

Dasygoda morawitzi Radchenko 2016 (Hymenoptera, Anthophila) a new species in the Polish fauna

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Zusammenfassung

Jacek Wendzonka, Waldemar Celary, Tomasz Klejdysz, Anna Krzysztofiak, Tadeusz Pawlikowski, Joanna Pośłowska, Tomasz Rutkowski, Lucyna Twerd, Przemysław Żurawlew: *Dasygoda morawitzi* Radchenko 2016 (Hymenoptera, Anthophila) eine neue Wildbienenart für die polnische Fauna. Die Hosenbiene *Dasygoda morawitzi* Radchenko 2016 konnte das erste Mal in Polen nachgewiesen werden. Verbreitungsdaten dieser Art und der nahe verwandten *D. hirtipes* (Fabricius, 1793) werden auf Basis der Sammlungen der Autoren analysiert.

Summary

Dasygoda morawitzi Radchenko 2016 is a species reported for the first time from Poland. Data on the distribution of this species and related *D. hirtipes* (Fabricius, 1793) were obtained on the basis of the analysis of specimens from the authors' collections.

Introduction

In Poland, to this time, three species of the genus *Dasygoda* Latreille, 1802 (Celary 2005, Michez et al. 2004) have been reported. These are: *D. argentata* Panzer, 1809, *D. hirtipes* (Fabricius, 1793) and *D. suripes* (Christ, 1791). In 2016 Radchenko described a new species *D. morawitzi*, not distinguished so far from *D. hirtipes*. He reported numerous localities from Kazakhstan, Ukraine, Russia and Turkey (Radchenko 2016). These results suggested the Eastern European distribution, but later the species was found in Central Europe in Austria, Germany, Bulgaria (Schmid-Egger & Dubitzky 2017), southern France, Serbia, Slovakia (Ghisbain et al. 2018) and also in Hungary (Shebl et al. 2018). These data suggested that there are no obstacles preventing the species from occurring in Poland. This prompted the authors to review all specimens *D. hirtipes* from their collections, which allowed to detect *D. morawitzi* in the area of Poland.

Methods

The material was distinguished on the basis of descriptions and photographs from the mentioned works (Radchenko 2016, Schmid-Egger & Dubitzky 2017). The maps were generated using the program „MapaUTM” by Grzegorz Gierlasiński (<http://www.heteroptera.us.edu.pl/mapautm.html>). Points on the maps were separated into records from before and after 1990.

Results

A total of 1439 specimens were tested, of which 1291 belonged to *D. hirtipes* (515 ♀♀, 776 ♂♂), and 148 for *D. morawitzi* (125 ♀♀, 23 ♂♂).

The analyzed material came from 322 research positions located in 180 UTM squares, respectively for *D. hirtipes*: 313 and 172, for *D. morawitzi*: 20 and 18 (Fig. 1).

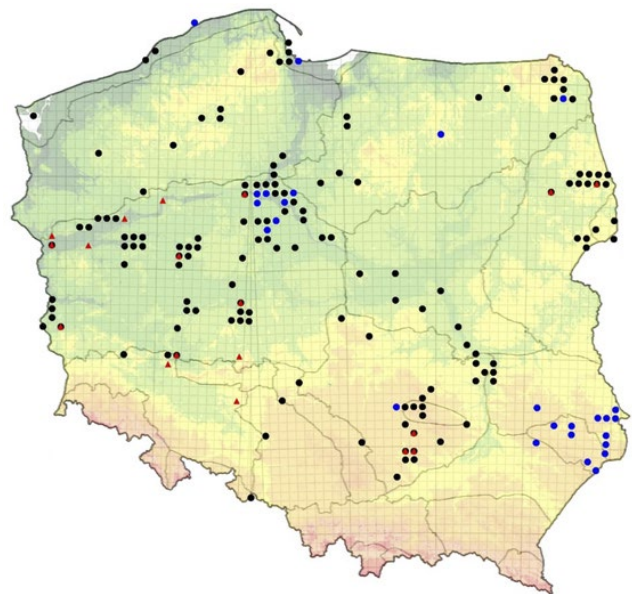


Fig. 1: Distribution map of *Dasygoda hirtipes* (● before 1990, ● after 1990), and *D. morawitzi* (▲ after 1990) in Poland, based on UTM grid.

