

New and interesting records of bees from Moravia and Slovakia with remarks to the Czech and Slovak checklist of bees (Hymenoptera: Apoidea: Apiformes)

Nové a zajímavé nálezy včel z Moravy a Slovenska s poznámkami k seznamu včel v České republice a na Slovensku (Hymenoptera: Apoidea: Apiformes)

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Abstract. The distribution of 15 bee species in the Czech Republic and Slovakia is documented and discussed. *Lithurgus cornutus* (Fabricius, 1787) is first recorded from the Czech Republic and *Hylaeus incongruus* Förster, 1871 and *Evylaeus subfulvicornis* (Blüthgen, 1934) are first recorded from Moravia. The occurrence of six species, *Lasiglossum discum* (Smith, 1853), *Synhalonia hungarica* (Friese, 1895), *Colletes graeffei* Alfken, 1900, *Andrena aberrans* Eversmann, 1852, *A. ferox* Smith, 1847 and *A. susterai* Alfken, 1914, is confirmed in the Czech Republic (from Moravia). *Nomada melathoracica* Imhoff, 1834 is added to the checklist of the Czech Republic (from Moravia). Two further species are newly registered for the Czech and Slovak bee fauna under their valid names: *Megachile rotundata* (Fabricius, 1787) (syn. *M. pacifica* (Panzer, 1798)) and *Hoplitis mazuccoi* (Schwarz et Gusenleitner, 2005) (syn. *H. tenuispina* auct., nec (Alfken, 1937)). The first records for Moravia are given for two species that are spreading, *Pyrobomus semenoviellus* (Skorikov, 1910) and *Heriades rubicola* Pérez, 1890. The northernmost known records, from Moravia, are given for three species, *Colletes graeffei* Alfken, 1900, *Lithurgus cornutus* (Fabricius, 1787) and *Heriades rubicola* Pérez, 1890.

INTRODUCTION

The most recent checklist of bees recorded in the Czech Republic and Slovakia was published in 2007 (Straka et al. 2007). Subsequent papers confirmed or complemented the checklist: Dvořák et al. (2007, 2008, 2009, 2010); Dvořák & Bogusch (2008); Bogusch et al. (2009, 2010, 2011); Blažej & Straka (2010); Dvořák & Dvořáková (2010); Holý & Vrabec (2008); Straka et al. (2008, 2009); Mazalová et al. (2009, 2010) and Bučánková et al. (2011).

The aim of this paper is to summarize the first records and other new faunistic or nomenclatural information that supplements or amends the list of Czech and Slovak apidofauna.

MATERIAL AND METHODS

The specimens discussed below were obtained during surveys of selected sites to verify the presence of species. Some of these species were recorded at these sites several years earlier, and in such cases this survey was conducted to verify their presence. Locations were selected primarily to verify the changes after the termination or interruption of agricultural activities (Mohelno, Sedlec, Špidlárky).

Bees were collected using an insect net with a 40 cm diameter frame and a 70 cm pole. Bees were caught in typical places, such as on flowers of bee forage, bare sites on the soil surface, roads and rock ledges, margins and the surface of low and sporadic growth of grass, in the vicinity of dead wood, on stones exposed to the sun, in the

close vicinity of lower margins of the top of pine trees or bushes where males performed hilltopping. The bees were identified using the following keys: Amiet et al. (2001, 2004, 2007), Ebmer (1974), Pesenko et al. (2000), Přidal (2001), Scheuchl (1995, 1996), Schmid-Egger & Scheuchl (1997) and Straka & Bogusch (2011).

Pollen loads from the hind tibia of *Andrena aberrans* were analyzed under light microscope at 450–600 magnification and compared with material deposited at the apidological laboratory of Mendel University in Brno. The methodology followed recommendations of Westrich & Schmidt (1986).

Abbreviations used through the text: PLA – protected landscape area, NNR – national nature reserve, NR – nature reserve.

