

# Distributional History and Present Status of the Species of the Family Scoliidae (Hymenoptera) in Poland and the Czech Republic

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**Abstract:** We present historical and current records of four wasp species of the family Scoliidae in Central Europe. *Scolia hirta* (Schrank) and *Scolia sexmaculata* (Müller) are common in Poland and the Czech Republic. They inhabit forest environments on sand layers, especially the Polish river valleys. *Megascolia maculata* (Drury) has been recorded only in some parts of the Czech Republic, while *Colpa sexmaculata* (F.) is considered extinct in the study region.

**Key words:** Hymenoptera, Scoliidae, Central Europe, Poland, Czech Republic

## Introduction

The aculeate family Scoliidae includes about 560 species occurring mainly in tropical regions. In Europe, 22 species of the subfamilies Proscoliinae and Scoliinae were found (OSTEN 2005, FALLAHZADEH, SAGHAEI 2010, MITROIU 2014). Females dig in the ground in search for larvae of scarabaeid beetles, paralyze them with the sting and lay one egg on the host's body. The host larva recovers after a while and continues feeding, and the wasp larva lives as an ectoparasitoid on the host, finally killing it when fully developed (OSTEN 2000, OSTEN *et al.* 2003, SCHARFY 2012). The family Scoliidae is represented in Central Europe by two common species, *Scolia hirta* (Schrank) and *Scolia sexmaculata* (O.F. Müller), as well as by other two rare taxa, *Colpa sexmaculata* (F.) and *Megascolia maculata* (Drury).

The aim of the present article is to summarise historical and new data on the distribution of the scoliid wasps in Poland and the Czech Republic.

## Material and methods

Our survey was based on specimens collected and observed irregularly during 1898-2014 in various regions of Poland and the Czech Republic. We compiled data from publications, museum collections, internet databases such as BioLib (JANŠTA *et al.* 2015) and Forum Entomologiczne (<http://www.entomo.pl/forum/index.php>) as well as from personal communications. Unless otherwise indicated, all specimens are deposited in private and institutional collections. Some records of *S. hirta* come from field observations only. The records from the Czech Republic include also the collections of the National Museum in Prague, the Moravian Museum in Brno and the East Bohemian Museum in Hradec Králové.

### Abbreviations

#### Names of collectors appearing more than once:

AH – A. Hoffer, AK – A. Kubes, ANS – Anonymus, BW – B. Wiśniowski, DV – D. Vepřek, ES – E. Staněk, FG – F. Gregor, HS – H. Studničková,

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JB – J. Buszko, JBK – J. Bąk, JBR – J. Brestovanský, JC – Jan Cibulka, JJ – J. Jurníček, JJA – J. Jančík, JJP – J.J. Podsedky, JM – J. Macek, JP – J. Pospíšil, JR – J. Růžička, JS – J. Šnoflák, JST – J. Straka, JV – J. Valíček, KH – K. Holý, KS – K. Szpila, LH – L. Hudík, LK – L. Klátil, MK – M. Kořínek, MKO – M. Kocourek, MKR – M. Krejčíř, MM – M. Mašínová, MMI – M. Mikát, OS – O. Šustera, OV – O. Vahala, PB – P. Bogusch, PBA – P. Baňář, PO – P. Olszewski, PT – P. Tyrner, RC – R. Čepelák, RM – R. Matoušek, SK – S. Krejčík, TB – T. Barczak, TP – T. Pawlikowski, VB – V. Balthasar, VP – V. Pluhař, VZ – V. Zavadil, ZK – Z. Kaláb, ZKA – Z. Karas, ZP – Z. Papoušek.

#### Others:

LP – Landscape Park, MMB – Moravian Museum in Brno, MVČHK – East Bohemian Museum in Hradec Králové, NM – Nature Monument, NMP – National Museum in Prague, NNM – National Natural Monument, NNR – National Nature Reserve, NP – National Park, NR – Nature Reserve, NtR – National Reserve, obs. – observation.

## Results

### *Scolia hirta* (SCHRANK, 1781) (Fig. 1)

The species occurs in North Africa, south-western Asia, and southern and central Europe. In Europe, the northern border of its range is at the level of Paris, Berlin and northern Poland (STEINBERG 1962, PUŁAWSKI 1963, MACEK *et al.* 2010). Wasps on wings can be observed from the middle of July to early September. Most frequently they visit the flowers of *Clematis vitalba* L., *Melilotus albus* Medikus, *Eryngium campestre* L., *Sambucus ebulus* L., *Achillea setacea* Waldst. and Kit., *Centaurea salonitana* Vis., *Cirsium incanum* (S. G. Gmel.) Fisch., *Cirsium vulgare* (Savi) Ten., *Solidago canadensis* L., *Mentha longifolia* (L.) Huds., *Teucrium polium* L., *Trachomitum sarmatiense* Woodson (FATERYGA, SHORENKO 2012). The hosts are larvae of *Cetonia aurata* (L.), *Protaetia speciosissima* (Scop.), *Potosia morio* (F.), *Protaetia metallica* Herbst, *Anomala dubia* (Scop.), *Netocia lugubris* (Herbst) and *Tropinota hirta* (Poda) (STEINBERG 1962). In Poland, the species prefers river valleys and sandy places on moraine plateaus. It dwells in forest habitats of sandy biotopes. In the last twenty years, the number of new observations clearly increased, mainly in the lower Vistula valleys in Poland, as well as in Moravia of the Czech Republic.

The species is reported as threatened across Europe (DAY 1991). It has been included in the Polish Red Data Book as vulnerable (BANASZAK 2004). It is

also classified as endangered in the Czech Republic (FARKAČ *et al.* 2005). Recent observations increased the number of records of the species.

#### Records:

##### Published data in Poland

For the first time in Poland, the species was found in Krzelów [XT00], Lasów [WS07], Oborniki Śląskie [XS38], Orzeszków [XS09] and Słup [WS17] (DITTRICH 1911); it was then reported from the following localities: Tumidaj [XU45], Wągrowiec [XU45] (MEYER 1919, SZULCZEWSKI 1927, 1930); Ludwikowo [XT37], Kobylepole [XU30] (GOEBEL 1937, SZULCZEWSKI 1950); Lubasz [EA07] (NIESIOŁOWSKI 1949); Pożegowo [XT29] (SZULCZEWSKI 1950); Wolin NP [VV77] (CZUBIŃSKI, URBAŃSKI 1951, RAFALSKI, URBAŃSKI 1973); Miłosna [EC18] (GŁOWACKI 1953); Starogród [CE20], “Biała Góra” NR [CE67] (BANASZAK 1978); Rubcowo [DE01] (KOWALCZYK 1988a); Kleszczele [FD52], Witowo [FD63] (KOWALCZYK 1988b); Dzierżoniów [XS12] (WIŚNIEWSKI 1994); Lasotki [DD03], Łęczyn [WU66], Folsz [XU87] (BANASZAK *et al.* 2004); Dębowa Góra [DC61], Brudzewice-Jaźwiny [DC50], Królówka [DC61], Stanisławów [DC61], Odrzywół [DC70], Inowłódz [DC40], Teofilów [DC40], Antoniów [DC40], Królowa Wola [DC41], Błota Brudzewickie [DC61], Ceteń [DC50], Zakościele [DC40] and Gapinin [DC51] (TABOR, CIACH 2006); Chotomowo [DD90], Włoszakowice [WT95], “Biała Góra” NR [CE67], Grzybowice [FD88], Ogrodniczki [FD59], Drawa NP [WU68], Pamięcin [VU71], Bobrowa [FD58], Smogulec [XU57], foothills of Kaczawskie Mts [WS54] and Kozienice Forest [EC30] (BANASZAK, TWERD 2009); Brzeźce [DC92] (STOLARZ, STOLARZ 2009); Ławszowa [WS29], “Perna” NR [CC79], Warszawa Ursynów [EC07], Bolimow Forest [DC46], Solec Kujawski [CD18], Nowy Dwór [XU58], Żeleźnica [XV30], Spychowo [EE23], Toruń-Barbarka [CD38], Chorap [DD59], Zalesie Antoniowskie [EB61], Dąbrowa Tomaszowska [FA79], Przyszów [EA79], Trzcianka [WU98] (ZIĘBA, ŻYLA 2010); “Jaskółcza Skarpa” Mts [WU73] (WENDZONKA 2011); Chłapowski LP [XT26], village Turew and Rąbiń [XU51], “Jaskółcza Skarpa” Mts [WU73], Chalin [WU72], Śrem [XT37] (KARG *et al.* 2011); Wolin NP [VV67], Wisetka [VV67], Forestry Inspectorate Jedwabno, Muszaki [DE34], Biebrza NP, and Budy [FE01], Kampinos NP, Niepust [DC89], Łomna Las [DD80], “Góry Pieprzowe” NR near Sandomierz [EB51], Poleski NP, Kulczyn [FB59], Urszulin [FB59] (MARCZAK *et al.* 2012); Poligon Świętoszów [WT30], former firing range 4 km near Trzebień [WS49], former gravel pit, 0,5 km near Bielawa Górna [WS17], “Dolina

