

The Genus *Andrena* from Kazakhstan and Kyrgyzstan (Hymenoptera, Andrenidae) (3)

Shebl, Mohamed A.

Entomological Laboratory, Graduate School of Bioresource and Bioenvironmental Sciences,
Institute of Tropical Agriculture, Kyushu University

Tadauchi, Osamu

Entomological Laboratory, Faculty of Agriculture, Kyushu University

<https://doi.org/10.5109/16146>

出版情報 : ESAKIA. 49, pp.21-62, 2009-12-21. Entomological Laboratory, Faculty of Agriculture,
Kyushu University

バージョン :

権利関係 :



The Genus *Andrena* from Kazakhstan and Kyrgyzstan (Hymenoptera, Andrenidae) (3)

Mohamed A. SHEBL¹⁾ and Osamu TADAUCHI²⁾

1) Entomological Laboratory, Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, Fukuoka, 812-8581 Japan

2) Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, 812-8581 Japan

Abstract. This is the third paper of a taxonomic study of the genus *Andrena* collected by the Kyushu University Expedition in Kazakhstan and Kyrgyzstan from 2000 to 20004. Collection data obtained from Central Asia in Oberösterreichischen Landesuseum, Linz and the American Museum of Natural History, New York are added. In this paper 21 species belongs to 10 subgenera from Kazakhstan and Kyrgyzstan are redescribed.

Key words: taxonomy, Hymenoptera, Andrenidae, *Andrena*, Kazakhstan, Kyrgyzstan

Introduction

In the previous papers Tadauchi (2006) recorded 10 species with redescription newly recorded from Kazakhstan by the Kyushu University Expedition in Kazakhstan and Kyrgyzstan. Tadauchi (2008) recorded 20 species collected by the Kyushu University Expedition along with the collection obtained from Zoological Institute of Kazakhstan Academy of Sciences, Almaty, Oberösterreichischen Landesuseum, Linz (OLML) and the American Museum of Natural History, New York (AMNH). This is the third one in a series of papers of the genus *Andrena* from Kazakhstan and Kyrgyzstan. Seventeen species are newly recorded with redescription of 21 species.

Material and Methods

This study is based on the material collected by the Kyushu University Expedition from Kazakhstan and Kyrgyzstan from 2000 to 2004. Some specimens are borrowed from foreign museums, Linz (Austria), New York (USA) and St. Petersburg (Russia). External structures of specimens are examined and described using stereoscopic microscope (OLYMPUS SZX9). Photos of

specimens were taken by using Nikon COOLPIX 995 Digital Camera, and Illustrated by using ADOBE PHOTOSHOP software. Examination of male genitalia carried out. The male terminalia were macerated with KOH 10% (potassium hydroxide) for at least half a day, and transferred to distilled water for dissection.

The morphological terminology in the description follows Tadauchi (2006, 2008). The terms and their abbreviations used are as follows: **T**: tergum, **S**: sternum, **HL**: head length, **HW**: head width, **MsW**: mesoscutum width, **MtW**: metasoma width, **IS**: interspace punctures, **OOD**: **POD**: **OCD**: ocellular distance: post ocellular distance: ocellocciptial distance, **FL1**: first flagellum length, **FL2**: second flagellum length, **FL3**: third flagellum length, **FVL**: facial fovea length, **FVW**: facial fovea width, **PP**: punctures, **CPL**: clypeus length, **GW**: **EW**: genal width: eye width. Floral association means that specimens of the species collected from flowers of the plant species.

31. *Andrena (Aenandrena) aeneiventris* Morawitz, 1872 (Fig. 1)

Andrena aeneiventris Morawitz, 1872, Verh. Zool., bot.

Ges. Wien, 22:368.

Andrena locularoides Strand, 1915, Arch. Naturgesch., 81A (4): 155.

Andrena (Aenandrena) aeneiventris: Gusenleitner & Schwarz, 2002, Entomofauna, Suupl., 12: 60.

Redescription.

Female.

Body length 7.5mm, wing length 5.0mm.

Color. Flagellum brownish beneath; mandibles black; wing membranes subhyaline, yellowish, veins and pterostigma yellow brownish; tibial spur yellowish; posterior depressions of metasomal terga black.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 200-250µm, whitish, with lateral fringes, those on vertex short 150-200µm, whitish, those on genal area dense, whitish, long, 200-300µm, facial fovea whitish. Hairs on mesoscutum dense, very short,

robust, pale yellowish; those on scutellum dense, very short, robust, pale yellowish, those on mesepisternum dense, whitish, long, 300-400µm, propodeal corbícula developed, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, whitish, femoral floccus dense, long, yellowish, tibial scopa developed, simple, whitish hairs. Hairs on metasomal terga slightly dense, short, whitish, T₁₋₂ with interrupted whitish hair bands, T₃₋₄ with completed whitish hair bands; caudal fimbria yellowish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 1.9mm, head width 2.4mm, HL/HW = 0.79. HW: MsW: MtW: 2.4: 1.7: 2.4. Vertex flat in frontal view, tessellate surface, shiny, with fine PP 30-40µm, IS = 0.5. OOD: POD: OCD: = 0.5: 0.35: 0.2. FL1 < FL2+FL3, FL2 = FL3 which are broader than long. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Facial fovea long, narrow,