RESULTS AND DISCUSSION

Colletidae

Hylaeus (Prosopis) incongruus (Fabricius, 1787)

Material examined. Czech Republic, Moravia mer., Olomučany (6666c), 2.vii.1997, 1 ♂, D. Všíanský lgt.; Bzenec (7069), 3.v.1998, 1 ♂, M. Říha lgt.; Příbram na Moravě (6863b), 29.vii.1997, 1 ♀; Troubsko u Brna (6864b), 16.vi.1997, 1 ♂; Pálava PLA, Sedlec u Mikulova, Slanisko u Nesytu NNR (7266a), 29.viii.2012, 1 ♂, all A. Přidal lgt., det. et coll.

This species was differentiated from *H. gibbus* Saunders, 1850 using characters given by Straka & Bogusch (2011). The ecology of the species is unknown. The species has previously only been reported in the Czech Republic from Bohemia (Straka & Bogusch 2011). The first records from Moravia.

Colletes (Denticolletes) graeffei Alfken, 1900

Material examined. Czech Republic, Moravia mer.-occ., Mohelno, Mohelenská hadcová step (serpentine steppe) NNR (6863c), 49°6'33.220"N, 16°11'8.832"E, 4.viii.2010, 1 ♂, 1 ♀, on *Allium flavum*, A. Přidal lgt., det. et coll.

Individuals observed and determined in the field (no specimens collected): same locality, 4.viii.2010, 1 ♂, 1 ♀, 3.viii.2011, 1 ♂, 2 ♂♂, on *Allium flavum*, A. Přidal lgt. et det.

Strictly oligolectic species on *Allium* spp. (Schmid-Egger & Kuhlmann 2008). This species has been recorded several times in the Czech Republic in southern Moravia, but is currently considered to be extinct (Macek et al. 2010). The distribution of this species in Europe and western Asia is reviewed by Schmid-Egger & Kuhlmann (2008). The record of *C. graeffei* in Mohelno is still the northernmost known record of this species. Confirmation of recent occurrence of the species in Moravia.

Andrenidae

Andrena (Taeniandrena) aberrans Eversmann, 1852

Material examined. Czech Republic, Moravia mer.-occ., Mohelno, Mohelenská hadcová step (serpentine steppe) NNR (6863c), 28.v.2010, 1 ♂, on *Alyssum montanum*, F. Gusenleitner det., 10.v.2011, 4 ♂♂, on *Chamaecytisus ratisbonensis*, A. Přidal det., all A. Přidal lgt. et coll.

The first reliable Moravian record of this species was published by Zavadil (1951) – from Brno (Hády hill, J. Šnoflák lgt). Pádr's faunistic index card (Přidal 2004) contains the following remark: "Moravia, Brno – Hády, 18. v. 1943, lgt. Šnoflák, 1 male, on *Taraxacum*".

Literature records were given by Kocourek (1963, 1966) from Pouzdřany, Vyškov, Plumlov, Kosíř and Hranice na Moravě. Šnoflák (1944) did not record this species in Mohelno. Every record of this species is important for its conservation, because this species is sparsely distributed and critically endangered not only in the Czech Republic (Straka 2005), where it has not been reported for nearly five decades, but in the whole of Europe (Gusenleitner & Schwarz 2002). The species is oligolectic on *Chamaecytisus ratisbonensis* (Kocourek 1966) and the record in 2010 on *Alyssum montanum* was late and the female was clearly very old and tired out. The pollen load contained pollen grains from *A. montanum* and singly as follows: *C. ratisbonensis*, *Picea* sp., *Ribes* sp., *Potentilla arenaria* and *Taraxacum* sp. probably as a result of unavailability of pollen from *C. ratisbonensis*, the flowers of which had faded. Females recorded in 2011 visited only *C. ratisbonensis* and their pollen loads consisted of pollen grains of *C. ratisbonensis*. Confirmation of occurrence in Moravia after nearly 50 years.

***Andrena (Hoplodrena) ferox* Smith, 1847**

Material examined. Czech Republic, Moravia mer., Pálava PLA, Milovice (7166), 9.v.1998, 1 ♂, Z. Laštůvka lgt., D. Všianský det., A. Přidal revid. et coll.