Szprotawki” Nature park [WT60], Nysa Łużycka River Valley [VS98 and WS08], Czarna Wielka River Valley [WS19], xerothermic grasslands near Ruszów [WS19] (BENA 2012); Cedzyna [DB83], Gliniany [EB44], Góry Pieprzowe [EB51], Gutwin [EB24], Kolonia Piaski [EB14], Krzemionki Opatowskie [EB34], Kunów [EB14], Lasocin [EB53], Lemierze [EB34], Mędrów [DB91], Mikołajów [EA29], Okół [EB45], Podgrodzie [EB33], Połaniec [EA28], Poręby [EB24], Rudka Bałtowska [EB35], Smerdyna [EB20], Strużki [EA29], Sudół [EB34], Sulejów [EB54], Warszawka [EB05], Zawidza [EA39] (BONK, SĘPIOŁ 2013); Mielno [XU73] (BARANIAK *et al.* 2013); Gosławice and Kamienica [CC19] (MIELCZAREK 2014).

#### Data from the public server “Forum Entomologiczne”

Sławica [XU43] (Anonymus, For. Ent. 2007); Chorap [DD59] (R. Żóralski, For. Ent. 2007); Iłowiec [WV92] (Anonymus, For. Ent. 2011); Jodłówka Wałki [EA14] (M. Brzeski, For. Ent. 2011); Kotkowo [DE36] (M. Brzeziński, For. Ent. 2012); Jabłonka Stara [WU50] (Czerski, For. Ent. 2012), Grabownica [XT70] (L. Matacz, For. Ent. 2013), Młyńska Struga River Valley [XT50] (L. Matacz, For. Ent. 2013), Macoszyn [FB79] (M. Hołowiński, For. Ent. 2013).

#### New records in Poland

*Pomeranian Lakeland*: Grupa [CE43] 1998 – obs. KS; Rudniki [XV46] 05 VIII 2010 – 1♂, 06 VIII 2010 – 1♀, 25 VII 2011 – 1♀ and 1♂, 03 VIII 2011 – 1♀, 04 VIII 2011 – 1♀, 12 VIII 2011 – 2♀♀, 13 VIII 2011 – 1♀, 15 VIII 2011 – 3♀♀, 16 VIII 2011 – 1♀, 17 VIII 2011 – 2♀♀ leg. J. Dąbrowski. Stronno [CE00] 05 IX 1960 – 1♀ leg. H. Ziółkowski; Taszewko [CE32] 1995 – obs. KS; “Zbocza Płutowskie” NR [CE20] 14 VIII 2011 – obs. PO. *Masurian Lakeland*: Elgiszewo [CD68] 06 VIII 2009 – 5♀♀ and 4♂♂, 08 VII 2011 – 1♀ leg. PO, 01 VIII 2011, 05 VIII 2011, 18 VII 2013, 09 VIII 2013 – obs. PO; Grzmięca [CE91] 22 VII 1975 – 8♀♀ and 7♂♂, 23 VII 1975 – 1♀ and 1♂, 24 VII 1975 – 1♀ and 3♂♂ leg. TP; Ostrowy [DD19] 15 VII 2005 – 1♂ leg. E. Rozej; Piska Forest [EE34] 06 VIII 1972 – 2♀♀ leg. JB; Sierakowo [CD59] 11 VIII 2010 – 1♀ leg. PO; Smólnik [CD82] 31 VII 2010 – 1♂ leg. PO. *Wielkopolska-Kujawy Lowland*: Bolechowo [XU32] 21 VII 1976 – 1♀ and 1♂ leg. P. Stachowiak; “Gorzowskie Murawy” NR [WU14] 30 VII 2013 – obs. PO; Koniczynka [CD48] 25 VII 1973 – 1♀ leg. TP; Leszcz [CD38] 11 VII 1997 – 1♀, 22 VIII 1997 – 1♀ leg. TB; Strugaj near Toruń [CD38] 29 VII 1983 – 3♀♀ and 3♂♂, 09 VIII 1983 – 10♀♀ and 4♂♂, 13 VIII 1984 – 1♀ and 13♂♂ leg. TP; Szubin Forest District [XU87] 23 VIII 2007 –

1♂ leg. KS; Świerczynki [CD38] 01 VIII 1997 – 1♂, 22 VIII 1997 – 1♀ leg. TB; Toruń-Barbarka [CD38] 27 VII 1946 – 1♀ leg. J. Prüffer; Toruń-Chełmińskie [CD37] 30 VII 2001 – 1♀ leg. KS; Toruń-Glinki [CD37] 23 VIII 1996 – 1♀ leg. K. Maciejewski; 10 VII 1999 – 1♀ leg. W. Zajda, 06 VIII 2009 – 2♀♀ and 1♂ leg. PO, 12 VII 2010 – 1♂, 10 VIII 2010 – 1♀, leg. PO; Toruń-Góra Batorego [CD37] 21 VII 1998 – 2♀♀ obs. TP; Toruń-Góra Żymierskiego [CD37] 05 VII 2005 – 1♀ leg. KS, 11 VII 2006 – obs. TP, 18 VI 2007 – 1♂ leg. KS, 01 IX 2009 – 1♀ leg. PO; Toruń-Wrzosy [CD37] 21 VII 1973 – 1♀ leg. JB; Uniejewo [CD93] 01 VIII 1988 – 1♀ leg. M. Kobalczyk; Wielkopolska NP [XT29] 09 VIII 2006 – 1♂ leg. Hanna Piekarska-Boniecka; Zamek Bierzgowolski [CD28] 17 VII 1998 – 1♀ leg. L. Rutkowski; *Mazovian Lowland*: Otwock [EC17] 22 VII 1934 – 1♀ leg. J. Pawłowicz.

#### Published data from the Czech Republic

Stará Boleslav [VR75], Kárané v Polabí [VR85], Židlochovice [XQ13], Bzenec-Moravský Písek [XQ62] (BAŤA *et al.* 1938); CHKO Pálava [XQ20] (PÁDR 1995); Hradec Králové, PP Na Plachtě [WR65] (ZEMAN 1997); Brno, PR Hádecká planinka [XQ25] (DVOŘÁK *et al.* 2008); Nučnický [VR49] (TYRNER 2009).