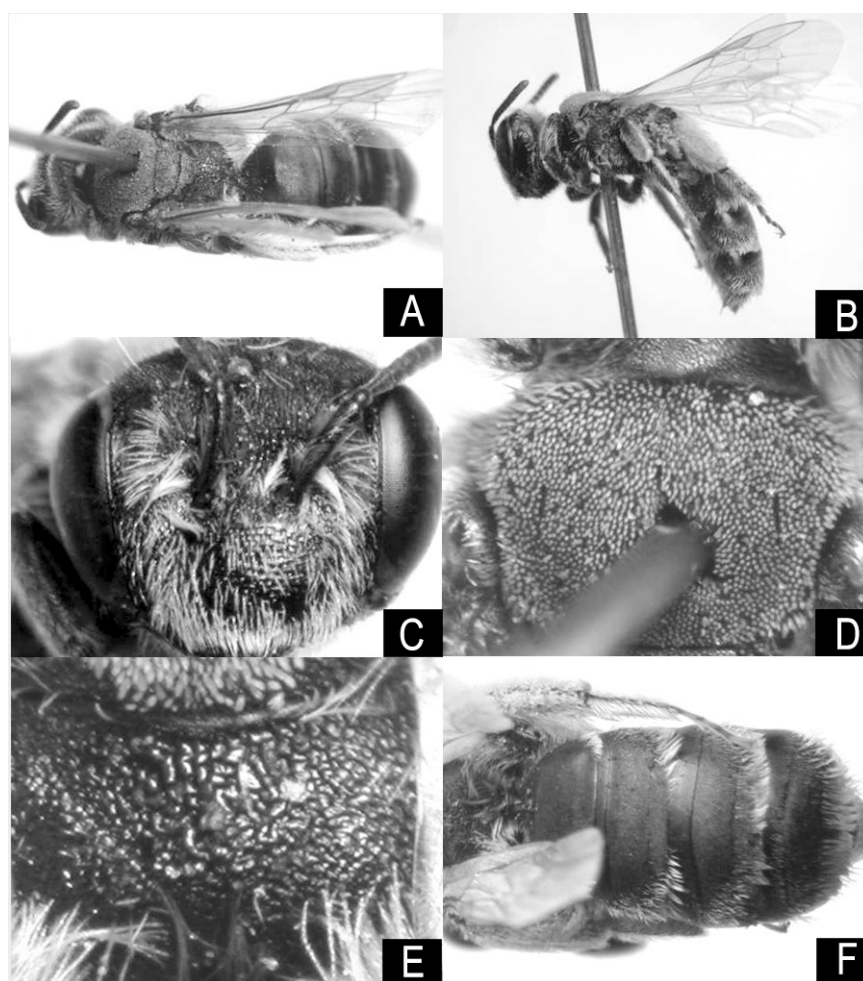


Fig. 1. *Andrena (Aenandrena) aeneiventris* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

not extending to a line at lower margins of antennal fossae, FVL = 0.95mm, FVW = 0.2mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.4:1.9). Clypeus convex, densely shagreening, punctate with dense, distinct PP 30µm, IS = 1, without longitudinal median impunctate space, CPL = 0.8mm. Process of labrum broad, trapezoidal. Lower paraocular area shiny, punctate with dense, minute PP 30µm, IS = 1. Malar space linear, small. Genal area as long as eye, GW: EW = 0.6 surface tessellate and shiny with minute PP 30µm, IS = 1. Mesosoma: Pronotum with lateral suture and without humeral angle, pronotum densely punctate, shiny with fine PP 25µm. Mesoscutum densely punctate, shiny with fine, distinct, small PP 30-40µm, IS = <0.5. Scutellum densely punctate, shiny with fine, distinct, small PP 30-40µm, IS = <0.5. Propodeal enclosure large, triangular, well indicated, rugulose; dorsal face of propodeum rugulose with fine, small PP 25µm. Mesepisternum tessellate, rugulose, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga densely punctate, shiny, T₁₋₄ with fine dense, small PP 20µm, IS = <0.5; posterior depressions of terga well indicated; pygidial plate U shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female, Achisai, 500-550m, Mts Karatau, S. Kazakhstan Prov. 6. vi. 2003 (K. Mitai); 1 female, Turkey-Horasau/Arastal. 16-6-1973 (K. Warncke)

Floral record. *Schrenkia golickeana*.

Distribution. Ukraine, Moldova, Russia, Kazakhstan, Tajikistan, South Europe (from Spain to Turkey), North Africa, Iran, Israel.

32. *Andrena (Aenandrena) hedikae* Jaeger, 1934 (Fig. 2)

Andrena hedikae Jaeger, 1934, Prirodosl. Razpr. Izdaja Zologa prirod. Sek. Muz. Drust. Slov., 2: 228.; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 336-337.

Redescription.

Female.

Body length 6.8mm, wing length 5.2mm.

Color. Flagellum ferruginous beneath; mandibles black reddened apically; wing membranes subhyaline, yellowish brown, veins and pterostigma yellowish brown; tibial spur yellowish; posterior depressions of metasomal

terga bronze.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, short 100-150µm, whitish, with lateral fringes, those on vertex slightly long 200-250µm, whitish, those on genal area dense, whitish, short, 80-120µm, facial fovea whitish. Hairs on mesoscutum dense, very short, robust, pale yellowish; those on scutellum dense, very short, robust, pale yellowish, those on mesepisternum dense, whitish, short, 150-250µm, propodeal corbicular moderately developed, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, sparse, whitish, femoral floccus dense, long, yellowish, tibial scopa developed, simple, whitish hairs. Hairs on metasomal terga T₁ laterally with sparse, short 120-180µm, whitish hairs, T₂₋₄ with slightly dense, short, sub-erect hairs, T₁₋₃ with interrupted whitish hair bands, T₄ with complete whitish hair band; caudal fimbria yellowish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 1.9mm, head width 2.6mm, HL/HW = 0.73. HW: MsW: MtW: 2.6: 1.7: 2.2. Vertex flat in frontal view, tessellate surface, shiny, with fine PP 30µm, IS = 0.5. OOD: POD: OCD: = 0.45: 0.4: 0.2. FL1 < FL2+FL3, FL2 > FL3 which are broader than long. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Facial fovea long, narrow, attaining to a line at lower margins of antennal fossae, FVL = 0.9mm, FVW = 0.2mm. Face above antennal fossae with fine longitudinal rugulae and strong interrugal PP, smooth surface. Facial quadrangle broader than long (2.6:1.9). Clypeus convex, smooth, punctate with dense, distinct, roughened PP 40µm, IS = 0.5-1, without longitudinal median impunctate space, CPL = 0.7mm. Process of labrum broad, rectangular, emarginated apically. Lower paraocular area shiny, punctate with dense, minute PP 30µm, IS = 0.5. Malar space linear, small. Genal area smaller than eye, GW: EW = 0.45:0.7, surface smooth and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum with lateral suture and without humeral angle, pronotum shagreening surface, punctate, shiny with fine PP 20µm. Mesoscutum densely punctate, shiny with fine, distinct, small PP 30-40µm, IS = <0.5. Scutellum densely punctate, shiny with fine, distinct, small PP 30µm, IS = <0.5. Propodeal enclosure large, triangular, well indicated, rugulose; dorsal face of propodeum rugulose with fine, small PP 25µm. Mesepisternum tessellate, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga densely punctate, shiny, T₁₋₄ with fine dense, small PP 20-25µm, IS = <0.5; posterior depressions of terga well indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with

