

**Redescription of *Andrena stragulata* ILLIGER, 1806 (Hymenoptera:  
Apoidea: Anthophila: Andrenidae) – the new wild bee species for the  
Polish fauna**

WALDEMAR CELARY\*, BOGDAN WIŚNIEWSKI\*\*

\* Department of Ecology and Environment Protection, Institute of Biology,  
Jan Kochanowski University, Świętokrzyska 15, 25-406 Kielce, Poland,  
e-mail: waldemar.celary@ujk.edu.pl

\*\* Ojców National Park, 32-047 Ojców, Poland, e-mail: bogdan@isez.pan.krakow.pl

**ABSTRACT.** First record of *Andrena stragulata* ILLIGER, 1806 (Apoidea: Anthophila: Andrenidae) from Poland is presented. Information on morphology (diagnosis and redescription), bionomics and distribution of the species is given.

**KEY WORDS:** Hymenoptera, Apoidea: Andrenidae, *Andrena stragulata*, new records, biology, distribution, Poland.

---

INTRODUCTION

During research on the biodiversity of wild bees of the Magurski National Park (south-eastern Poland) two males of *Andrena* sp. were collected. They were identified as *A. stragulata* ILLIGER, 1806 - the species not recorded previously from Poland (BANASZAK 2000, DYLEWSKA 1997). It was the starting point for research of specimens in Polish collections of wild bees and their results indicate that *Andrena stragulata* ILL. is a good species. Until present, *A. stragulata* ILL. was recognized as the first generation of *Andrena rosae* PANZER, 1801 (DYLEWSKA 1987, GUSENLEITNER, SCHWARZ 2002, WESTRICH 1990).

This paper gives diagnosis, redescription and data on bionomics and distribution (some of the data after: ELSE & ROBERTS 2009, GUSENLEITNER & SCHWARZ 2002, MONSEVIČIUS

1995, WESTRICH 1990) of *A. stragulata* ILL. - the wild bee species new for the Polish fauna.

***Andrena stragulata* ILLIGER, 1806**

Magazin Insektenk 5: 62 Loc. Typ.: Germany

Synonym: *Andrena eximia* SMITH, 1847; *Andrena rosae* auct. nec PANZER, 1801 (partim)

**Diagnosis**

Female is easily recognizable by the following characters: orange second tergum (Fig. 1), broad facial fovea (its width is equal of one-half of distance between frontal line and paracocular carina), very fine microsculptured propodeal triangle (not rugose) and relatively long malar area (twice shorter than distal width) (Fig. 2). Male can be recognized by long malar area (twice shorter than distal width) with long spine on its posterior margin (Figs 3-4) and orange second tergum.



**Figs 1-4.** Morphology of *Andrena stragulata* ILLIGER. Females: 1 – metasoma in dorsal view, 2 – malar area; Males: 3 – head in frontal view, 4 – malar area.

### Redescription

**Female.** – Measurements and ratios: number of specimens, 9; number of hamuli, 12-15; length of body, 11.1-12.9 mm; length of metasoma (ML), 5.9-7.7 mm; width of metasoma (MW), 3.5-4.1 mm; ML : MW = 1 : 0.5-0.6; length of head (HL), 2.85-3.13 mm; width of head (HW), 3.49-3.91 mm; HL : HW = 1 : 1.2-1.3; length of face (FL), 2.35-2.49 mm; width of face (FW), 2.56-2.85 mm; FL : FW = 1 : 1.1; length of first flagellomere (FL<sub>1</sub>L), 0.47-0.50 mm; width of first flagellomere (FL<sub>1</sub>W), 0.22-0.24 mm; FL<sub>1</sub>L : FL<sub>1</sub>W = 1 : 0.4-0.5; length of second flagellomere (FL<sub>2</sub>L), 0.24-0.28 mm; length of third flagellomere (FL<sub>3</sub>L), 0.25-0.29 mm; FL<sub>1</sub>L : FL<sub>2</sub>L : FL<sub>3</sub>L = 1 : 0.5-0.6 : 0.5-0.6; length of malar area (MAL), 0.22-0.27 mm; width of malar area (MAW), 0.43-0.49 mm; MAL : MAW = 1 : 1.9-2.2.