#### Data from the public server BioLib

Babí kopec-Rouchovany [WQ83] 8 VIII 2010 – leg. JC; Bořetice-Kraví hora [XQ32] 29 VIII 2013 – leg. Z. Mačát; Bosonožský hájek NR, Brno [XQ04] 15 VIII 2008 – leg. JV; Břeclav [XQ30] 10 VI 2007, 5 VII 2008 – leg. JV, 28 VI 2009, 28 VII 2009 – leg. OV, 27 VII 2012 – leg. LK, 6 VII 2013, leg. V. John; Břeclav [XQ30] 19 VII 1995 – leg. O. Vahala; Brno [XQ15] 10 VIII 2012 – leg. JV; Brno, NNR Hádecká planinka [XQ25] 24 VI 2011 – leg. O. Machač; Brno-Komín and Netopýrky NM [XQ15] 6 VIII 2006, 28 VI 2007, 17 VIII 2008 – leg. JV; Brno-Královo Pole, Medlánecké kopce NM [XQ15] 17 VIII 2008 – 1♀, 26 VII 2009 – leg. JV; Brno-město [XQ15] 26 VI 2009 – leg. OV, 6 IX 2011 – leg. JV, 20 VIII 2010 – leg. JV; Brno-mesto, Netopýrky u Brna NM [XQ15] 6 VIII 2006, 28 VII 2007, 17 VIII 2008 – leg. JV; Brno-Průžnice [XQ14] 6 IX 2011 – leg. JV; Brno-Slatina [XQ24] 20 VIII 2010 – leg. JV, 10 VIII 2012 – leg. JV; Brno-venkov [XQ24] 3 VIII 2013 – leg. ZK; Brno-Žebětín [XQ05] 15 VIII 2008 – leg. JV; Bzenec [XQ62] 11 VIII 2006 – 1♀ leg. SK; Bzenec, Váté písky NNR [XQ62] 19 VII 2012 – leg. MK; Bzenec-Průvoz [XQ62] 6 VII 2011 – leg. LK, 27 VII 2012 – leg. LK; Havraníky, heathland [WQ70] 14 VII 2012 – leg. ANS; Hlubočky [XR70] 31 VII 2014 – leg. ANS; Hodonín [XQ51] 28 VII 2010 – leg. JR, 6 VII 2011 – leg. LK, 19 VII

2012 – leg. MK, 22 IX 2013 – leg. JV; Hrušovany u Brna [XQ13] 21 VIII 2010 – leg. ZK, 3 VIII 2013 – leg. ZK; Káraný [VR85] 22 VIII 2010 – leg. ANS; Klapý, Házmburk [VR38] 17 VIII 2013 – leg. T. Burian; Kopec [VR56] 11 VI 2011 – leg. D. Matthey; Košátky [VR77] 9 VII 2007 – 1♀ leg. JBr; Košíky [XQ74] 27 VIII 2009 – leg. JJP; Košíky-Uherské Hradiště [XQ74] 2009 – leg. JJ; Kroměříž [XQ76] 2 VII 2010 – leg. ANS, VIII 2010 – leg. VP; Kroměříž, Vážany [XQ76] VIII 2010 – leg. VP; Kroměříž, Zdounky [XQ76] 2010 – leg. JJA; Kuřim [XQ16] 29 VII 2007 – 1♂ leg. JV; Květné jezero [XQ31] 11 VII 2009 – leg. OV; Kyjov [XQ53] 15 VIII 2009 – leg. JR; Lednice [XQ30] 11 VII 2009 – leg. OV; Mělník [VR67] 30 VII 2009 – leg. JBR; Mělník, Kly [VR67] 30 VII 2010 – leg. ZP; Mladá Boleslav, Košátky [VR77] 9 VII 2007 – leg. JBR; Mohelenská hadcová step NNR [WQ84] 25 VII 2007 – leg. KH, 28 VII 2009 – leg. JV; Mohelno [WQ84] 5 IX 2005 – 2♀♀ leg. LH, 28 VII 2009 – leg. JV; Na Vinici-Košátky [VR77] 9 VII 2007 – leg. JBR; Neratovice [VR66] 30 VII 2009 – 8♂♂ and 32♀♀ leg. JBR; Obránská stráň [XQ25] 16 IX 2013 – leg. JV; Perná [XQ11] 19 VII 1995 – leg. OV; Pouzdřanská step NNR [XQ22] 10 VI 2007 – 1♂, 5 VII 2008 – leg. JV; Pouzdřany [XQ22] 10 VI 2007, 5 VII 2008 – leg. JV; Pyšely [WQ75] 17 VI 2012 – leg. ANS; Rohatec [XQ61] 28 VII 2010 – leg. JR; Rouchovany [WQ83] 8 VIII 2010 – leg. JC; Šlapanice [XQ24] 16 VII 2012 – leg. JV; Southeast Morava [XQ95] 27 VIII 2009 – leg. JJ; Stránská skála NNM [XQ25] 20 VIII 2010 – leg. JV, 10 VIII 2012 – leg. JV; Úpor [VR67] 30 VII 2010 – leg. ZP; Váté písky NNR [XQ62] 13 VII 2010 – 1♀, 28 VII 2010 – 1♀ leg. JR; Ždánice [XQ43] 15 VIII 2009 – leg. JR, 22 IX 2013 – leg. JV; Zdounky [XQ65] 2 VII 2010 – leg. ANS, 03 VII 2014 – leg. JJ; Znojmo [WQ71] 19 VIII 2011 – leg. P. Červenka.

#### New records from the Czech Republic

Bořetice [XQ31] 15 VIII 1940 – 1♂ leg. JS, coll. MMB; Budkovice [WQ93] 29 VII 2009 – 3♂♂ and 1♀ leg. PBA, coll. MMB; Bulhary [XQ21] 10 VIII 2005 – 1♀ leg. and coll. ZK; Bzenec [XQ62] 22 VII 1930 – 1♂, 28 VII 1930 – 1♂, 19 VII 1932 – 1♂ leg. VZ, coll. NMP, 26 VII 1933 – 1♀ leg. VZ, coll. MMB, 10 VII 1940 – 1♂, 12 VII 1940 – 1♂ leg. JS, coll. MMB, 14 VII 1940 – 1♂ leg. OS, coll. NMP, VII 1958 – 1♀ leg. ANS, coll. NMP, 2010 – leg. and coll. PB; Čejč [XQ42] 28 VII 1914 – 1♀, 1 VIII 1939 – 1♀ leg. OS, coll. NMP, 20 VIII 1940 – 1♀ leg. JS, coll. MMB, 4 IX 1941 – 2♀♀, 4 VII 1943 – 1♀ leg. VZ, coll. NMP; Čelákovice [VR85] VII 1941 – 1♂, VIII 1941 – 1♂, 12 VII 1942 – 1♀, VII 1943 – 3♂♂ leg. MKO, coll. NMP, VII 1941 – 1♂,