This species is sparsely distributed in Europe (Gusenleitner & Schwarz 2002). The last records of this rare species in the Czech Republic were by Kocourek (1963, 1966). Straka (2005) treated this species as regionally extinct in the Czech Republic. Confirmation of recent occurrence in the Czech Republic (Moravia) after nearly 50 years.

***Andrena (Simandrena) susterai* Alfken, 1914**

Material examined. Czech Republic, Moravia mer.-occ., Mohelno, Mohelenská hadcová step (serpentine steppe) NNR (6863c), 28.iv.2010, 1 ♂, 1 ♀, 22.iv.2011, 3 ♂♂, all A. Přidal lgt., det. et coll.

The species is distributed with low frequency in central, eastern and south-eastern Europe (Gusenleitner & Schwarz 2002). It has been recorded in Slovakia (Lukáš 1998, Lukáš & Okáli 1998) and Slovenia (Gogała 2011). The last record of this species in the Czech Republic was by Kocourek (1966). Straka (2005) considered this species as regionally extinct in the Czech Republic. Straka et al. (2007) confirmed the occurrence of this species in Moravia after nearly 50 years. Further record of this sparsely occurring species in Moravia.

Halictidae

***Lasioglossum (Leuchalictus) discum* (Smith, 1853)**

Material examined. Czech Republic, Moravia mer., Pálava PLA, Pouzdřany (7065), 9.v.1966, 1 ♂, B. Tkalců lgt., A. W. Ebmer det., A. Přidal revid. et coll.; Sedlec u Mikulova (7266a), Slanisko u Nesytu NNR, 29.viii.2012, 1 ♂, A. Přidal lgt., det. et coll.

The species is distributed from Morocco to Afghanistan and Russia (Tuva) (Amiet et al. 2001). There is only one published record of this species from Moravia (Kocourek 1989). Even in Pádr's card index (Přidal 2004) the data on the occurrence of this species in Moravia are absent. Macek et al. (2010) stated that the species is absent. The recent record at Slanisko u Nesytu reported above was with a very large population of the related species *L. leucozonium* (Schrank, 1781). Records from Moravia are probably the northernmost within the distribution of this species in Europe. Confirmation of recent occurrence in Moravia after nearly 50 years.

***Evyllaes subfulvicornis austriacus* (Ebmer, 1974)**

Material examined: Czech Republic, Moravia bor., Hrubý Jeseník, Jeseníky PLA: Rašeli-nišťe Skřítek NNR (6068b), 7.viii.2011, 2 ♂♂, 18 ♂♂; Břidličná NR, Pod ztracenými kameny (5969a), 7.viii.2011, 3 ♂♂, 14 ♂♂; Mravenečník (5968b), about 1300 m a.s.l., 9.viii.2011, 3 ♂♂, 13 ♂♂, on *Crepis* sp.; Kamenec (5968b), about 1200 m a.s.l., 9.viii.2011, 8 ♂♂, 21 ♂♂, on *Crepis* sp., all A. Přidal lgt., det. et coll.

Evyllaes subfulvicornis (Blüthgen, 1934) was identified in Europe as *E. fratellus* (auct.) until Ebmer (1974) described *Lasioglossum austriacum*. Both the variability and species status of *E. subfulvicornis* are described and explained by Ebmer (1988). The species was reported from the Czech Republic (Bohemia) for the first time by Dvořák et al. (2006). Subsequent records were published in 2007 for Bohemia (Straka et al. 2007). Dvořák & Bogusch (2008) reported further records from south Bohemia and remarked on the bionomics of this species and the related *E. fratellus*, considering both as mainly mountainous species. The latest records from Bohemia (Jizerské hory) were reported by Straka et al. (2009) and near to the Bohemian and Moravian border in Králický Sněžník NNR (5866) by Dvořák et al. (2009). With regard to the records cited above, and also to the very large populations of these species in Jeseníky PLA (eudominant bee species of the late summer) it can be affirmed that *E. subfulvicornis austriacus* is an orophile species that is abundant at high altitudes, including in the Czech Republic. Its presumed occurrence in other Moravian mountains has to be verified. The threats to this species proposed by Straka (2005) should be reinterpreted as suggested by Dvořák et al. (2009). The first record for Moravia.

