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Records of *Bombus* (*Megabombus*) *argillaceus* (Hymenoptera: Apidae: Bombini) from Slovakia and notes on the record from the Czech Republic

Nálezy čmeľa *Bombus* (*Megabombus*) *argillaceus* (Hymenoptera: Apidae: Bombini) zo Slovenska a poznámky k nálezu z Českej republiky

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Abstract. We summarise all known records of *Bombus* (*Megabombus*) *argillaceus* (Scopoli, 1763) from Slovakia. The list of records is supplemented with details about localities and plants utilised for feeding. A distribution map of *B. argillaceus* in Slovakia is given. The single record of *B. argillaceus* from the Bohemian part of the Czech Republic is discussed.

INTRODUCTION

Intensive entomofaunistic surveys during recent years, focusing on the bumblebees of selected localities in the south-western part of Slovakia, increased the knowledge of the diversity, distribution and abundance of several species in the region. One of the most interesting outcomes of our surveys was the confirmation of the rare bumblebee *Bombus* (*Megabombus*) *argillaceus* (Scopoli, 1763) in Slovakia.

Bombus argillaceus is a West-Palearctic bumblebee species mainly inhabiting open, warm, dry habitats. Its distribution area extends from Kazakhstan (Skorikov 1931) eastwards to France (Delmas 1976, Rasmont et al. 1995) and from south-western Slovakia (Tkalců 1973, Smetana 1991), Ukraine (Konovalova 2002, 2008, 2010) and south-western Russia (Popov 2010) in the north, to Syria (Khaled et al. 2012) and Iran (Skorikov 1931, 1938, Tahmasbi et al. 2008, Monfared et al. 2007) in the south and southeast. The species is reported from Switzerland (Rasmont et al. 1995), Italy (Manino et al. 2010), Slovenia (Gogala 1991, 1999), Austria (Knechtel 1955, Neumayer & Kofler 2005), Hungary (Móczár 1953a, b, Tanács 1975, Józan 1990, 2000), Romania (Knechtel 1955), Moldova (Pelin & Coadă 2001), as well as in the countries of southeast Europe (Pittioni 1939, Tkalců 1969, Anagnostopoulos 2005) and Turkey (Özbek 2002). The vertical distribution of this species is wide, from sea level up to suitable places as high as 3500 m a.s.l., e.g. in the mountains of Turkey (Aytekin & Çağatay 1999, 2003, Özbek 2002).

It is a polylectic, long-tongued species, recorded foraging from at least 157 different plant species (Józan 2000, Móczár 1953a, Knechtel 1955, Özbek 2002, Anagnostopoulos 2005,

Khaled et al. 2012, Monfared et al. 2007). *B. argillaceus* nests underground, usually in the abandoned nests of rodents. It is a pocket-making species and creates colonies of 100–500 individuals (Pawlikowski 1996, Knechtel 1955, Konovalova 2008, Grad et al. 2010).

In this work we summarise all the historical and recent records of *B. argillaceus* from Slovakia. A record from the Czech Republic also discussed.

MATERIALS AND METHODS

The specimens of bumblebees listed below were observed or collected and determined using appropriate literature (Pawlikowski 1996, Pavelka & Smetana 2000). Each locality of observation (or collection) contains these data (if available): number of the faunistic code of the Central European mapping grid system (Ehrendorfer & Hamann 1965), date of observation or collection, number of specimens observed or collected, sex (female(s) = ♀ (♀♀), male(s) = ♂ (♂♂) or 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; NMPC = coll. Národní muzeum, Praha, Czech Republic; MB = coll. M. Brestovská). Literature sources are cited for historical records.

RESULTS

Bombus argillaceus (Scopoli, 1763)

Historical records from Slovakia: Trenčín (7174 ? – exact collection site not specified on the specimen's label), collection date not available, 1 ♀, Čepelák leg., coll. NMPC (Tkalců 1973); ***Tribeč:*** Nitra – Zobor (7674), 29.iv.1973, 1 ♀, forest-steppe, 588 m a.s.l., Brestovská leg., Smetana det., MB (Smetana 1991).