VII 1943 – 3♂♂ and VIII 1944 – 1♂ leg. MKO, coll. NMB, VII 1942 – 6♂♂ and 3♀♀ leg. JP, coll. NMP, 2 VIII 1945 – 1♂ leg. VB, coll. MVČ HK, 1 VIII 1985 – 3♂♂ leg. and coll. PT; CHKO Pálava, PP Kočíčí skála [XQ20] 31 V 2007 – 1♂ leg. and coll. PB; Děvín, Pálava-Mikulov [XQ21] 26 VIII 1997 – 1♀ leg. and coll. JST; Děvín-Pavlov [XQ21] 5 VII 1936 – 1♀ leg. VZ, coll. MMB; Dunaj kopce-Dolní Dunajovice [XQ11] 19 VIII 1995 – 1♀ leg. and coll. DV; HK-Plachta [WR56] 22 VI 1984 – 1♀ leg. V. Zeman, coll. MVČ HK; Hradec Králové [WR56] – 1♂ leg. Uzel, coll. NMP; Ječmenišť [XQ69] 22 V 2005 – 2♂♂ leg. and coll. ZKA; Jizera [WS13] 21 VIII 1993 – 1♀ leg. M. Houska, coll. NMP; Káraný [VR85] VII 1934 – 1♀, VII 1939 – 2♀♀ leg. RC, coll. NMP; Kobyly [XQ32] 2 VII 1939 – 1♂ leg. FG, coll. MMB, 4 VIII 1976 – 1♂ leg. J. Krejčárek, coll. MMB; Lednice [XQ30] 6 VIII 1984 – 2♀♀ leg. HS, coll. NMP, 5 IX 1986 – 1♀ leg. JM, coll. NMP; Lysá nad Labem [VR86] 27 VII 1950 – 3♂♂ and 2♀♀ leg. RC, coll. NMP, 07 VII 1952 – 5♂♂ leg. AH, coll. NMP, 18 VIII 1993 – 1♂ and 1♀ leg. and coll. JST; Mikulov [XQ20] 26 VII 1950 – 1♂, 11 VII 1951 – 2♂♂ leg. ES, coll. MMB, 20 VIII 1984 – 1♀ leg. MM, coll. NMP; Mikulov-Svatý kopeček [XQ20] 18 VIII 1984 – 2♀♀ leg. JM, coll. NMP, 18 VIII 1984 – 2♀♀ leg. MM, coll. NMP; Milovice u Novomlýnské nádrže [XQ30] 20 VIII 1984 – 1♀ leg. MM, coll. NMP; Mohelno [WQ84] 26 IX 1941 – 1♂, 7 VIII 1946 – 1♂ leg. JS, coll. MMB, IX 1942 – 1♀, VIII 1943 – 1♀ leg. RM, coll. MMB, 30 VII 1945 – 1♀, 1946 – 1♂, 5 VIII 1945 – 1♂, 5 VIII 1946 – 1♀, 6 VIII 1946 – 1♀, 7 VIII 1946 – 1♂, 10 VIII 1946 – 1♂, 12 IX 1948 – 1♀ leg. R. Obrtel, coll. MMB, 1945 – 1♂ leg. D. Povolný, coll. MMB, 12 VIII 1954 – 1♂ leg. ANS, coll. NMP; Moravský Písek [XQ72] 22 VII 1930 – 1♂, 22 VII 1932 – 1♂, 23 VII 1932 – 1♂, 13 VI 1934 – 2♀♀ leg. VZ, coll. NMP, 18 VII 1934 – 1♀ leg. VZ, coll. MMB, 12 VII 1939 – 2♀, 12 VIII 1939 – 2♂, 31 VII 1939 – 1♂ and 1♀ leg. OS, coll. NMP, 26 VII 1953 – 1♀ leg. VZ, coll. NMP; Mušov [XQ21] 20 VIII 1984 – 1♀ leg. HS, coll. NMP; Mutěnice [XQ41] 12 VII 1939 – 1♂ leg. FG, coll. MMB; Načeratický kopec Hill [WQ80] 14 VII-10 VIII 2009 – 2♂♂ and 1♀, 10 VIII-2 IX 2009 – 10♂♂ and 1♀ leg. and coll. PB; Neratovice Kozly [VR66] VII 1952 – 1♀ and 1♂ leg. AH, coll. NMP; NP Pálava-Svatý kopeček [XQ69] 17 VIII 1998 – 2♂♂ and 1♀ leg. B. Mocek, coll. MVČ HK; Nučnický-Travčický les [VR49] 11 VIII 2009 – 1♂ leg. and coll. PT; Oleško [VR49] 12 VII-14 VIII 2008 leg. and coll. PT; Pálava, Děvičky [XQ21] 22 VI 2005 – 1♂ and 1♀ leg. and coll. PB; Pálava-Děvín, Mikulov [XQ20] 26 VIII 1997 –

1 ♀ leg. M. Kolísko, coll. JST; Pánov u Hodonína [XQ51] 2010 leg. and coll. PB; Pavlovské vrchy [XQ21] 6 VIII 1954 – 1 ♀, 3 IX 1954 – 3 ♂♂ and 6 ♀♀ leg. J. Moucha, coll. NMP, 16 VIII 1984 – 1 ♀ leg. JM, coll. NMP; Pouzdřany [XQ12] 30 V 1946 – 1 ♂ leg. JS, coll. MMB, 24 VI 2005 – 1 ♂ leg. and coll. JST; Rašovice, Rašovický zlom NR [XQ44] 2 VII 2009 – 1 ♂ leg. PBA, coll. MMB; Říp [VR48] 2009 – leg. and coll. PB; Rohatec [XQ61] 25 VII 1942 – 1 ♀ leg. A. Černý, coll. MVČ HK, 7 VII 1989 – 1 ♂ and 1 ♀ leg. DV, coll. DV; Šardice [XQ42] VIII 1942 – 1 ♀ leg. JS, coll. MMB; Senorady [WQ84] 1938 – 1 ♂, 7 VIII 1939 – 1 ♀ leg. RM, coll. MMB; Úvaly, Valtice [XQ20] 1 VII 2009 – 1 ♂ leg. PBA, coll. MMB; Vizovice [YQ05] VIII 1939 – 1 ♀ leg. ANS, coll. MVČ HK; Zbýšov [WQ94] 31 V 2009 – 1 ♂ leg. and coll. JST; Znojmo [WQ71] 27 VII 1939 – 1 ♂ leg. JS, coll. MMB.

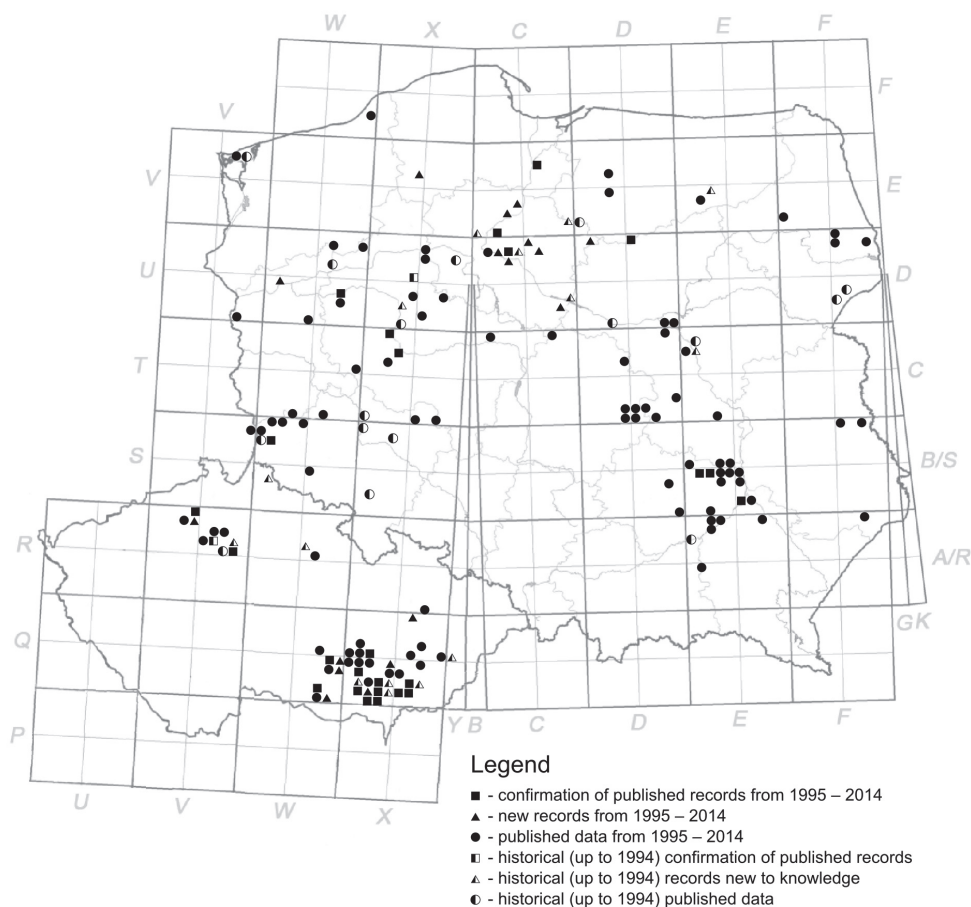
***Scolia sexmaculata* (O. F. Müller, 1766) (Fig. 2)**

This species is widely distributed in the Palearctic (STEINBERG 1962). The imagines fly from June to August on sandy and xeric localities. They prefer steppe meadows and forest ecotones and visit most frequently blue flowering plants like *Teucrium* L., *Veronica* L., *Thymus* L. or *Eryngium* L. (MACEK

*et al.* 2010). The hosts are larvae of scarabeid beetles, e.g. *Anisoplia austriaca* (Herbst), *Anomala vitis* (F.), *Oxythyrea funesta* (Poda), *Tropinota hirta* (Poda), *Anoxia* Laporte de Castelnau and *Cetonia* F. (AMIET 2008). The species is critically endangered in the Czech Republic (FARKAČ *et al.* 2005).