Localities *D. morawitzi* in Poland

Below is a list of localities with their characteristics.

- Wielkopolsko-Kujawska Lowland, Mierków, VT93, 51°47'49"N, 14°54'39"E. Dry meadows at the foot of the disused railway line of the NW-SE course. Rich xerothermic and ruderal vegetation like *Sedum* sp., *Jasione montana*, *Hieracium pilosella*, *Tanacetum vulgare*, *Knautia arvensis* (Fig. 2). In the vicinity damp, mowed meadows.

Material: 9 VII 2011 - 1 ♀, leg. det. et coll. J. Wendzonka.



Fig. 2: Mierków – locality of *Dasygoda morawitzi* – view of the grassland from the side of the railway embankment (photo: Wendzonka).

- Wielkopolsko-Kujawska Lowland, Tarnów, VT93, 51°46'26"N, 14°52'01"E.

Sandy crossroads on the border of the village and the forest. The initial grasslands on the sand with *Corynephorus canescens*, *Hieracium pilosella*, *Jasione montana* and *Coryza canadensis*. The characteristic and dominant species of Aculeata in this location are *D. morawitzi* and *Bembix rostrata* (Linnaeus, 1758) forming a mixed colony (Fig. 3). Interestingly, 27 of the collected females were dead and lay on the sand.

Material: 24 VII 2011 – 30 ♀♀, 7 ♂♂, leg. det. et coll. J. Wendzonka.



Fig. 3: Tarnów – locality of *Dasygoda morawitzi* – view of rural buildings and the initial sandy grassland (photo: Wendzonka).



Fig. 4: Tarnów – locality of *Dasygoda morawitzi* – view on sandy grassland with *Corynephorus canescens* and mixed colony of *Dasygoda morawitzi* (bright mounds) and *Bembix rostrata* (dark mounds) (photo: Wendzonka).



Fig. 5: Tarnów – locality of *Dasygoda morawitzi* – sand scraping, the entrance hole to the nest is located under the tuft of *Corynephorus canescens* (photo: Wendzonka).

- Wielkopolsko-Kujawska Lowland, „Ujście Warty” National Park, Czarnowska Górka, 1 km to N ad Czarnów, VU82, 52°32'38"N, 14°45'28"E.

Sandy enclave, which is an extension of forested dunes from the southern boundary of the Park. A place of xerothermic nature. In the central part with loose sands and initial lichen communities and trees.

Material: 12 VIII 2012 – 4 ♀♀, leg. det. et coll. J. Wendzonka.

- Wielkopolsko-Kujawska Lowland, „Ujście Warty” National Park, Mościczkowa Górka, 1,5 km to S ad Mościczki village, VU83, 52°39'59"N, 14°50'30"E. Initial grassland with a sandy substrate and xerothermic and ruderal vegetation (Fig. 6).

Material: 12 VIII 2012 – 1 ♀, 1 ♂, leg. det. et coll. J. Wendzonka.

- Wielkopolsko-Kujawska Lowland, Skwierzyzna, WU22, 52°35'33"N, 15°23'37"E. Sandy initial grassland under the high voltage power line.

Material: 24 VIII 2012 – 1 ♀, leg. T. Rutkowski, det. et coll. J. Wendzonka.



Fig. 6: Mościczkowa Górka, „Ujście Warty” National Park – locality of *Dasypoda morawitzi* (photo: Wendzonka).

- Wielkopolsko-Kujawska Lowland, Straszewo, WU65, 52°51'33"N, 15°57'30"E.
The edge of the Noteć valley with a running railway line on the route Krzyż Wielkopolski-Drezdenko. Flowery xerothermic initial grassland (Fig. 7).
Material: 29 VII 2017 – 1 ♂, leg. det. et coll. J. Wendzonka.



Fig. 7: Straszewo – locality of *Dasypoda morawitzi*. In the foreground a xerothermic grassland, a further railway line and the Noteć river (photo: Wendzonka).