– Structure: Head with more or less indistinct microsculpture; clypeus distinctly convex, shiny in the middle, densely punctured (distance between punctures as multiple of puncture diameter -  $E < 1$ ) with indistinct median longitudinal unpunctured line, punctures in the middle coarse, those along margins fine (Fig. 5); supraclypeal area shagreened, fine and densely punctured ( $E < 1$ ), dull; inner margins of eyes parallel; facial fovea reach below a line at lower margin of antennal socket, broad in upper part and narrowed in lower part; paraocular area densely and shallowly punctured ( $E \leq 1$ ), weakly shiny; frons with fine longitudinal wrinkles and very fine punctures, dull; vertex rather densely and very indistinctly, fine punctured; gena slightly broader than eye, sparsely and finely punctured, weakly shiny; malar area distinct, about 1/2 as long as its width (Fig. 2); apical part of labrum smooth and shiny; process of labrum trapezoidal, short and broad (about three times shorter than its basal width), straight apically, smooth and shiny (Fig. 5); flagellomeres cylindrical, slightly longer than their distal width. Scutum distinctly microsculptured, dull, sparsely and finely punctured (Fig. 6); punctures irregularly scattered ( $E = 0.5-8$ ); scutellum smooth and shiny (microsculpture indistinct) with scattered fine punctures, lateral and posterior margins dull; metanotum distinctly microsculptured, dull, rather densely and finely punctured; lateral parts of metapostnotum with indistinct microsculpture, weakly shiny; posterior part of metapostnotum (adjacent to propodeal triangle) distinctly microsculptured, densely and finely punctured ( $E = 1-2$ ), dull; propodeal triangle microsculptured, not wrinkled, weakly shiny; mesepisternum distinctly microsculptured, dull, with sparse and irregular, fine punctures ( $E = 1-4$ ). Terga indistinctly microsculptured with scattered fine punctures, moderately shiny; marginal zones of terga broad and distinct, without punctures (Fig. 7); pygidial plate V-shaped without raised triangular area, dull; sterna 2-5 with subtle microsculpture, weakly shiny, rather densely but irregularly punctured ( $E = 0.5-4$ ); punctures rather coarse and distinct (Fig. 8). Hind tibia, basitarsus, medio- and distitarsus slender.

– Integumental colouration: Head and mesosoma black; antennae and tegulae brownish black. Metasoma black with reddish (or partly reddish) second tergum and sternum, posterior margins of terga and sterna yellowish transparent (Fig. 1). Legs blackish brown, tibial spurs pale yellow translucent.

– Pubescence: Head rather sparsely covered with long (clypeus with shorter), erect (frons and vertex) and suberect (remainder of head), light brown hairs; facial fovea brown.

Scutum, scutellum and metanotum sparsely clothed with erect and rather short, light brown hairs; mesepisternum and mesosternum rather densely covered with long, yellowish white hairs; propodeal corbicula long and dense, yellowish white. Basal part of first tergum sparsely clothed with rather long and erect, light brown hairs; posterior margins of terga 2-4 sparsely covered with moderately long and suberect, light brown hairs; discs of terga 2-4 almost bare; disc of tergum 5 sparsely covered with rather long and suberect, brownish black hairs; prepygidial and pygidial fimbria brownish black; discs of sterna 2-5 densely covered with short and erect, brownish black hairs; posterior margins of sterna 2-5 with long and sparse, light brown subapical fimbriae. Trochanters and femora of fore and mid legs sparsely covered with erect and yellowish white hairs, those on fore legs long, those on mid legs short; tibiae of fore and mid legs sparsely covered with adpressed and rather short, blackish brown hairs; mid tibial comb brown; basitarsi sparsely clothed with suberect and relatively long hairs, those on outer surfaces blackish brown, those on inner surfaces brownish; trochanteral flocculus sparse and long, yellowish white; femoral flocculus long and sparse whitish; tibial scopa sparse, scopal hairs long and simple, whitish below and brownish above (Fig. 9).