**Published data in Poland**

Krzelów [XS09] (SCHOLZ 1907, 1909; DITTRICH 1911); Mirków [XS56], Wrocław [XS46], Orzeszków [XS09], Słup [WS17] (DITTRICH 1911), Wołów [XS18] (SCHOLZ 1912); Gorzewo [CD91] (TORKA 1912, MEYER 1919); Strzelce Dolne, Bydgoszcz [CD19] (MEYER 1919, BETREM 1935); Żmigród by Milicz [XT30] (BETREM 1933); Poznań-Głuszyna [XU30] (GOEBEL 1937); Wielkopolska NP: Góry Szwedzkie [XT29], Wiry [XT29], forest in Puszczykowo [XT29] (SZULCZEWSKI 1950); Augustów Primeval Forest near Rubcowo [FE66] (KOWALCZYK 1991); Góra świętej Anny [BA99], Szymiszów [CB00], Wrocław-Karłowice [XS46] (WIŚNIEWSKI 1994); Sulejów [DB29] (SOSZYŃSKI *et al.* 1998); Załęcze LP [CB46] (KOWALCZYK, KURZAC 2000); Załęcze LP, Lisowice [CB46], Kamion [CB47], Toporów [CB46], Przywóz-Pustkowie [CB36], Ogroble [CB46], Kolonia Lisowice [CB46],



**Fig. 1.** Distribution of *Scolia hirta* in Poland and the Czech Republic

“Węże” NR [CB46], Załęcz Wielkie-Piaski [CB36] (KOWALCZYK, KURZAC 2002); “Biała Góra” NR [CE67] (CIECHANOWSKI *et al.* 2004); Bromierzyk [DC59] (SZCZEPKO, WIŚNIEWSKI 2006); Stanisławów [DC61], Brudzewice [DC60], Ciebłowice [DC30], Inowódz [DC40] (KOWALCZYK *et al.* 2008); Sulejów [DB18] (KOWALCZYK, SZCZEPKO 2008); “Winnica” NR [CC40], Nature and Landscape Complex “Góry Wapienne” [CC40], Ecological site “Góra Charława” [CC50] (KOWALCZYK *et al.* 2009); Jabłonka Stara [WU60] (CZERSKI 2012).

#### New records in Poland

*Pomeranian Lakeland*: Grudziądz [CE20] 2011, 2012, 2013 – obs. PO; “Zbocza Płutowskie” NR [CE20] 2013 – obs. PO. *Masurian Lakeland*: Czerwony Krzyż [FE48] 03 VII 1989 – 1♂, leg. L. Krzysztofiak; Ruciane-Nida [EE34] 06 VIII 1972 – 1♂ leg. JB; Sierakowo [CD59] 2011, 2012, 2013 – obs. PO; Wielkie Rychnowo [CD59] 14 VII 1973 – 1♀ and 2♂ leg. JB. *Wielkopolska-Kujawy Lowland*: Olek near Toruń [CD37] 24 VI 1975 – 1♂, leg. JB; Toruń-Chełmińskie [CD37] 22 VI 1998 – 1♂ leg. TP, 12 VII 2001 – 2♀, leg. KS, 24 VII 2001 – 2♀, leg. KS; Toruń-Góra Żymierskiego [CD37] 05 VII 2005 – 1♂, leg. TP; Toruń-Kaszczorek [CD47] 30 VI 1999 – 1♀, leg. TP; Toruń-Na Skarpie [CD47] 22 VII 1985 – 1♀, leg. TP. *Mazovian Lowland*: Winnica [DD03] 01 VII 1939 – 1♂, leg. ANS. *Podlasie*: Komarówka [FC40] 19 VII 2013 – 1♀, leg. BW; Mielnik on the Bug [FD30] 13 VI 1996 – 1♂, leg. T. Rynarzewski. *Upper Silesia*: Pustynia Błędowska by Chechło [CA98] 23 VI 2004 – 2♂, 29 VI 2005 – 1♀ and 10♂, 29 VI 2007 – 1♀, 28 VI 2011 – 2♀, leg. BW. *Kraków-Wieluń Upland*: Góra Biakło [CB72] 11 VII 2012 – 2♀ and 1♂, leg. BW; “Góry Towarne” NR by Częstochowa [CB72] 12 VIII 2000 – 1♀ leg. WC; “Góry Towarne” NR [CB72] 4 VIII 2001 – 1♀, leg. A. Klasa; 12 VIII 2011 – 3♀, 14 VII 2013 – 5♂, leg. BW. *Małopolska Upland*: Western Pińczowskie Hills [DA69] 25 VI 2006 – 1♀ and 11♂, 24 VII 2006 – 1♀, 9 VII 2007 – 4♀ and 2♂, leg. BW; “Skowronno” NR [DA69] 14 VII 2006 – 1♂, leg. BW. *Świętokrzyskie Mts*: Korzecko [DB52] 25 VI 2003 – 1♀ and 1♂, 27 VII 2006 – 1♂ leg. JBK; Miedzianka [DB53] 29 VI 2004 – 1♀ and 1♂, 11 VII 2004 – 2♂, 08 VIII 2004 – 1♂, 14 VI 2005 – 2♀, 06 VIII 2005 – 1♀, leg. JBK. *Lublin Upland*: Karczunek [FB69] 20 VII 2013 – 1♀, leg. BW; Kazimierz Dolny [EB68] VII 1997 – 1♀, leg. WC; Kazimierz Dolny-Albrechtówka [EB68] 11 VII 2006 – 2♀ and 1♂, leg. BW; Puławy [EB69] 07 VII 2010 – 1♀, leg. WC. *Roztocze*: Bełzec [FA78] 10 VII 2006 – 2♂, leg. BS; Józefów [FA49] 07 VII 2006 – 5♂, leg. BW. *Sandomierz Lowland*: Łętowice

[DA83] 27 VI 1997 – 8♂, 07 VII 2002 – 4♀, 14 VI 2004 – 4♂, leg. BW.

#### Published data from the Czech Republic

Beroun [VR33], Bzenec [XQ62], Čelákovice [VR85], Doksy [VS70], Houštka [VR76], Jirny [VR75], Kolín [WR14], Kutná Hora [WR13], Modřany [VR54], Štěchovice nad Vltavou [VR52], Třebenice u Štěchovic [VR51] and Veselí nad Moravou [XQ72] (BAŤA *et al.* 1938); Pouzdřany [XQ12] (BOGUSCH 2007); Poštorná [XQ30] (BOGUSCH 2007); Stroupeč [UR97], Hradec Králové-Březhrad [WR55], Hradec Králové, PP Na Plachtě [WR65] (BOGUSCH *et al.* 2011).

#### Data from a public server BioLib

Břeclav [XQ30] 01 VIII 2014 – leg. MKR; Bzenec [XQ62] 11 VII 1931 – leg. KH, 07 VII 2000 – 1♂ leg. SK; Hradec Králové [WR56] 22 VIII 2010 – leg. LH; Mikulov [XQ20] 01 VIII 2014 – leg. MKR; Mladá Boleslav, Radouč [VR98] 22 VI 2003 – leg. MKR; Váté písky NNR [XQ62] 28 VII 2010 – 2♀♀ leg. JR; Pouzdřanská step NNR [XQ22] 05 VII 2008 – 1♀ leg. JV; Žatec [UR97] 11 VII 1949 – leg. KH.