dense, minute PP25µm.

Specimens examined. [KAZAKHSTAN] 1 female, Talas Mt. R., 3 km W. Dzhabagly. 5.08.2000 (Makogonova).

Floral record. Not available.

Distribution. Moldova, Ukraine, Russia, Hungary, Slovakia, Yugoslavia, Italy, France, Spain, North Africa, Azerbaijan, Turkey, Kazakhstan. (new record)

33. *Andrena (Andrena) fucata* Smith, 1847

Andrena fucata Smith, 1847, Zoologist, 5: 1743.

Andrena clypearis Nylander, 1848, Notis. Sallsk. Faun. Fel. Fenn. Forh., 1: 215.

Andrena (Biareolina) norvegica Strand, 1910, Nytt Mag. Naturvid., 48: 334.

Andrena (Andrena) fucata: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 288-289.

Redescription.

Female.

Body length 10.3mm, wing length 8.5mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, moderately brown, veins and pterostigma brownish; tibial spur pale brownish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 300-400µm, whitish, with lateral fringes, those on vertex long 500-700µm, brownish, those on genal area dense, whitish, long, 400-500µm, facial fovea brownish. Hairs on mesoscutum dense, long 400-500µm, yellowish; those on scutellum dense, long 400-500µm, yellowish, those on mesepisternum dense, whitish, long, 600-900µm, propodeal corbicular well developed, whitish, with internal simple, sparse hairs, trochanteral floccus perfect, whitish, femoral floccus

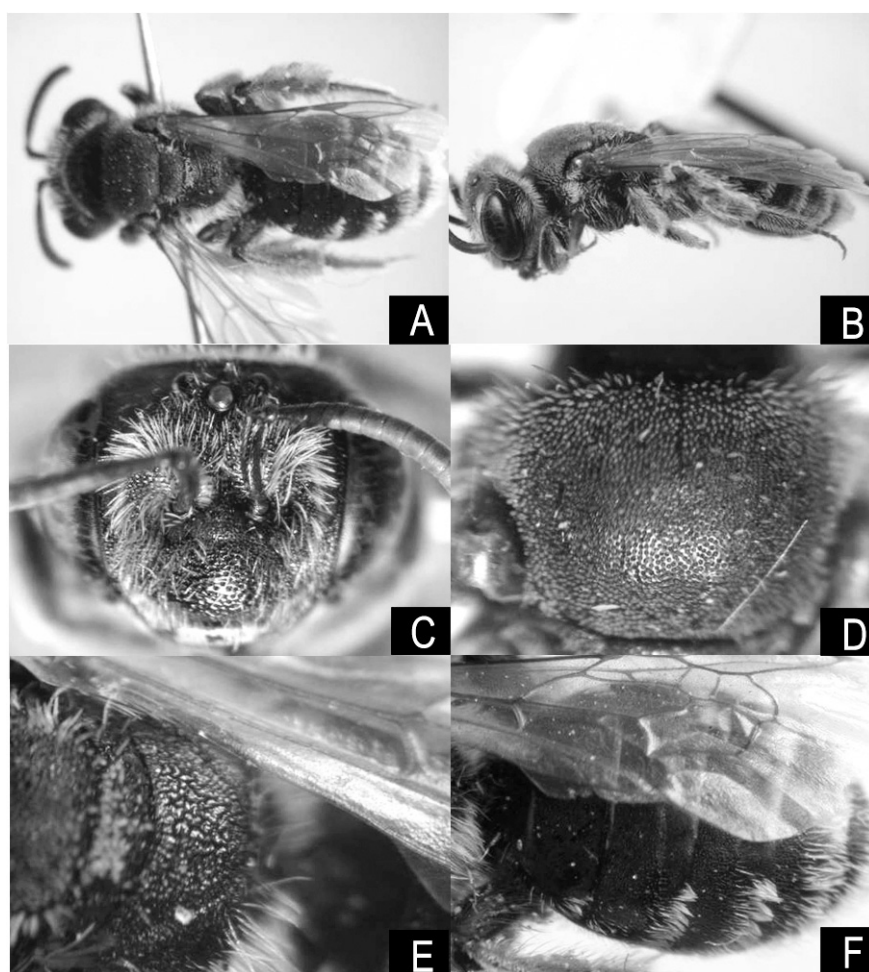


Fig. 2. *Andrena (Aenandrena) hedikae* Jaeger, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