**Male.** – Measurements and ratios: number of specimens, 5; number of hamuli, 10-12; length of body, 9.7-10.1 mm; length of metasoma (ML), 5.2-5.7 mm; width of metasoma (MW), 2.4-2.7 mm;  $ML : MW = 1 : 0.5$ ; length of head (HL), 2.41-2.75 mm; width of head (HW), 3.10-3.42 mm;  $HL : HW = 1 : 1.2-1.3$ ; length of face (FL), 1.91-2.26 mm; width of face (FW), 2.27-2.53 mm;  $FL : FW = 1 : 1.1-1.2$ ; length of first flagellomere ( $Fl_1L$ ), 0.26-0.29 mm; width of first flagellomere ( $Fl_1W$ ), 0.25-0.28 mm;  $Fl_1L : Fl_1W = 1 : 0.96$ ; length of second flagellomere ( $Fl_2L$ ), 0.45-0.51 mm; length of third flagellomere ( $Fl_3L$ ), 0.41-0.46 mm;  $Fl_1L : Fl_2L : Fl_3L = 1 : 1.7-1.8 : 1.6$ ; length of malar area (MAL), 0.22-0.25 mm; width of malar area (MAW), 0.42-0.50 mm;  $MAL : MAW = 1 : 1.9-2$ .

– Structure: Head with more or less indistinct microsculpture; clypeus distinctly convex, weakly shiny in the middle, densely punctured (distance between punctures as multiple of puncture diameter –  $E < 1$ ), punctures in the middle coarse, those along margins fine; supraclypeal area shagreened, fine and densely punctured ( $E < 1$ ), dull; inner margins of eyes slightly divergent; paraocular area rather densely and irregularly punctured ( $E = 0.5-2$ ), dull; frons with fine longitudinal wrinkles and very fine punctures, dull; vertex rather densely and very indistinctly, finely punctured; gena twice broader than width of eye, sparsely and finely punctured, weakly shiny; malar area with long process on posterior margin, long (about one half as long as width); process of labrum trapezoidal, short and broad (about three times shorter than basal width), slightly emarginated apically, smooth and shiny; mandibles long, bidental, crossed; flagellomeres slightly curved, twice longer than their distal width. Scutum distinctly microsculptured, dull to weakly shiny, sparsely and rather finely punctured, punctures irregularly scattered ( $E = 0.5-8$ ); scutellum smooth and shiny (microsculpture indistinct) with scattered fine punctures, lateral and posterior margins dull; metanotum distinctly microsculptured, dull, rather densely and finely punctured; lateral parts of metapostnotum microsculptured, weakly shiny; posterior part of

metapostnotum (adjacent to propodeal triangle) distinctly microsculptured, with scattered and fine punctures (E = 0.5-3), dull; propodeal triangle microsculptured, not wrinkled, weakly shiny; mesepisternum distinctly microsculptured, dull, with rather sparse and irregular, fine punctures (E = 1-4). Metasomal terga and sterna shiny with scattered fine punctures, marginal zones broad and without punctures; eighth sternum slightly emarginated on apex; genital capsule similar to that of *Andrena rosae* PANZER.

– Integumental colouration: Head, antennae and mesosoma black; tegulae dark brownish. Metasoma brownish-black with reddish pattern (second tergum reddish, third tergum and sterna 2-3 with reddish lateral marks), sometimes ornament reduced and indistinct (second tergum reddish in distal part and third one on sides), posterior margins of terga and sterna yellowish transparent. Legs blackish brown, tibial spurs pale yellow translucent.

– Pubescence: Head rather sparsely covered with long and erect (frons and vertex) or suberect (remainder of head) hairs, those on vertex yellowish brown, those on remaining parts of head dark brown to blackish brown. Scutum, scutellum and metanotum sparsely clothed with erect and long, yellowish brown hairs; sides and bottom of mesosoma rather densely covered with long, blackish brown to dark brown hairs. Metasoma sparsely covered with suberect hairs, those on terga 1-2 long and yellowish, those on terga 3-4 shorter and dark brown, those on terga 5-6 long and pale brown; posterior margins of terga 3-4 with sparse, yellowish hair bands; sterna with long, pale brown to brown hairs; posterior margins of sterna 2-5 with rather long and sparse, light brown subapical fimbriae. Legs sparsely clothed with brown hairs; these on coxae, trochanters and femora long and erect; hairs on tibiae and basitarsi shorter and suberect.