#### New records in Czech Republic

Beroun [VR33] 29 V 1940 – 1♂ leg. K. Beserer, coll. NMP; Břeclav, Boří Les [XQ30] 29 VI 2005 – 2♂♂ and 1♀ leg. PB, coll. PB; Bzenec [XQ62] 2010 – leg. PB, coll. PB, 07 VIII 1923 – 1♂ and 1♀, 23 VII 1929 – 1♂, 04 VII 1940 – 1♂ leg. VZ, coll. NMP, 07 VIII 1936 – 1♀ leg. FG, coll. MMB, 16 VIII 1938 – 1♂, 11 VII 1940 – 1♂ leg. O. Kodym, coll. MMB, 11 VIII 1940 – 1♂ and 3♀ leg. ANS, coll. MVČ HK, 29 VI 1941 – 1♂ leg. VB, coll. MVČ HK, 06 VII 1942 – 2♀ leg. OS, coll. NMP, VII 1958 – 5♂ and 6♀ leg. VB, coll. NMP, VIII 1938 – 1♂ leg. FG, coll. MMB; Čejč [XQ42] 10 VII 1939 – 1♀ leg. FG, coll. MMB, 12 VII 1939 – 3♂ leg. JS, coll. MMB, 13 VII 1939 – 1♂, 14 VIII 1940 – 1♀, 18 VII 1939 – 1♂ leg. JS, coll. NMP, 03 VII 1941 – 1♂ leg. VB, coll. MVČ HK, 20 V 1957 – 1♂ leg. MKO, coll. MMB, VII 1946 – 2♂, VII 1956 – 4♂ and 1♀, VIII 1953 – 1♀, VIII 1956 – 2♀ leg. MKO, coll. MMB; Čelákovice [VR85] 01 VII 1939 – 3♀ leg. RC, coll. NMP, 01 VIII 1939 – 3♂ and 6♀, VII 1942, 2♂ and 1♀ leg. JP, coll. NMP; 07 VIII 1908 – 2♀ leg. OS, coll. NMP; Čeperka [WR55] 11 VII 1956 – 2♂ leg. VB, coll. MVČ HK; Děvín-Pavlov [XQ21] 09 VII 1952 – 1♂ leg. ES, coll. MMB; Hradec Králové-Březhrad [WR55] 04 VII 2009 – 3♂, 05 VII 2009 – 1♂, 22 VII 2009 – 1♂, 30 VII 2009 – 1♀ leg. MMI, coll. MVČ HK; 05 VII 2009 – 1♀ leg. MMI, coll. NMP; Hněvice [VR58] 1951 – 2♂ leg. MKO, coll. MMB; Hodonín [XQ51] 12 VII 1948 – 1♀ leg. F. Balát, coll. NMP, 20 VI 1954 – 1♀ leg. MKO, coll. MMB, 20 VII 1954 – 4♂♂

and 10 ♀♀ leg. MKO, coll. MMB; Hurdis, Hodonín, Cihelna [XQ51] 30 VII 2008 – 4 ♀♀ leg. JST, coll. JST; Javořina [XQ91] 17 VII 1937 – 1 ♂ leg. FG, coll. MMB; Jiřina-Čelákovice [VR66] 04 VII 1907 – 1 ♂ leg. V. Holík, coll. NMP; Kobylí [XQ32] 02 IX 1941 – 1 ♀ leg. VB, coll. MVČ HK, VI 1957 – 1 ♀, VII 1954 – 2 ♂ and 3 ♀ leg. MKO, coll. MMB; Kolín [WR14] 15 VII 1903 – 1 ♀ leg. A. Kubes [AK], coll. NMP, 18 VI 1904 – 1 ♂, 13 VII 1923 – 1 ♂ and 2 ♀ leg. VZ, coll. NMP; Kolín-Zálabí [WR14] 03 VII 1903 – 3 ♂ and 1 ♀ leg. AK, coll. NMP, 23 VI 1904 – 2 ♂, 27 VI 1904 – 8 ♂, 01 VII 1898 – 1 ♂, 13 VII 1899 – 1 ♂, 26 IV 1898 – 1 ♂, 28 VI 1898 – 1 ♂, 04 VII 1898 – 1 ♂; Kostomlaty [VS20] VII 1951 – 1 ♀ leg. ANS, coll. MMB, VII 1951 – 1 ♂ leg. ANS, coll. NMP; Kozly-Neratov [VR66] 29 VI 1938 – 1 ♂ leg. ANS, coll. NMP; II 1952 – 1 ♀ leg. AH, coll. NMP; Kutná Hora [WR13] 11 VIII 1913 – 3 ♀ leg. VZ, coll. NMP; Liděřovice [XQ72] 21 VII 1940 – 1 ♀ leg. JS, coll. MMB, 16 VII 1944 – 4 ♂♂ and 1 ♀ leg. VB, coll. MVČ HK; Lysá nad Labem [VR86] 18 VII 1910 – 1 ♂ leg. OS, coll. NMP, VII 1950 – 3 ♀ leg. ANS, coll. MMB, VII 1950 – 9 ♂, VII 1960 – 3 ♀ leg. Z. Kočmid, coll. NMP; Mikulov [XQ20] 13 VII 1950 – 1 ♀, 24 VII 1950 – 1 ♀, 20 VII 1951

– 1 ♂ leg. ES, coll. MMB; Modřany [VR54] 18 VII 1909 – 3 ♂, 17 VII 1910 – 1 ♂ and 1 ♀ leg. OS, coll. NMP; Mohelno [WQ84] 25 VII 1942 – 1 ♀ leg. JS, coll. MMB; Mutěnice [XQ41] 15 VII 1939 – 1 ♀ leg. FG, coll. MMB, VIII 1956 – 2 ♂ leg. MKO, coll. MMB, 03 VIII 1941 – 1 ♀ leg. VB, coll. MVČ HK; Oblík, Louny [VR18] 20 VII 1953 – 1 ♂ leg. FG, coll. MMB; Pánov u Hodonína [XQ51] 2010 – leg. PB, coll. PB; Pouzdřanská step [XQ22] 24 VI 2005 – 1 ♂ leg. JST, coll. JST; Pouzdřany [XQ12] 28 VI 1936 – 1 ♂ leg. FG, coll. MMB, 09 VII 1936 – 3 ♂, 25 VII 1936 – 1 ♂ and 1 ♀, 30 VII 1936 – 1 ♂, 28 VIII 1936 – 1 ♂, 09 VII 1937 – 1 ♂ and 1 ♀, 14 VI 2005 – 1 ♂ leg. DV, coll. DV, 24 VI 2005 – 2 ♂ leg. PB; Hradec Králové, PP Na Plachtě [WR65] 22 VIII 2010 – 1 ♀, 23 VIII 2010 leg. LH, coll. BioLib; Radotín, Praha [VR53] 15 VII 1906 – 1 ♂ leg. OS, coll. NMP; Sadská [VR95] 04 VII 1912 – 1 ♂, 14 VII 1912 – 1 ♀ leg. OS, coll. NMP; Senorady [WQ84] 25 VII 1939 – 1 ♀ leg. B. Matoušek, coll. MMB; Stéblová [WR55] VII 1953 – 1 ♂ leg. VB, coll. MVČ HK; Stroupeč-Žatecká tabule [UR97] 15 VI 2010 – 3 ♂ leg. P. Krásenský, coll. PT; Veselí nad Lužnicí [VQ74] 11 VII 1943 – 2 ♂ leg. AH, coll. NMP; Žatec [UR97] 04 VIII 1953 – 2 ♀ leg. J.