- Wielkopolsko-Kujawska Lowland, Osiniec, 2 km to E ad Trzcianka, XU07, 53°01'51"N, 16°29'47"E. Initial grassland in a mid-field environment.
Material: 18 VII 2013 – 7 ♀♀, 7 ♂♂; 13 VIII 2013 – 4 ♀♀, leg. T. Rutkowski, det. et coll. J. Wendzonka.
- Wielkopolsko-Kujawska Lowland, Poznań, XU21, 52°29'07"N, 16°54'01"E. Flowery grassland with *Armeria maritima* and *Hieracium pilosella* near southern border of „Meteoryt Morasko” nature reserve.
Material: 14 VII 2018 – 5 ♀♀, leg. T. Klejdysz, det. et coll. J. Wendzonka.
- Wielkopolsko-Kujawska Lowland, Białe Błota, XU98, 53°06'34"N, 17°56'50"E. Railway embankment and wide railroad shoulder with *Scabiosa columbaria*, *Hieracium pilosella*, *Helichrysum arenarium*, *Thymus serpyll-*

lum and *Centaurea jacea*. In the vicinity pine forests.

Material: 18 VIII 2017 – 4 ♀♀, 1 ♂, leg. det. et coll. L. Twerd.

- Wielkopolsko-Kujawska Lowland, Żbiki, XT96, 51°58'54", 17°48'11"E. A three-year old backyard garden with a large lawn, vegetable garden, numerous plantings of ornamental plants, shrubs and young trees. The area is surrounded by extensive cultivated fields, in the vicinity a road with sandy shoulders and low vegetation. Insects were drowned in a blue swimming pool for kids.
Material: 17 VII 2017 – 5 ♀♀, 3 ♂♂; 15 VIII 2017 – 7 ♀♀, 1 ♂, leg. P. Żurawlew, det. et coll. J. Wendzonka.
- Wielkopolsko-Kujawska Lowland, Szklarka Przygodzicka, XT90, 51°28'52"N, 17°46'34"E. Sandy initial grasslands on a roadside.
Material: 25 VIII 2004 – 2 ♀♀, leg. T. Rutkowski, det. et coll. J. Wendzonka.
- Wielkopolsko-Kujawska Lowland, 1 km to S ad Szklarka Przygodzicka, XT90, 51°28'04"N, 17°48'29"E. Initial grassland.
Material: 21 VII 2012 – 2 ♀♀, leg. T. Rutkowski, det. et coll. J. Wendzonka.
- Lower Silesia, Kuźnica Miodarska, 7 km to S ad Namysłów, XS95, 50°59'40"N, 17°43'01"E. Post-agrar wasteland near a small village.
Material: 1 VIII 2010 – 1 ♂, leg. det. et coll. J. Wendzonka.
- Lower Silesia, Trzcinica Wołowska, „Korydon” ecological site, XT20, 51°26'21"N, 16°43'47"E. Gravel pit with initial grassland.
Material: 12 VIII 2013 – 2 ♀♀, leg. T. Rutkowski, det. et coll. J. Wendzonka.
- Lower Silesia, Smogorzówek, XS19, 51°25'16"N, 16°40'05"E. Gravel pit with initial grassland in the mid-field environment.
Material: 9 VIII 2012 – 2 ♀♀; 24 VII 2013 – 1 ♀, 1 ♂; 11 VIII 2013 – 2 ♀♀, leg. T. Rutkowski, det. et coll. J. Wendzonka.
- Małopolska Upland, „Skowronno” sanctuary, DA69, 50°32'33"N, 20°29'11"E. Reserve with xerothermic grassland on limestone, but in the vicinity there are places with fragments of sandy grasslands.
Material: 8-29 VIII 2013 – 1 ♀, leg. det. et coll. W. Celary.
- Małopolska Upland, Piotrkowice, DB71, 50°40'07"N, 20°40'17"E. Wet meadows, but in the vicinity there are grasslands on the sandy ground.
Material: 10-24 VII 2017 – 1 ♀, 24 VII-6 VIII 2017 – 7 ♀♀, leg. det. et coll. J. Pośłowska.
- Małopolska Upland, Zwierzyniec, DA79, 50°30'46"N, 20°42'43"E. Wet meadows, but in the vicinity there are grasslands with sandy ground.
Material: 31 VII-12 VIII 2016 – 1 ♀; 6-21 VIII 2017 – 33 ♀♀, leg. det. et coll. J. Pośłowska.