New records from Slovakia: ***Podunajská rovina*****:** Nové Zámky (8074), 11.iv.2009, 1 ♀, levee of the Nitra river, 113 m a.s.l., *Lamium purpureum*, P. Šima leg. et det., PS; same data, 1 ♀, deciduous forest edge, 110 m a.s.l., *Lamium maculatum*, P. Šima observ. et det.; Nové Zámky (8074), 08.iv.2010, 2 ♀♀, deciduous forest, 110 m a.s.l., *Lamium maculatum*, P. Šima observ. et det.; Nové Zámky (8074), 10.iv.2010, 1 ♀, deciduous forest, 110 m a.s.l., *Lamium maculatum*, P. Šima observ. et det.; Nové Zámky (8074), 3.v.2013, 1 ♀, deciduous forest, 110 m a.s.l., *Lamium maculatum*, P. Šima observ. et det.; Nové Zámky (8074), 25.v.2013, 2 workers, levee, 113 m a.s.l., *Salvia nemorosa, Stachys recta*, P. Šima observ. et det.; Nové Zámky (8074), 20.vii.2013, 2 workers, levee, 113 m a.s.l., *Salvia nemorosa,* P. Šima observ. et det.; ***Podunajská pahorkatina*****:** Kamenica nad Hronom (8178), 17.iv.2010, 2 ♀♀, village – ruderalised area, *Lamium maculatum*, P. Šima observ. et det., 1 ex. PS; 10.iv.2011, 1 ♀, village – ruderalized area, *Lamium maculatum*, P. Šima observ. et det.; Kamenica nad Hronom (8178), 20.iv.2013, 1 ♀, under the levee of the Hron river, a queen was observed searching for a suitable nesting place, *Lamium purpureum*, P. Šima observ. et det.; Kamenica nad Hronom (8178), 12.iv.2008, 1 ♀, forest-steppe on the slopes of Burda Hill, 222 m a.s.l., P. Šima observ. et det.; Kamenica nad Hronom (8178), 21.vi.2008, 1 ♂, forest-steppe, 219 m a.s.l., P. Šima leg. et det., PS.

The distribution of *B. argillaceus* in Slovakia is shown on a map using the Central European mapping grid system (Fig. 1).

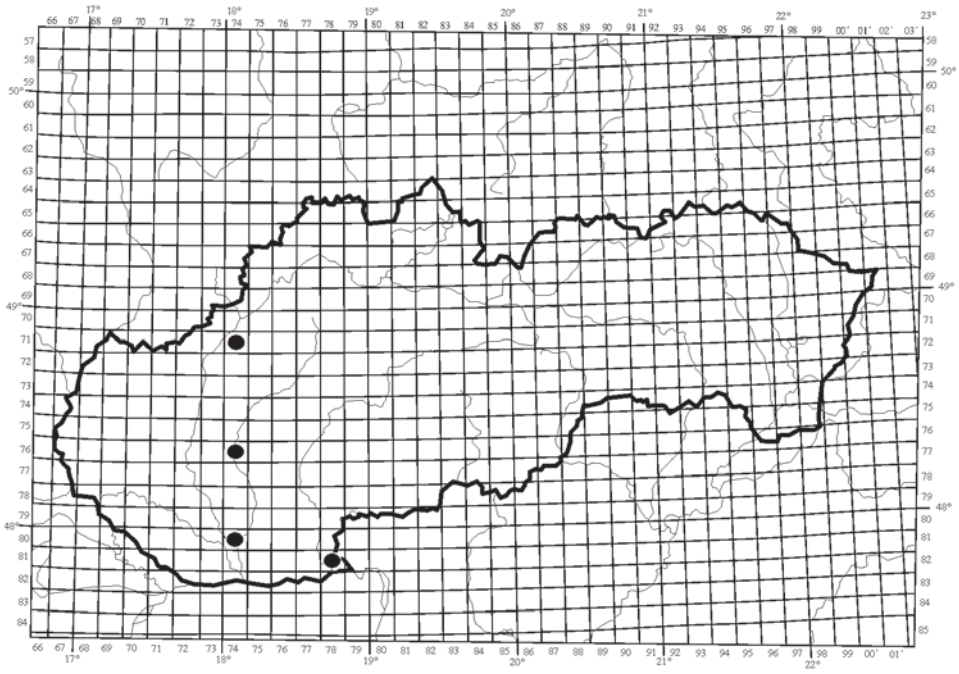


Fig. 1. Occurence of *Bombus argillaceus* (Scopoli, 1763) in Slovakia.
Obr. 1. Výskyt *Bombus argillaceus* (Scopoli, 1763) na Slovensku.

DISCUSSION

Even though the presence of *B. argillaceus* in the southern parts of Slovakia had been previously supposed (May 1959), the species was not known in the country before the first published record by Tkalců (1973). The first documented specimen from Slovakia, a female of *B. argillaceus*, was collected by Čepelák in Trenčín (Tkalců 1973). Following this first record from 1973, a second specimen was collected in forest-steppe close to the town of Nitra (Zobor) in Western Slovakia (Smetana 1991). After the second record, the species was not recorded in Slovakia until 2008. It has been repeatedly reported from 2008 onwards from a few localities in south-western Slovakia.