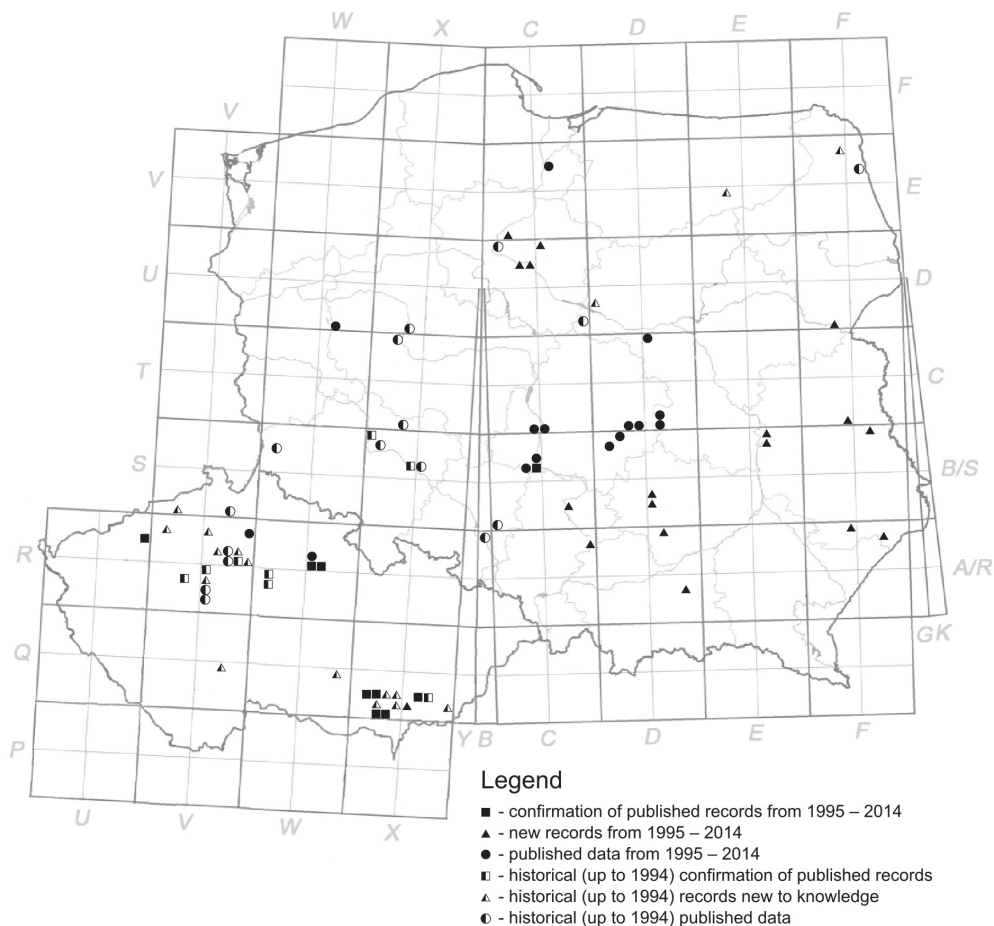


Fig. 2. Distribution of *Scolia sexmaculata* in Poland and the Czech Republic

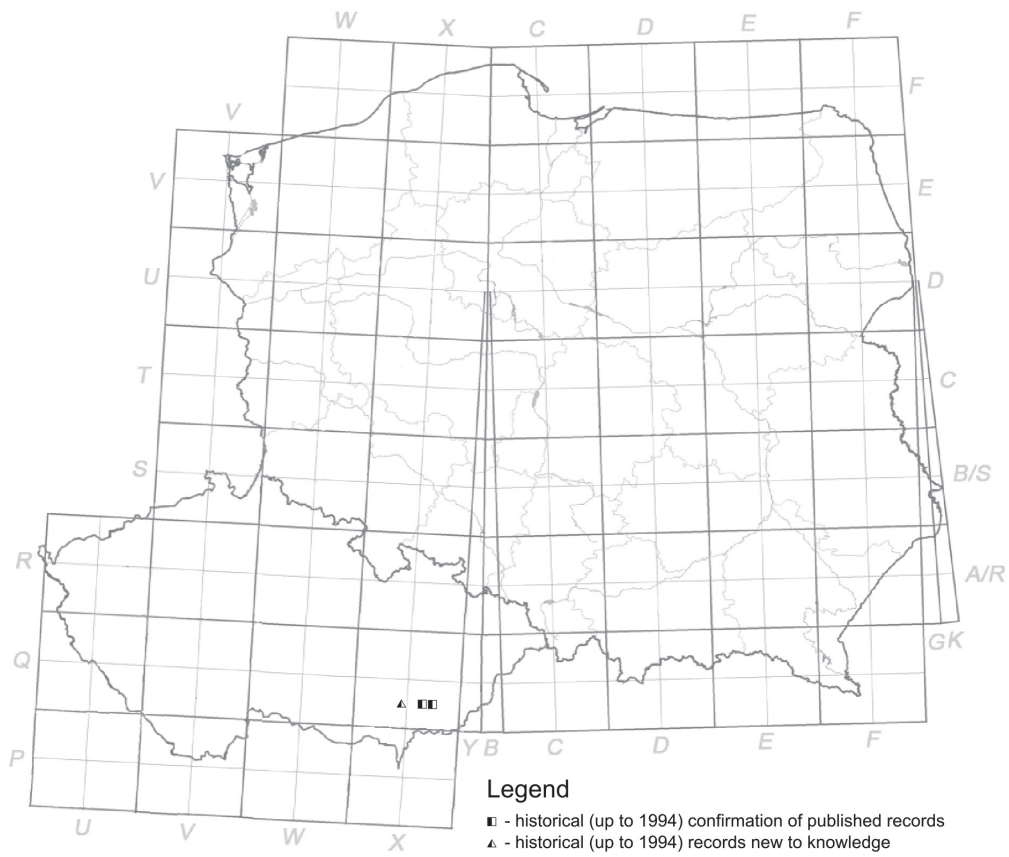


Fig. 3. Distribution of *Colpa sexmaculata* in the Czech Republic

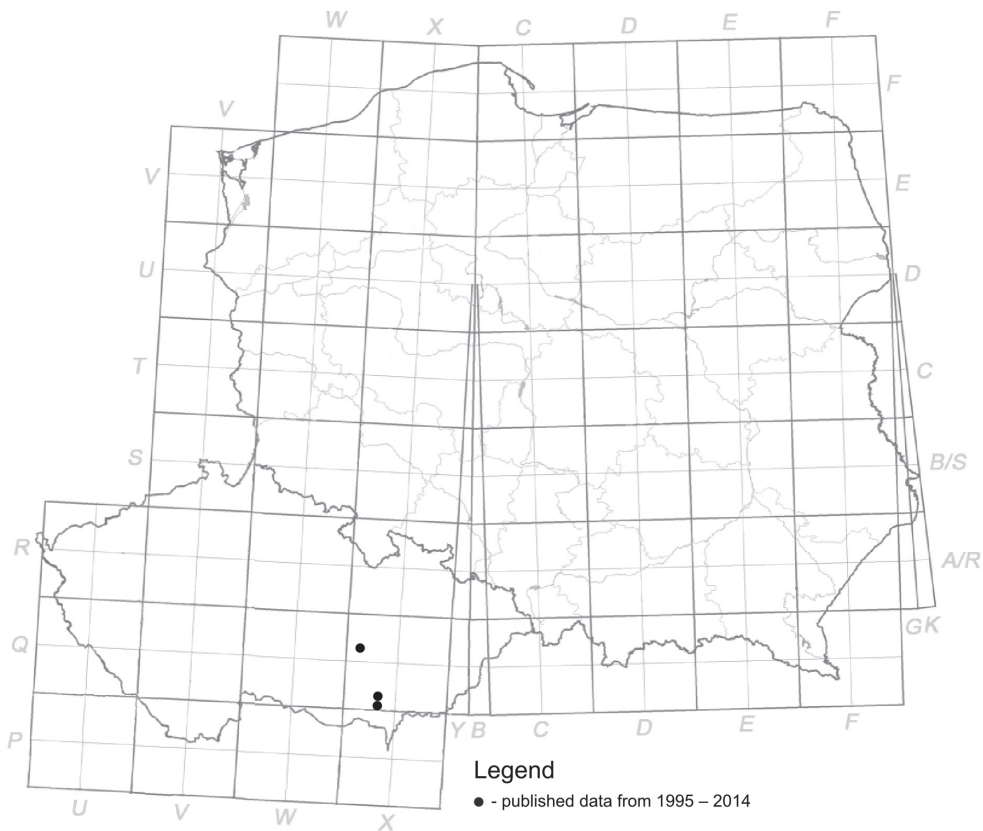


Fig. 4. Distribution of *Megascolia maculata* in the Czech Republic

Brčák, coll. NMP.