dense, long, brownish, tibial scopa developed, simple, whitish hairs. Metasomal terga T₁ anteriorly with dense, long whitish hairs 300-600µm, T₂₋₄ with suberect, short hairs, metasomal terga T₁₋₄ with interrupted hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.8mm, head width 3.5mm, HL/HW = 0.80. HW: MsW: MtW: 3.5: 2.5: 3.3. Vertex rounded in frontal view, tessellate surface, shiny, with fine, distinct PP 30µm, IS = 1. OOD: POD: OCD: = 0.7: 0.4: 0.25. FL₁ = FL₂ + FL₃, FL₂ < FL₃ which are longer than broad. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with small PP. Facial fovea long, broad, occupying 1/2 space between eye and lateral ocellus, extending to a line at lower margins of antennal fossae, FVL = 1.4mm, FVW = 0.4mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (3.5:2.8). Clypeus convex, shagreening surface, punctate with dense, distinct PP 30-40µm, IS = 1, with longitudinal median impunctate space, CPL = 1.1mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area shiny, shagreening, punctate with dense, minute PP 30µm, IS = 1. Malar space linear. Genal area broader than eye GW: EW = 0.9:0.7 surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate, shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS = 1. Scutellum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS = 1. Propodeal enclosure large, triangular, well indicated, 1/3 basally rugulose, 2/3 tessellate apically; dorsal face of propodeum tessellate with fine, small PP 30µm. Mesepisternum tessellate, punctate, with fine, small PP 40µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga densely tessellate, punctate, shiny, T₁ with fine sparse, small PP 25µm, IS=1-2, T₂₋₄ with sparse, fine, small PP >20µm, IS = 3-4; posterior depressions of terga well indicated; pygidial plate U shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female, KaTaB-IIBaHOBCK., 3., IIBOIIHIIIII YÖ. 24. v. 1926 (Bakirehko).

Floral record. Not available.

Distribution. Europe, Caucasus, Kazakhstan, Turkey.

34. *Andrena (Andrena) lapponica* Zetterstedt, 1838 (Figs. 3-5)

Andrena lapponica Zetterstedt, 1838, Insect. Lappon., 1:460.

Andrena (Andrena) lapponica: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 414-415.

Redescription.

Female.

Body length 10.2mm, wing length 8.2mm.

Color. Flagellum brownish beneath; mandibles black with apical half reddened; wing membranes subhyaline, brown, veins and pterostigma brownish; tibial spur brown; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, brownish; those on clypeus dense, long 350-500µm, brownish, with lateral fringes, those on vertex long 600-700µm, brownish, those on genal area dense, brownish, long, 550-650µm, facial fovea brownish. Hairs on mesoscutum dense, long 350-550µm, yellowish; those on scutellum dense, long 350-550µm, yellowish, those on mesepisternum dense, brownish, long, 700-800µm, propodeal corbicle developed, yellowish, without internal simple hairs, trochanteral floccus perfect, whitish, femoral floccus dense, long, brownish, tibial scopa developed, simple, whitish hairs. Metasomal terga T₁₋₂ with dense, long 300-400µm, yellowish hairs, T₃₋₄ with dense, long 400µm, brownish hairs, metasomal terga without hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.8mm, head width 3.4mm, HL/HW = 0.82. HW: MsW: MtW: 3.4: 2.7: 3.5. Vertex flat in frontal view, tessellate surface, shiny, with fine PP 30µm, IS = 1. OOD: POD: OCD: = 0.7: 0.4: 0.25. FL₁ > FL₂ + FL₃, FL₂ < FL₃ which are broader than long. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with small PP. Facial fovea long, broad, occupying 3/4 space between eye and lateral ocellus, extending to a line at lower margins of antennal fossae, FVL = 1.5mm, FVW = 0.4mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (3.4:2.8). Clypeus convex, tessellate, punctate with dense, distinct PP 40µm, IS = 1, with longitudinal median impunctate space, CPL = 1.0mm. Process of labrum broad, trapezoidal. Lower paraocular area shiny, punctate with dense, minute PP 30µm, IS = 1. Malar space linear, broad. Genal area slightly broader than eye GW: EW = 0.75:0.6 surface tessellate and shiny with minute PP

25µm, IS =1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate, shiny with fine PP 30µm. Mesoscutum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS =1. Scutellum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS =1. Propodeal enclosure large, triangular, well indicated, tessellate, rugulose; dorsal face of propodeum tessellate with fine, small PP 30µm. Mesepisternum tessellate, punctate, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, punctate, shiny, T₁₋₄ with fine dense, small PP 25µm, IS =2; posterior depressions of terga weakly indicated; pygidial plate U shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Male.

Body length 8.3mm, wing length 6.9mm.

Color. Flagellum brownish beneath; mandibles black with apical half reddened; wing membranes subhyaline, brown, veins and pterostigma brownish; tibial spur yellowish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 450-500µm, whitish, with lateral fringes, those on vertex long 550-700µm, whitish, mixed with brownish, those on genal area dense, whitish, long, 550-650µm. Hairs on mesoscutum dense, long 300-350µm, yellowish; those on scutellum slightly dense, long 350-500µm, yellowish, those on mesepisternum dense, whitish, long, 600-750µm. Hairs on metasomal terga T₁₋₂ with slightly dense, long hairs 150-350µm, whitish hairs, T₃₋₄ with dense, short 100-200µm, brownish hairs, metasomal terga without hair bands; caudal fimbria yellowish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.1mm, head width 2.7mm,

