Fig. 1).

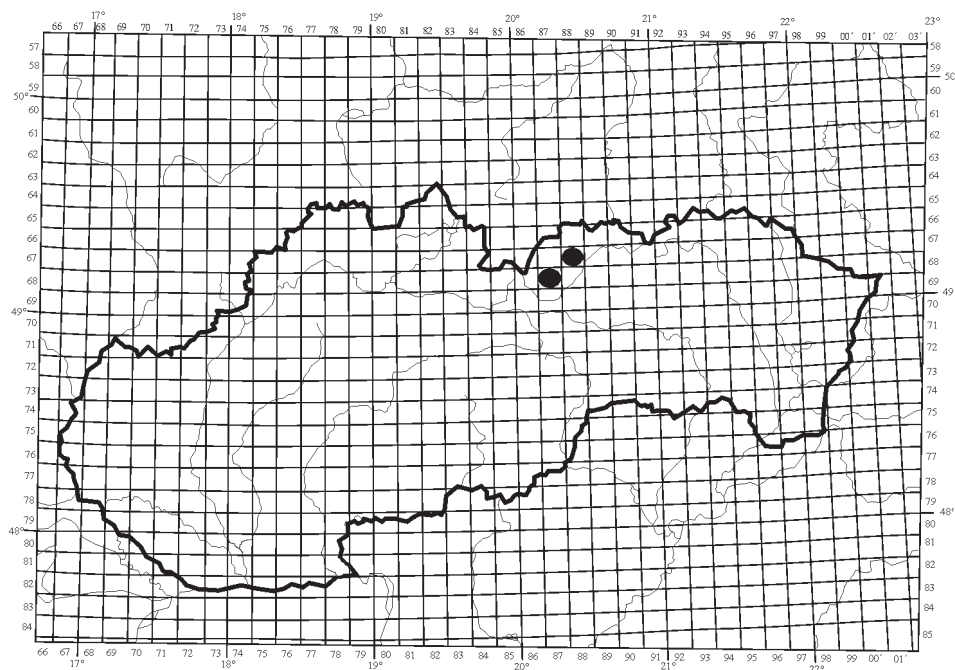


Fig. 1. Occurrence of *Bombus semenoviellus* Skorikov in Slovakia.

Obr. 1. Výskyt *Bombus semenoviellus* Skorikov na Slovensku.

DISCUSSION

Females of *B. semenoviellus* we recorded have yellow supraclypeal area, yellow collar and scutellar band on the dorsal part of thorax, and the interalar band is a black colour. The first abdominal tergite (T1) is covered with yellow hairs; T4 – T6 with white hairs. The rest of the body is black. The above described colour pattern is in accordance with publications of Pawlikowski (1996) and Pridal & Tkalců (2003). In colouration pattern, *Bombus semenoviellus* resembles *B. jonellus* (Kirby, 1802), *B. hortorum* (Linnaeus, 1761) and *B. ruderatus* (Fabricius, 1775). This fact may contribute to the possible misidentification of *B. semenoviellus* (especially females) during faunistic field work; therefore, characteristics other than colour pattern should be employed when distinguishing *B. semenoviellus* from species of similar colouration. Important diagnostic characters and differences among the subgenera *Pyrobombus* Dalla Torre, 1880, *Megabombus* Dalla Torre, 1880 and *Cullumanobombus* Vogt, 1911 are discussed and well described in Pridal & Tkalců (2003).

On the basis of the ecological preferences of the species, *B. semenoviellus* is considered as a stenotopic hylophilous species, inhabiting mostly forests and meadows of colder areas up to 1100 m a.s.l. During the last few years, its ecological needs have obviously been changing. As in the cases of *B. hypnorum* (Linnaeus, 1758), *B. haematurus* Kriechbaumer, 1870 and *B. pratorum* (Linnaeus, 1761), certain adaptations to relatively dry and warm biotopes have been observed (Přidal & Tkalců 2003, Banaszak et al. 2006a), showing certain plasticity in ecological adaptations. This species could also be found in ruderalised areas and in agricultural landscapes (Potapov 2010, Streinzer 2010, G. Potapov, pers. comm. 2011). As Antonín Přidal has stated (Přidal 2005), there is a real need to explore and re-evaluate the ecological requirements of *B. semenoviellus*, which seem to have become wider than previously observed.

From the trophic point of view, *B. semenoviellus* belongs to the polylectic bumble bee species that have been recorded on the flowers of the following plants; *Trifolium pratense*, *Hieracium murorum*, *Inula* sp., *Primula* sp., *Carduus* sp., *Tanacetum vulgare*, *Cirsium* sp., *Taraxacum officinale*, *Knautia arvensis*, *Solidago virgaurea*, *Hypochoeris radicata*, *Anthemis* sp., *Centaurea* sp., *Acer platanoides*, *Anchusa officinalis*, *Vicia* sp., *Ranunculus* sp., *Anthemis tinctoria*, *Epilobium angustifolium*, *Helianthus annuus*, *Rubus idaeus*, *Angelica sylvestris*, *Centaurea phrygia*, *Cirsium arvense*, *Geranium palustre*, *Valeriana officinalis*, *Thymus serpyllum*, *Jasione montana*. According to published records and our own observations, we can affirm that *B. semenoviellus* shows a preference towards plant species that have shallow, easily accessible flowers.

The presence of *B. semenoviellus* in Slovakia was previously predicted by Přidal & Tkalců (2003), but was not recorded until late July 2011. Since the surveys of bumble bees in Slovakia have been quite intensive in the last few years, and since we did not record this species in the western, southern or eastern parts of the country, we assume that *B. semenoviellus* arrived in Slovakia most probably from southern Poland.

After a proper synthesis of data available from a number of publications from the last three decades, it became clear that *B. semenoviellus* belongs to the group of bumble bee species that have expanded in Central Europe. The exact reasons and factors responsible for this drift are still unknown.

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SÚHRN

Bombus semenoviellus Skorikov, 1910 je široko rozšírený palearktický druh čmeľa. Jeho areál rozšírenia je pomerne rozsiahly, tiahne sa najmä v páse medzi 52. a 58. stupňom severnej zemepisnej šírky, pričom západnú hranicu jeho výskytu tvorí v súčasnosti Stredná Európa (Van der Smissen & Rasmont 2000), ďalej sa jeho areál rozšírenia tiahne celým územím Ruska, až na východ po Ochotské more. V období posledných niekoľkých desaťročí pozorujeme výraznú expanziu tohto pôvodne tajgového druhu čmeľa do oblasti strednej Európy, pričom sa jedná o šírenie v západnom smere cez oblasti ležiace pri Baltickom mori. Prvé nálezy z územia Slovenska boli zaznamenané v roku 2011 a to na troch lokalitách situovaných v Podtatranskej kotline, ležiacich v nadmorských výškach v rozmedzí od 670 až do 850 m n.m. Na spomínaných lokalitách sa nám podarilo zistiť celkom 15 robotníc a 1 samicu *B. semenoviellus*, pričom tieto exempláre navštevovali kvety *Angelica sylvestris*, *Centaurea phrygia*, *Cirsium arvense*, *Geranium palustre* a *Valeriana officinalis*. Predpokladáme, že na územie Slovenska sa *B. semenoviellus* dostal pravdepodobne z oblasti južného Poľska, nakoľko v iných častiach Slovenska nebol ani v rámci intenzívnych výskumov zaznamenaný. Skutočné príčiny zodpovedné za výrazný posun západnej hranice areálu výskytu tohto druhu zostávajú neznáme, je však zrejme, že druh sa naďalej úspešne šíri v oblasti Strednej Európy.