Currently, Slovakia forms the northern border of the distribution range of *B. argillaceus* in Central Europe. All the new records come from the warmest regions of the country, mainly from open, dry, forest-steppes or cultural steppes (on levees) and warm deciduous forests (mixed, but primarily Querceto-Fraxinetum) situated in the alluvial flat of the Nitra River close to the town of Nové Zámky. Our observations are in accordance with Skorikov (1931, 1938), who assigned *B. argillaceus* to the group of typical steppe species („steppenindikator“) inhabiting forest-steppe and steppe. Based on our knowledge, supported by the faunistic data provided, we can state that *B. argillaceus* has stable and persistent populations in suitable localities in the southern parts of western Slovakia.

Notes on the record from the Czech Republic. The finding of *B. argillaceus* in the Bohemian part of the Czech Republic was somewhat surprising. On 12.iv.2007, a female was found foraging on *Lamium* sp. on the south-eastern edge of Prague (Uhříněves, J. Čížek leg. et det., coll. J. Kindl). The specimen was collected and a image published later with a short comment (Ptáček 2008). This single documented record has yet to be confirmed by any additional findings, despite repeated visits to and monitoring of the collection site. It is therefore questionable whether the presence of *B. argillaceus* in the Czech Republic was a result of natural expansion of the species northwards, or just the finding of a casually introduced specimen that had apparently successfully overwintered. It will be interesting to follow the results of faunistic surveys of bumblebees in the Czech Republic in the future. Further records from the Bohemian or Moravian parts of the Czech Republic could eventually provide answers to this question.

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SÚHRN

Čmeľ *Bombus (Megabombus) argillaceus* (Scopoli, 1763) patrí k západopalearktickým druhom čmeľov, ktorý osídľuje najmä otvorené, teplé a suché biotopy. Bol zaznamenaný v nadmorských výškach od 0 až do 3500 m. Jeho areál výskytu sa tiahne od východného Kazachstanu až po západné Francúzsko, ďalej od juhozápadného Slovenska cez Ukrajinu a západnú časť Ruskej federácie na severe, až po Sýriu a Irán na juhu, juhovýchode. Ďalej sa vyskytuje v strednej i východnej Európe, na Balkánskom polostrove a v Turecku. Hniezdi pod zemou v opustených norách hlodavcov, jeho kolónie dosahujú početnosť 100 až 500 jedincov. Severná hranica prirodzeného výskytu tohto druhu v Európe prebieha v súčasnosti územím juhozápadného Slovenska. Jeho možný výskyt na južnom Slovensku bol predpokladaný už v minulosti (May 1959), avšak správa o prvom zdokumentovanom náleze bola publikovaná až o vyše desaťročie neskôr. Prvý nález z územia Slovenska pochádza z Trenčína (Tkalců 1973). Druhý nález bol zaznamenaný z lesostepnej lokality Zobora pri Nitre (Smetana 1991). Od roku 2008 pravidelne registrujeme výskyt *B. argillaceus* na niekoľkých lokalitách situovaných v najjužnejších častiach západného Slovenska, kde sa vyskytuje predovšetkým v kultúrnej stepi (hrádze riek Nitra a Hron), v lesostepiach a v teplých aluviálnych listnatých lesoch. Z trofického hľadiska sú pre tento druh významné predovšetkým rastliny z čeľade Lamiaceae (*Lamium purpureum*, *Lamium maculatum*, *Salvia nemorosa* a *Stachys recta*). Na základe našich doterajších viacročných pozorovaní môžeme tvrdiť, že na vhodných lokalitách západného Slovenska má druh *B. argillaceus* stabilné a pretrvávajúce populácie.

Nález exemplára *B. argillaceus* v Prahe (Uhříněves), v centrálnej časti Českej republiky sa nám vo svetle súčasných poznatkov vidí ako prekvapujúci. Keďže jeho prítomnosť na území Českej republiky nebola ani napriek opakovaným návštevám lokality od r. 2007 potvrdená, je otázne, či sa mohlo jednať o prirodzený výskyt druhu, napr. ako výsledok prirodzeného rozširovania areálu druhu, alebo či mohlo ísť o nález náhodne zavlečeného a úspešne prezimovaného jedinca. Ďalšie nálezy z územia Českej republiky by mohli priniesť definitívne odpovede na tieto otázky.