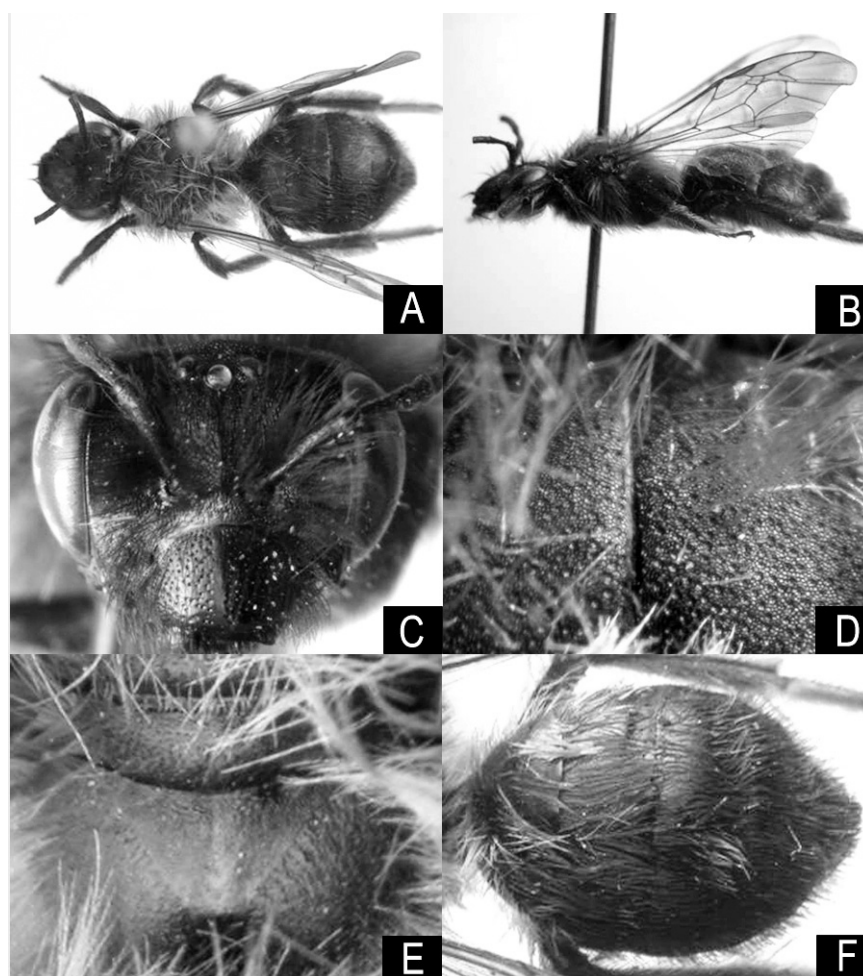


Fig. 3. *Andrena (Andrena) lapponica* Zetterstedt, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

HL/HW = 0.78. HW: MsW: MtW: 2.7: 1.7: 2.2. Vertex flat in frontal view, tessellate surface, shiny, with fine PP 30 μ m, IS =1. OOD: POD: OCD: =0.5: 0.3: 0.2. FL1< FL2+FL3, FL2 < FL3 which are broader than long. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.7:2.1). Clypeus convex, tessellate, punctate with dense, distinct PP 30 μ m, IS = 1, without longitudinal median impunctate space, CPL = 0.9mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area shiny, tessellate, punctate with dense, minute PP 30 μ m, IS=1. Malar space linear, broad. Genal area broader than eye GW: EW =0.8:0.65 surface tessellate and shiny with minute PP 25 μ m, IS =2. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate, shiny with fine PP 25 μ m. Mesoscutum

densely tessellate, punctate, shiny with fine, distinct, small PP 30 μ m, IS=1. Scutellum densely tessellate, punctate, shiny with fine, distinct, small PP 30 μ m, IS =1. Propodeal enclosure small, triangular, weakly indicated, tessellate, rugulose; dorsal face of propodeum tessellate with fine, small PP 25 μ m. Mesepisternum tessellate, punctate, with fine, small PP 30 μ m. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, punctate, shiny, T₁₋₄ with fine sparse, small PP 25 μ m, IS =2; posterior depressions of terga weakly indicated. S₂₋₅ strongly tessellate and shiny with dense, minute PP20 μ m.

Specimens examined. [KYRGYZSTAN] 1 female, Issyk-ata, 1800m, 27. v. 2000 (D. Ahmatjan). [KAZAKHSTAN] 1 female, Achisai, 500-550m, Mts Karatau, S. Kazakhstan Prov. 6. vi. 2003 (K. Mitai): 1 female, Talasskaya Obi., Fer. Khrebet, Kara-Suu, 2000-2200m. 8. 6. 1995. (H & R. Rausch, P. Ressler). [RUSSIA]

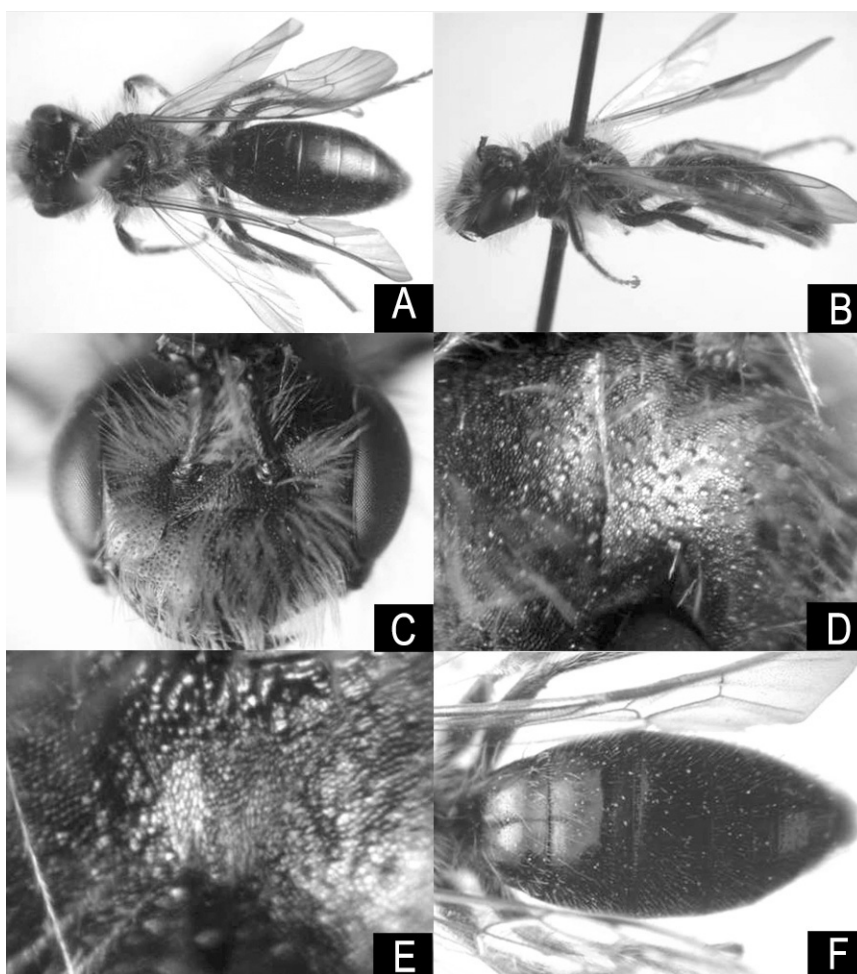


Fig. 4. *Andrena (Andrena) lapponica* Zetterstedt, male. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