Apidae

***Nomada melathoracica* Imhoff, 1834**

The species was reported from Moravian territory – Pálava (Pádr 1995). Straka et al. (2007) listed this species only for Slovakia. Therefore, the species has to be added to the checklist of the Czech Republic (from Moravia).

***Nomada stigma* Fabricius, 1804**

Material examined. Czech Republic, Moravia mer.-occ., Mohelno, Mohelenská hadcová step (serpentine steppe) NNR (6863c), 10.vi.2010, 1 ♂, A. Přidal det.; White Carpathians Mts., Strání, Nová hora NR (7072), 10.viii.2004, 1 ♂, M. Schwarz det., all A. Přidal lgt. et coll.

This species is disappearing – the number of localities for the species is markedly decreasing (Westrich 1990; Amiet et al. 2007). Straka (2005) treated this species as regionally extinct in the Czech Republic, but it has recently been recorded in Bohemia (Macek et al. 2010) and Moravia (Bogusch et al. 2009). Further Moravian records of this apparently decreasing species in the Central Europe.

***Synhalonia hungarica* (Friese, 1895)**

Material examined. Czech Republic, Moravia mer., Čejč, Špidláký NR (7067d), 2.vi.2001, 1 ♂, A. Přidal lgt., det. et coll.

This species is distributed in North Africa and the Ponto-Mediterranean region (Amiet et al. 2007). The latest record of this species, in a large population, was given by Balthasar (1952) in Kobyly na Moravě near Čejč-Špidláký. This species was later treated as absent

from Moravia (Macek et al. 2010). A similar status for this species was noted in Poland (Sandomierz – Góry Pieprzowe; Banaszak (2003)). Confirmation of recent occurrence in Moravia after 60 years.

Pyrobombus (Cullumanobombus) semenoviellus (Skorikov, 1910)

Material examined. Czech Republic, Moravia mer.-occ., Mohelno, Mohelenská hadcová step (serpentine steppe) NNR (6863c), 3.viii.2011, 1 ♂, on *Solidago* sp., A. Přidal lgt., det. et coll.

This species is spreading in Central Europe (Plewka 1995, Smisssen & Rasmont 1999, Přidal & Tkalců 2003, Přidal & Komzáková 2009, Streinzer 2010 and Šima & Smetana 2012). The record by Přidal & Komzáková (2009) comes from the Bohemian and Moravian border. The reasons for the sudden spread of this species from the taiga remain unclear (Přidal & Tkalců 2003, Šima & Smetana 2012). A further Moravian record.

Megachilidae

Hoplitis (Micreriades) mazzucchi (Schwarz et Gusenleitner, 2005)

syn. *H. tenuispina* auct. (sensu Staněk 1962, Tkalců 1977) nec (Alfken, 1937).

The species occurs in Austria, Slovakia, Hungary, Bulgaria (Schwarz et al. 2005) and Slovenia (Gogala 2009). Schwarz et al. (2005) compared western specimens of *H. tenuispina* (Alfken, 1937) from Italy, on the one hand, with eastern specimens from Austria, Slovakia and Hungary, on the other, and found that they are not conspecific. The species represented by the eastern specimens was named as *H. mazzucchi*. *H. mazzucchi* is listed in the Slovak bee checklist under the name *H. tenuispina* according to Staněk (1962) and Tkalců (1977). The Slovak bee checklist is amended to include this species under its valid name.