#### Material examined

**Slovakia.** Tatry Mts.: Lučky, 23.05.1985 - 3♀♀, leg. M. DYLEWSKA

**Ukraine.** Stanowce, 22.05.1868 - 3♀♀, leg. A. WIERZEJSKI

#### Poland.

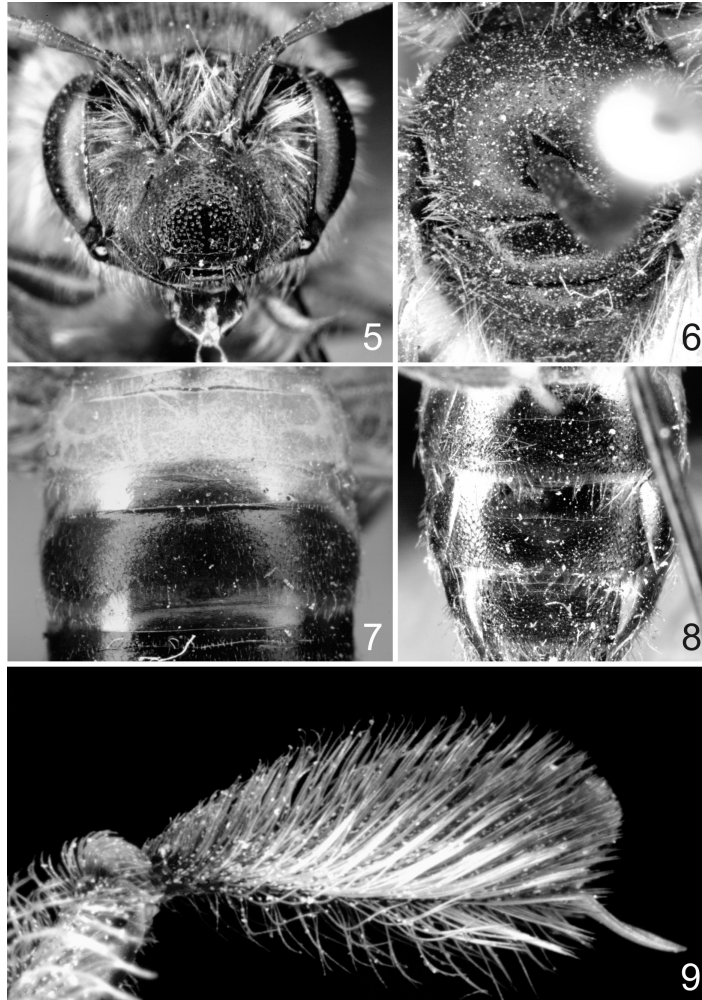
Wielkopolska-Kujawy Lowland. CD37 Toruń: 23.04.1947 - ♂, 30.04.1950 - ♀, 20.04.1952 - ♂, leg. J. ZABŁOCKI.

Kraków-Wieluń Upland. DA16 Ojców, 2.05.1988 - ♂, leg. M. DYLEWSKA.

Western Beskidy Mts. DV87 Zubrzyk, 4.05.1966 - ♀, leg. M. DYLEWSKA; DV87 Żegiestów, 29.04.1966 - ♀, leg. M. DYLEWSKA.

Eastern Beskidy Mts. EV18 Magura National Park: Żydowskie, 13.05.2005 - 2♂♂, leg. B. WIŚNIEWSKI.

All Polish localities given above are presented on figure 10.



**Figs 5-9.** Morphology of female of *Andrena stragulata* ILLIGER: 5 – head in frontal view, 6 – dorsum, 7 – metasomal terga, 8 – metasomal sternum, 9 – tibial scopa.

**Distribution** (Figure 11)

West and Central Europe (southern England, Austria, Czech Republic, European part of Russia, Germany, Lithuania, Netherlands, Poland, Slovakia, Switzerland, Ukraine).



Fig. 10. Polish localities of *Andrena stragulata* ILLIGER.