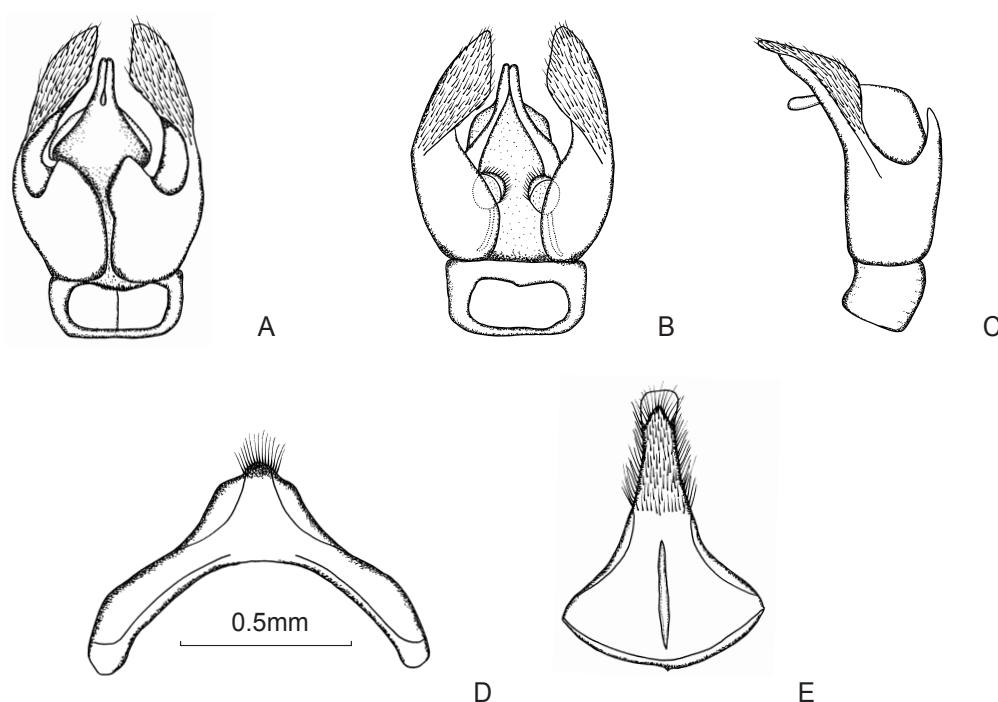


Fig. 5. *Andrena (Andrena) lapponica* Zetterstedt, male. Genital capsule and subgenital sterna. A: dorsal view of genital capsule; B: ventral view of genital capsule; C: lateral view of genital capsule; D: metasomal sternum 7; E: metasomal sternum 8.

1 female, 12. vi. 1990. (B. КИЗЗерИццИй); 1 male, 2 km Ю. А7МаЫ, Ю -В Ка3ахсТай, Ка3еНас. 30. v. 1998.

Floral record. *Triforium repens*.

Distribution. West Europe, European part of USSR, southwestern Asia, Kyrgyzstan, Kazakhstan.

35. *Andrena (Andrena) praecox* (Scopoli, 1763) (Fig. 6)

Apis praecox Scopoli, 1763, Entom. Carn.: 301.

Melitta smithella Kirby, 1802, Monogr. Apum Angl., 2: 131.

Andrena flavescens Schenck, 1853, Jb. Ver. Naturk. Nassau, 9: 138.

Andrena clypeata Smith, 1855, Cat. Brit. Hym. Brit. Mus., 1: 84.

Andrena torkai Alfken, 1913, De. ent. Z., 1913: 709.

Andrena (Andrena) praecox: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 606-608.

Redescription.

Female.

Body length 8.8mm, wing length 7.5mm.

Color. Flagellum brownish beneath; mandibles black with apical half reddened; wing membranes subhyaline,

moderately brown, veins and pterostigma brownish; tibial spur yellowish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 250-350µm, whitish, with lateral fringes, those on vertex long 500-550µm, whitish, those on genal area dense, whitish, long, 500-600µm, facial fovea brownish above, whitish below. Hairs on mesoscutum dense, long 300-500µm, whitish; those on scutellum dense, long 400-500µm, whitish, those on mesepisternum dense, whitish, long, 650-700µm, propodeal corbicle well developed, whitish, with internal simple, sparse hairs, trochanteral floccus perfect, whitish, femoral floccus dense, long, brownish, tibial scopa developed, simple, whitish hairs. Metasomal terga T₁₋₄ with dense, long 300-500µm, whitish hairs, metasomal terga without hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.5mm, head width 3.1mm, HL/HW = 0.81. HW: MsW: MtW: 3.1: 2.2: 3.0. Vertex rounded in frontal view, tessellate surface, shiny, with fine PP 30µm, IS = 0.5. OOD: POD: OCD: = 0.6: 0.4: 0.2. FL₁ > FL₂ + FL₃, FL₂ > FL₃ which are broader than long. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with small PP. Facial fovea long, broad,

occupying 3/4 space between eye and lateral ocellus, extending to a line at lower margins of antennal fossae, FVL = 1.45mm, FVW = 0.4mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (3.1:2.5). Clypeus convex, shagreening surface, punctate with dense, distinct PP 30µm, IS = 1, with longitudinal median impunctate space, CPL = 1.0mm. Process of labrum broad, trapezoidal. Lower paraocular area shiny, tessellate, punctate with dense, minute PP 30µm, IS = 1. Malar space linear, small. Genal area slightly broader than eye GW: EW = 0.7:0.6 surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate, shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, distinct, small PP 40µm, IS = 1. Scutellum densely tessellate, punctate, shiny with fine, distinct, small PP 40µm,

IS = 1. Propodeal enclosure large, triangular, well indicated, tessellate; dorsal face of propodeum tessellate with fine, small PP 30µm. Mesepisternum tessellate, punctate, with fine, small PP 40µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga densely tessellate, punctate, shiny, T₁₋₄ with fine dense, small PP 25µm, IS = 1-2; posterior depressions of terga well indicated; pygidial plate U shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 5 females, Iii riv. area, Bakanas distr., iv.-v. 2001 (Gurko); 1 female, Jabagly, 1180-1250m, S. Kazakhstan Prov., 28. v. 2003 (K. Mitai).