Lithurgus (Lithurgus) cornutus (Fabricius, 1787)

Material examined. Czech Republic, Moravia mer., Pálava PLA, Sedlec u Mikulova, 48°46'31.141"N 16°41'54.794"E, Slanisko u Nesytu NNR (7266a), 23.viii.2012, 4 ♂♂, 29.viii.2012, 1 ♂, on *Centaurea jacea*, A. Přidal lgt., det. et coll.

The species is distributed in Mediterranean territory, south-eastern parts of Central Europe (Pannonia) and West and Central Asia (Zanden 1977, Warncke 1980). A recent reliable record for Central Europe was given by Pachinger (2003) near Vienna. Kocourek (1989) listed *L. cornutus* for Moravia and Slovakia and *L. chrysurus* Fonscolombe, 1834 only for Slovakia. However, this was not consistent with the general distribution of the species in Europe: *L. cornutus* occurs very sparsely on the southern edge of Central Europe and *L. chrysurus* is distinctly more northerly and frequent in Central Europe than *L. cornutus*. Pádr (1995) did not record this species in an apidological survey of Pálava territory. Straka et al. (2004) found that specimens of *L. chrysurus* in the collection of the National Museum (Prague) came from Moravia and Slovakia while specimens of *L. cornutus* came only from Slovakia, therefore, they suggested that former entomologists might have accidentally transposed the data. Straka et al. (2004) corrected the distribution of *Lithurgus* species in the Czech Republic and Slovakia as follows: *L. chrysurus* occurs in Moravia and Slovakia (historical and recent records) and *L. cornutus* occurs in Slovakia (only historical records). Historical published records for the Czech Republic and Slovakia are not reliable. The former Czech entomologists used

identification keys in which the both species were interchanged (Bařa 1941, Bouček & Šusterka 1947, Ponomareva 1978). Moreover, Balthasar (1958) listed any *Lithurgus* species as “Lithurge cornuta F. (= chrysurus Fonsc.)” for Slovakia, therefore, it is not clear which of these two species Balthasar reported. The synonymy is also incorrect in all three above mentioned keys. It is possible that the mistake resulted from unclear synonymy according to Schmiedeknecht (1930): “*L. chrysurus* Fonsc. (*L. cornutus* Schenck)”. “*L. cornutus* Schenck” is an invalid name, so subsequent authors interchanged *L. chrysurus* with *L. cornutus* and vice versa, although the differential diagnosis in Schmiedeknecht’s key was correct. Correct synonymy and identification is presented in Schwarz et al. (1996), Scheuchl (1996) and Macek et al. (2010).

The above-mentioned facts are summarized as follows: a) The faunistic records of *Lithurgus* species in the Czech Republic and Slovakia according to the literature before 2004 are not reliable, b) *L. chrysurus* is the species historically and also recently recorded from Moravia and *L. cornutus* is reliably recorded for the first time from the Czech Republic in Moravia, which is the northernmost known locality for the species.

***Heriades (Heriades) rubicola* Pérez, 1890**

Material examined. Czech Republic, Moravia mer., Pálava PLA, Sedlec u Mikulova, Slanisko u Nesytu NNR (7266a), 23.viii.2012, 3 ♂♂, 29.viii.2012, 2 ♂♂, 11.ix.2012, 6 ♂♂, only a sample of all observed individuals, all on *Pulicaria dysenterica* or *Inula britannica*, all A. Přidal lgt., det. et coll.

The species is distributed mainly in the Mediterranean region (Amiet 2004), however, it also extends to Central Europe (Macek et al. 2010). Straka et al. (2008) recorded this species (one male) from the Czech Republic for the first time (Tasovice near Znojmo). The species is probably spreading northwards in Europe and the record in Tasovice is the northernmost record for this species. The species is very abundant in Sedlec. However, only one specimen of *H. truncorum* (Linnaeus, 1758) was recorded on the sampling days although related *Heriades* species were looked for. *H. truncorum* and *H. crenulatus* Nylander, 1856 were recorded in the neighbouring locality of Sedlec (Liřčí vrch NR), but no *H. rubicola* was recorded, therefore, it seems that *H. rubicola* is later, or as a xerotherm specialist is well adapted and thus the most abundant. Similar ecological relationships in *Heriades* spp. were observed in Mohelno Serpentine Steppe (Přidal & Veselý 2011). *H. rubicola* is probably one of the species that are spreading in Europe, as (for example) are the following species: *Ceratina cucurbitina* (Rossius, 1792), *C. nigrolabiata* Friese, 1896 and *Megachile pilicrus* Morawitz, 1878 (Přidal & Veselý 2011). A further record from the Czech Republic of a species spreading from southern to northern Europe. The Moravian records of this species are probably the northernmost known within the general species distribution.