- Podlasie, Kruszewo, FD28, 53°07'09"N, 22°50'06"E. Overgrown sand pit with *Centaurea jacea*, *Scabiosa columbaria*, *Helichrysum arenarium*, *Thymus serpyllum*, *Cichorium intybus*. Surrounded by arable fields and buildings.

Material: 30 VII 2008 – 1 ♀, leg. det. et coll. L. Twerd.

- Podlasie, Waliń Dwór, FD79, 53°08'01"N, 23°36'14"E. Sandy grassland on sand pit banks with *Jasione montana*, *Lathyrus tuberosus*, *Echium vulgare*, *Knautia arvensis* and *Helichrysum arenarium*. Surrounded with fallow land and arable fields.

Material: 23 VII 2017 – 1 ♀, leg. det. et coll. L. Twerd.

Discussion

In Poland, *D. morawitzi* was found at 20 sites, of which on 12 it co-occurred with *D. hirtipes*. These positions lie in the belt of central Polish lowlands and highlands in the south.

Preferred environments are grasslands, mainly sandy. They range from initial forms to dry flower meadows. All positions are areas subjected to anthropopressure and are the effect of the functioning of railway lines, gravel pits and sand pits, roadsides or wastelands. Some of the stands are located near large rivers (Noteć, Warta), or within wet meadows, but then there are always sandy grasslands nearby. Radchenko (2016) reports that the species is rather widespread and that in part of the area (Kazakhstan, Crimea) is more common than the sister *D. hirtipes*. Data from Poland indicate that *D. morawitzi* is a clearly rarer species. It occurs at 6.2 % of the positions analyzed, for *D. hirtipes* this indicator is 97.2 %. Nevertheless, the number of *D. morawitzi* posts in Poland is relatively high in the context of only one position in Germany and their absence in the Czech Republic, despite the intentional search (Schmid-Egger & Dubitzky 2017). In the light of new data from southern France (Ghisbain et al. 2018) it is difficult to judge the reasons for this condition, and the issue of determining the western boundary of the area requires further research. According to Radchenko (2016) *D. morawitzi* is a polylectic species with the preference of the Asteraceae families (mainly *Inula britannica*, *Cichorium intybus*, *Picris hieracioides*) and Plumbaginaceae (*Limonium gmelini*), they also collect from single species from Apiaceae, Boraginaceae, Caprifoliaceae and Lamiaceae. *C. intybus* and *P. hieracioides* are species of plants visited at the site in Austria (Schmid-Egger, Dubitzky 2017). On this basis, in this part of Europe, these authors consider *D. morawitzi* to be oligolectic (Asteraceae), which is confirmed by information from France (Ghisbain et al. 2018) and Hungary (Shebl et al. 2018). The analyzed material from Poland did not provide any

data on the flowering plants visited, but *C. intybus* and *P. hieracioides* are common on Polish sites.

The flight period in eastern part of the area runs from the beginning of May to mid-August (Radchenko 2016). Data from Central Europe shows that the species fly from start of July to the end of August (Schmid-Egger & Dubitzky 2017, data in this work). In southern part of area the flight period can be longer (Shebl et al. 2018). For comparison, the flight period of *D. hirtipes* in Poland runs from mid-June to mid-September (Celary 2005).

Dasypoda morawitzi is a relatively easy to distinguish species from *D. hirtipes*, however microscopic analysis of specimens is absolutely necessary. A key feature for both sexes is the galei sculpture, and additionally the sculpture and the mesonotum punctation. In the determination of males, it is important to analyze the structure of the genitalia. When comparing both species, it is also seen that *D. morawitzi* is a clearly smaller species. The size of the body should be treated only as an indicative feature because there are small specimens (males) of *D. hirtipes*.

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