Floral record. *Salix* sp.

Distribution. Europe, North Caucasus, Transcaucasia, Kazakhstan.

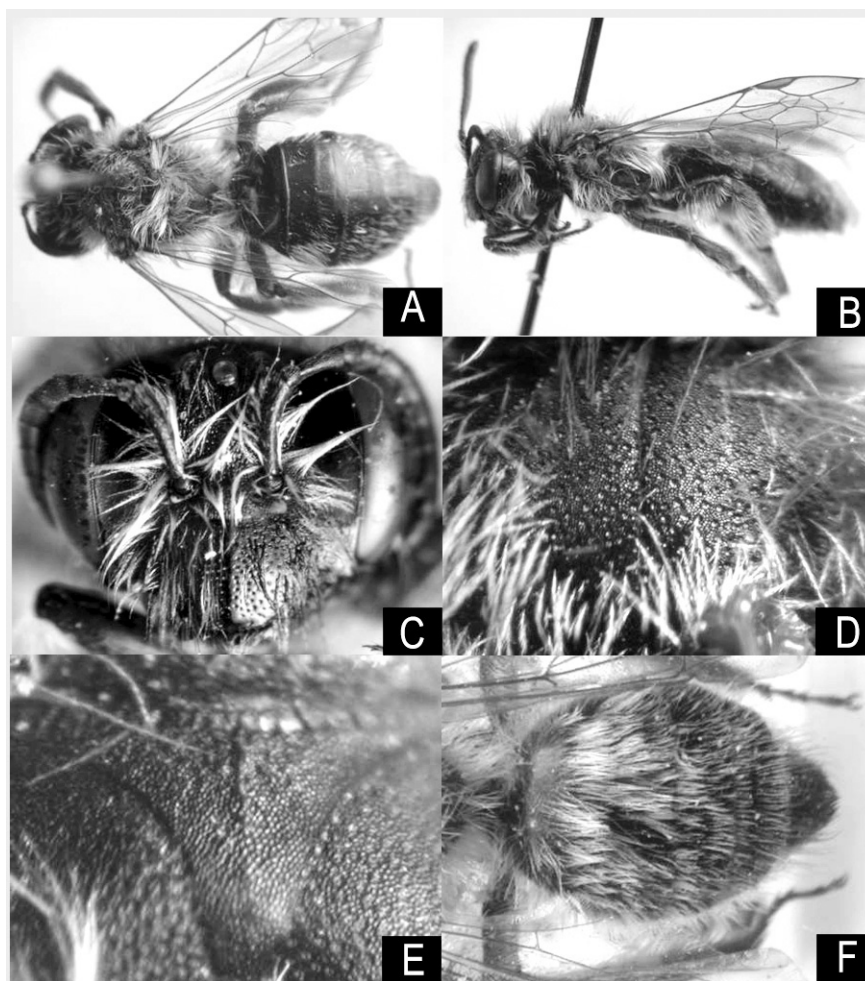


Fig. 6. *Andrena (Andrena) praecox* (Scopoli), female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

**36. *Andrena (Andrena) valentinae*
Osytsnjuk, 1993**
(Figs. 7-9)

Andrena (Andrena) valentinae Osytsnjuk, 1993, Vest. Zool., 5: 65; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 800-801.

Redescription.

Female.

Body length 12.7mm, wing length 10.6mm.

Color. Flagellum brownish beneath; mandibles black with apical third reddened; wing membranes subhyaline, brownish, veins and pterostigma brownish; tibial spur pale brownish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, dull whitish; those on clypeus dense, long 400-550µm, dull whitish, with

lateral fringes, those on vertex long 450-550µm, brownish, those on genal area dense, dull whitish, long, 650-750µm, facial fovea brownish above, whitish below. Hairs on mesoscutum dense, long 400-500µm, yellowish; those on scutellum slightly dense, long 300-500µm, yellowish, those on mesepisternum dense, dull whitish, long, 850-950µm, propodeal corbícula well developed, whitish, with internal simple, sparse hairs, trochanteral floccus perfect, whitish, femoral floccus dense, long, brownish, tibial scopa developed, simple, pale yellowish hairs. Metasomal terga T₁₋₄ with dense, long 400-700µm, yellowish hairs, metasomal terga T₁₋₄ without hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 3.3mm, head width 4.1mm, HL/HW = 0.80. HW: MsW: MtW: 4.1: 3.1: 4.5. Vertex flat in frontal view, shagreening surface, shiny, with fine, distinct PP 30µm, IS =1. OOD: POD: OCD: =0.85: 0.5: 0.2.