***Megachile (Neoeutricharaea) rotundata* (Fabricius, 1787)**

syn. *M. pacifica* (Panzer, 1798)

The lectotype of *Apis rotundata* Fabricius, 1787 was set aside by the International Commission on Zoological Nomenclature, and the Commission subsequently confirmed the designation of a neotype – conspecific with *M. pacifica* (Panzer, 1798) and *M. rotundata* auct. (Roberts 1974, 1978). This species has listed in the Czech and Slovak lists under the junior name *M. pacifica* according to Rebmann (1967). The Czech and Slovak bee checklist is amended to include this species under its valid name.

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SOUHRN

Práce se zabírá výskytem 15 druhů včel v České republice a na Slovensku a shrnuje poznámky k jejich výskytu na dotčeném území a případně jejich registraci v seznamu api-

dofauny České republiky a Slovenska. V převážné části jde o materiál získaný autorem při průzkumu lokalit s historickým vlivem různé zemědělské či lesnické činnosti.

Výskyt druhu *Lithurgus cornutus* (Fabricius, 1787) byl poprvé spolehlivě potvrzen v České republice na Moravě. Všechny literární faunistické údaje o výskytu druhů rodu *Lithurgus* Latreille, 1825 v České republice a na Slovensku publikované před rokem 2004 jsou nespolehlivé z důvodu záměny obou zde se vyskytujících druhů. *Lithurgus chrysurus* Fonscolombe, 1834 se s jistotou na Moravě vyskytoval historicky a byl nesprávně určován jako *L. cornutus*, který je z těchto důvodů na Moravě zaznamenán poprvé. Na Moravě jsou poprvé zaznamenány druhy: *Hylaeus incongruus* Förster, 1871 a *Evylaeus subfulvicornis* (Blüthgen, 1934). U následujících druhů je potvrzen výskyt na Moravě téměř po 50 a více letech: *Lasioglossum discum* (Smith, 1853), *Synhalonia hungarica* (Friese, 1895), *Andrena aberrans* Eversmann, 1852, *A. ferox* Smith, 1847. Poslední dva druhy zůstávají nadále neznámé pro Čechy. Pro druh *Colletes graeffei* Alfken, 1900 byl potvrzen výskyt na Moravě. Frekvence výskytu druhu *Nomada stigma* Fabricius, 1804 v posledních desetiletích klesala nejen v Česku. Uvedení dalšího jeho nálezu na Moravě proto doplňuje seznam recentně známých lokalit jeho výskytu. *Nomada melathoracica* Imhoff, 1834 musí být dodatečně zahrnuta do seznamu včel České republiky pro Moravu. Další dva druhy včel jsou uvedeny dodatečně pod platným jménem: *Megachile rotundata* (Fabricius, 1787) (syn. *M. pacifica* (Panzer, 1798)) a *Hoplitis mazzuccoi* (Schwarz et Gusenleitner, 2005) (syn. *H. tenuispina* auct., nec (Alfken, 1937)). Pro *Pyrobombus semenoviellus* (Skorikov, 1910) a *Heriades rubicola* Pérez, 1890 jsou uvedeny lokality výskytu na Moravě potvrzující spolu s dřívějšími literárními údaji o výskytu obou druhů jejich šíření v Evropě. Druhy *Colletes graeffei*, *Lithurgus cornutus* a *Heriades rubicola* mají s největší pravděpodobností na Moravě severní hranici svého rozšíření.