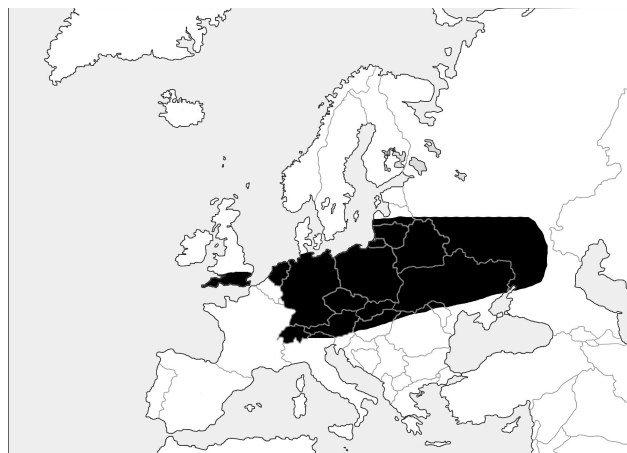


Fig. 11. General distribution of *Andrena stragulata* ILLIGER.

### Biology

Flight season: from the mid of April till the end of May. Flower preferences: Asteraceae (*Taraxacum officinale* F. H. WIGG.), Campanulaceae (*Campanula glomerata* L., *C. patula* L.), Rosaceae (*Cerasus avium* (L.) MOENCH, *Prunus spinosa* L.) and Salicaceae (*Salix caprea* L., *S. purpurea* L. *S. triandra* L., *S. viminalis* L.). Nests are excavated in the ground.

### REFERENCES

- BANASZAK J. 2000. A checklist of the bee species (*Hymenoptera, Apoidea*) of Poland, with remarks on their taxonomy and zoogeography: revised version. *Fragmenta faunistica* **43**: 135-193.
- DYLEWSKA M. 1987. Die Gattung *Andrena* FABRICIUS (*Andrenidae, Apoidea*) in Nord- und Mitteleuropa. *Acta zoologica cracoviensia* **30**: 359-708.
- DYLEWSKA M. 1997. Apoidea. [in:] *Wykaz zwierząt Polski*. J. RAZOWSKI (ed.). Instytut Systematyki i Ewolucji Zwierząt PAN, Kraków, vol. **5**. Pp: 61-74.
- ELSE G.R., ROBERTS S.P.M. 2009. *Andrena stragulata* ILLIGER 1806. [in:] Provisional atlas of the aculeate Hymenoptera of Britain and Ireland. R. EDWARDS, H. ROY (eds.). Biological Records Centre, Wallingford, part **7**, 80-81 pp.
- GUSENLEITNER F., SCHWARZ M. 2002. Weltweite Checkliste der Bienengattung *Andrena* mit Bemerkungen und Ergänzungen zu paläarktischen Arten (Hymenoptera, Apidae, Andrenidae, *Andrena*). *Entomofauna, Supplement* **12**: 1-1280.
- ILLIGER K. 1806. William KIRBY'S Familien der bienenartigen Insekten mit Zusätzen, Nachweisungen und Bemerkungen. *Magazin für Insektenkunde*, hrsg. von ILLIGER Karl. Braunschweig **5**: 28-175.
- MONSEVIČIUS V. 1995. A check-list of wild bee species (Hymenoptera, Apoidea) of Lithuania with data to their distribution and bionomics. [in:] *New and rare for Lithuania insect species. Records and descriptions of 1994-1995*. Institute of Ecology, Vilnius, 7-144 pp:.
- PANZER G.W.F. 1801. *Faunae Insectorum Germanicae initia oder Deutschlands Insekten gesammelt und herausgegeben von D. Georg Wolfgang Franz PANZER*. Heft **74**, Felssecker, Nürnberg.
- SMITH F. 1847. Description of British bees belonging to the genus *Andrena* of FABRICIUS. *Zoologist* **5**: 1916-1931.
- WESTRICH P. 1990. *Die Wildbienen Baden-Württembergs. Spezieller Teil: Die Gattungen und Arten*. Eugen Ulmer GmbH & Co., Stuttgart.

Received: November 15, 2009

Accepted: December 02, 2009