***Colpa sexmaculata* (Fabricius, 1781) (Fig. 3)**

This species occurs in North Africa and is known also from southern and central Europe. The northernmost localities are in the Czech Republic. It has been recorded also in Portugal, Turkey and Russia (MACEK *et al.* 2010, AMIET 2008, BAĀA *et al.* 1938). It appears from July to August. The hosts are scarabaeid beetles of *Anoxia* Laporte de Castelnau, i.e. *A. villosa* (F.) and *A. matutinalis* Laporte de Castelnau. Males often spend the night in groups under the leaves of plants (MACEK *et al.* 2010). In the Czech Republic, it has been unconfirmed since 1958 and considered extinct (FARKAČ *et al.* 2005). It does not occur in Poland.

**Records:**

**Published data from the Czech Republic**

Bzenec [XQ62], Moravský Písek [XQ72] and Lidéřovice [XQ72] (BAĀA *et al.* 1938).

**New records in Czech Republic**

Bzenec [XQ62] 24 VII 1930 – 2♂ leg. VZ, coll. NMP, 10 VII 1931 – 1♂ leg. VZ, coll. MMB, 11 VII 1931 – 1♀ leg. VZ, coll. MMB, 10 VII 1931 – 2♂ leg. VZ, coll. NMP, 11 VII 1931 – 2♂ and 3♀, 12 VII 1931 – 1♂, 13 VII 1931 – 1♀, 04 VIII 1932 – 3♀, 26 VII 1933 – 1♂, 17 VII 1934 – 1♂, 18 VII 1934 – 5♀, 20 VII, 1934 – 3♀, 24 VII 1934 – 1♀, 29 VII 1934 – 1♀, 10 VIII 1933 – 1♂ leg. JS, coll. MMB, 20 VII 1934 – 1♀, 16 VIII 1938 – 6♂, 19 VII 1940 – 2♂ leg. FG, coll. MMB, 11 VIII 1940 – 4♂ and 3♀ leg. VB, coll. MVČ HK, VII 1954 – 5♂ leg. MKO, coll. MMB, VII 1955 – 4♂, VII 1958 – 2♂ leg. OS, coll. NMP; Bzenec-Váté pískey [XQ62] 19 VIII 1941 – 5♀ leg. AH, coll. NMP; Moravský Písek [XQ72] 10 VII 1931 – 1♂ leg. VZ, coll. NMP, 12 VII 1931 – 1♀, 12 VII 1932 – 1♂, 18 VII 1932 – 1♂, 19 VII 1932 – 1♂, 21 VII 1932 – 1♂, 04 VIII 1932 – 1♀, 18 VII 1934 – 1♂ and 2♀ leg. VZ, coll. MMB, 31 VII 1939 – 9♂ and 6♀ leg. OS, coll. NMP, 12 VIII 1939 – 1♂ and 5♀ leg. OS, coll. NMP; Šardice [XQ42] 11 VIII 1942 – 1♂ leg. VZ, coll. NMP.

***Megascolia maculata* (Drury, 1773) (Fig. 4)**

The species occurs in North Africa, south-western Asia, the Middle East, south-eastern and central Europe, having the northernmost localities in the Czech Republic (MACEK *et al.* 2010, AMIET 2008, PUŁAWSKI 1963). It appears from June to August. It frequently visits the flowers of *Allium* L., *Origanum* L., *Eryngium* L., *Teucrium* L. and *Thymus* L. The hosts are scarabaeid beetles of *Oryctes nasicornis* (L.) and stag beetles of *Lucanus cervus* (L.) (MACEK *et al.* 2010, PUŁAWSKI 1963, BAĀA *et al.* 1938). Not recorded from Poland.

**Records:**

**Published data from the Czech Republic**

Břeclav [XQ30] 14 VI 2009 – leg. OV; Břeclav – Pohansko [XP39] 27 VI 2009 – leg. Z. Navrátil; Brno [XQ15] 03 VI 2011 – leg. M. Pejčoch (BOGUSCH *et al.* 2011).

**Discussion**

All the four species of the family Scoliidae from Poland and the Czech Republic are restricted to warm sites in lowland regions. Only *S. hirta* occurs also in other habitat types, i.e. rocky steppes, hilly slopes, sandy sites, and also in post-industrial sites like sandpits and former military exercising areas. *Scolia sexmaculata* and *Colpa sexmaculata* occur only in flat biotopes with sandy substrate. This habitat preference is probably caused by the respective occurrence of the preferred scarabaeid beetle hosts.

*Scolia hirta* is xerophilic and its distribution pattern apparently did not change during the record history (BAĀA *et al.* 1938 in comparison to the present study). It is threatened only due to its preference of xerothermic sites.

*Scolia sexmaculata* was not recorded in the Czech Republic for a long time. Early records came from the Polabí lowland and south Moravia (BAĀA *et al.* 1938). MACEK *et al.* (2010) classified the species as being extinct in Bohemia. However, recently it was rediscovered in two regions in Bohemia (BOGUSCH *et al.* 2011) and it is spreading to other localities. The situation in southern Moravia is also changing. Twenty years ago the species was restricted to a few very warm sandy localities. Recently, it has been recorded in a number of other sites and it is spreading to the north-west. This increase is similar to other aculeate Hymenoptera, which were rare or absent in the Czech Republic and are recently spreading in this country (TYRNER 2005, BOGUSCH *et al.* 2011). Perhaps the recent warmer climatic conditions allow *S. sexmaculata* and its potential hosts to colonise new localities particularly in northern parts of the country.

*Megascolia maculata* was formerly unknown from the Czech Republic, although many amateur entomologists from south Moravia reported about their own (unconfirmed) observations of the species. The host of this wasp, the beetle *Oryctes nasicornis*, is not rare in the warmer parts of the Czech Republic. First records of *M. maculata* came from the southernmost part of the Czech Republic and have been confirmed in 2013 (P. Bogusch, unpublished). Thus, we can count this species to be a new member of the fauna of the Czech Republic. The distribution in

neighbouring countries isn't well known but it occurs very rarely in southern Slovakia (Podunajská nížina lowland) and north and central Hungary (P. Bogusch, unpublished records). Its presence in Poland is unlikely.

*Colpa sexmaculata* is a species with specific ecology. It was not rare in several localities in south-eastern Moravia in 30's and 40's of the 20th century (BAŤA *et al.* 1938) but probably disappeared from this region after that (MACEK *et al.* 2010). The recent absence of this species in this region, as well as in the whole south Slovakia, was probably caused by the extensive use of pesticides affecting the potential hosts. Many potential localities also overgrew by grass and shrub. Recently, the species is common in central Hungary, but only at sites with large bare sand patches (P. Bogusch, unpublished).

Our results show that all four species are endangered and that their distribution depends not only on the host beetles, but also on the structure and character of the biotope. Occurrence of all three present

species in sandpits and former military training areas show that there is a lack of sites with bare sand patches (BOGUSCH, STRAKA 2011). Only appropriate management of the sites can help these conspicuous wasps to stay in the nature of both countries.

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