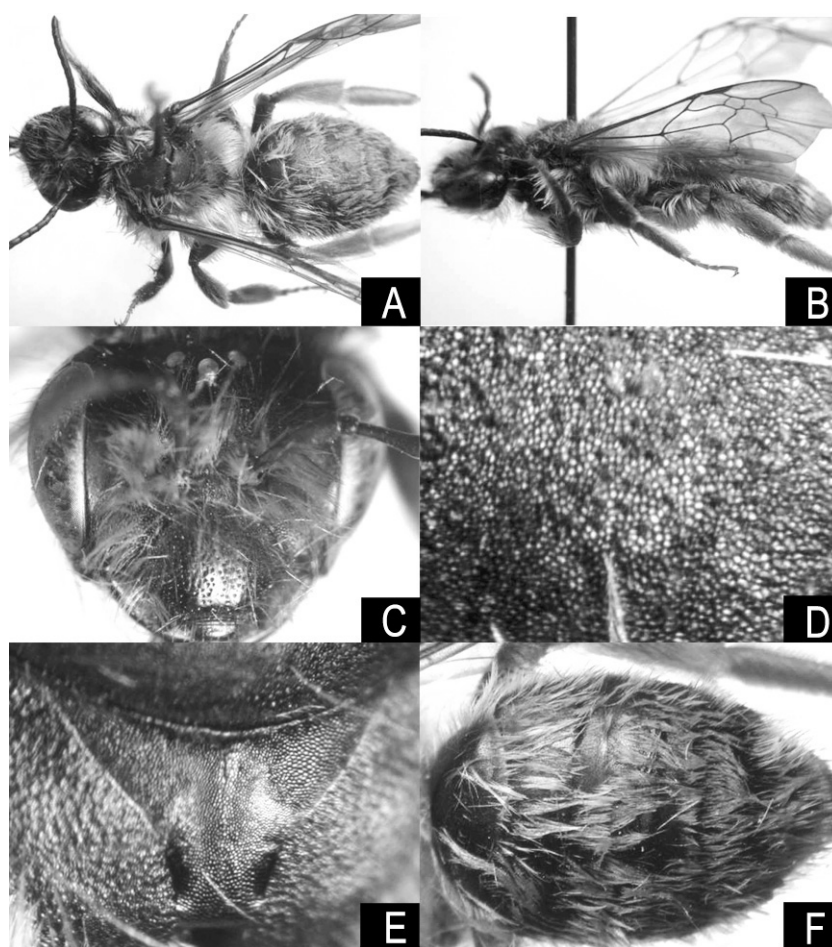


Fig. 7. *Andrena (Andrena) valentinae* Osytsnjuk, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

FL1 > FL2 + FL3, FL2 = FL3 which are broader than long. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with small PP. Facial fovea long, broad, occupying 3/4 space between eye and lateral ocellus, extending to a line at lower margins of antennal fossae, FVL = 1.6mm, FVW = 0.6mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (4.1:3.3). Clypeus convex, shagreening surface, smooth apically, punctate with dense, distinct PP 30µm, IS = 1, without longitudinal median impunctate space, CPL = 1.3mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area shiny, shagreening, punctate with dense, minute PP 25µm, IS = 1. Malar space linear. Genal area broader than eye GW: EW = 1.0:0.9 surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate,

shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, small PP 30µm, IS = 1. Scutellum densely tessellate, punctate, shiny with fine, small PP 40µm, IS = 1. Propodeal enclosure large, triangular, well indicated, tessellate; dorsal face of propodeum tessellate with roughened, small PP 30µm. Mesepisternum tessellate, punctate, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga densely tessellate, punctate, shiny, T₁ with fine dense, small PP 25µm, IS = 1, T₂₋₄ with dense, fine, small PP 20µm, IS = 1-2; posterior depressions of terga well indicated; pygidial plate U shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Male.

Body length 9.8mm, wing length 8.0mm.

Color. Flagellum brownish beneath; mandibles black with apical third reddened; wing membranes subhyaline,

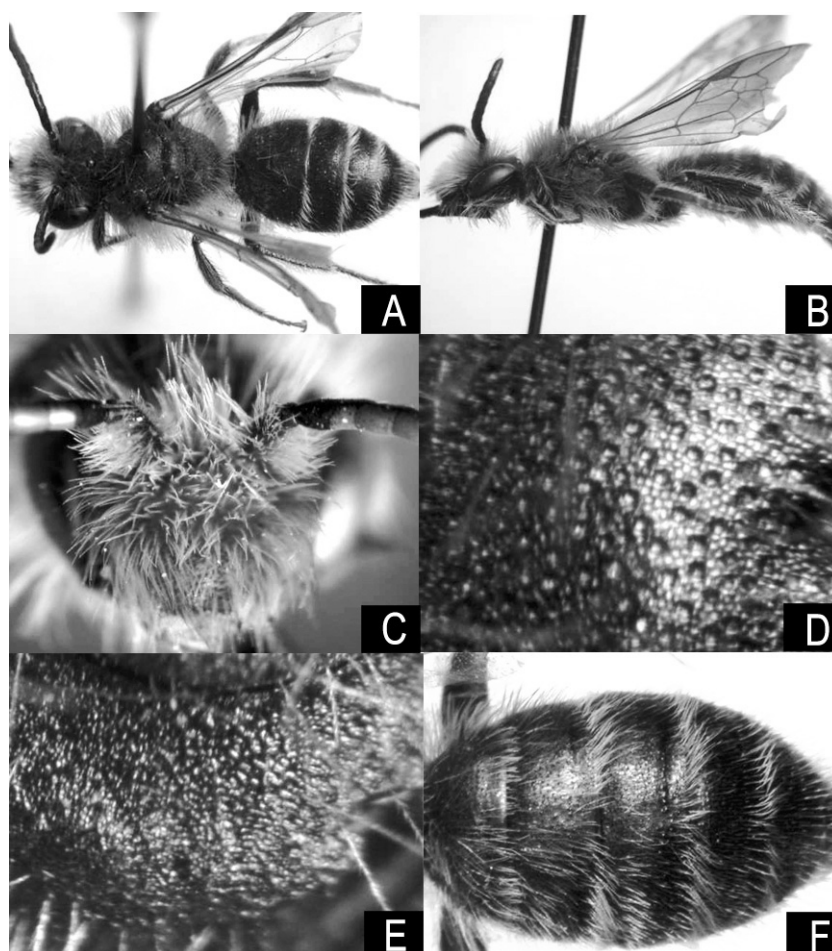


Fig. 8. A-F *Andrena (Andrena) valentinae* Osytshnjuk, male. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

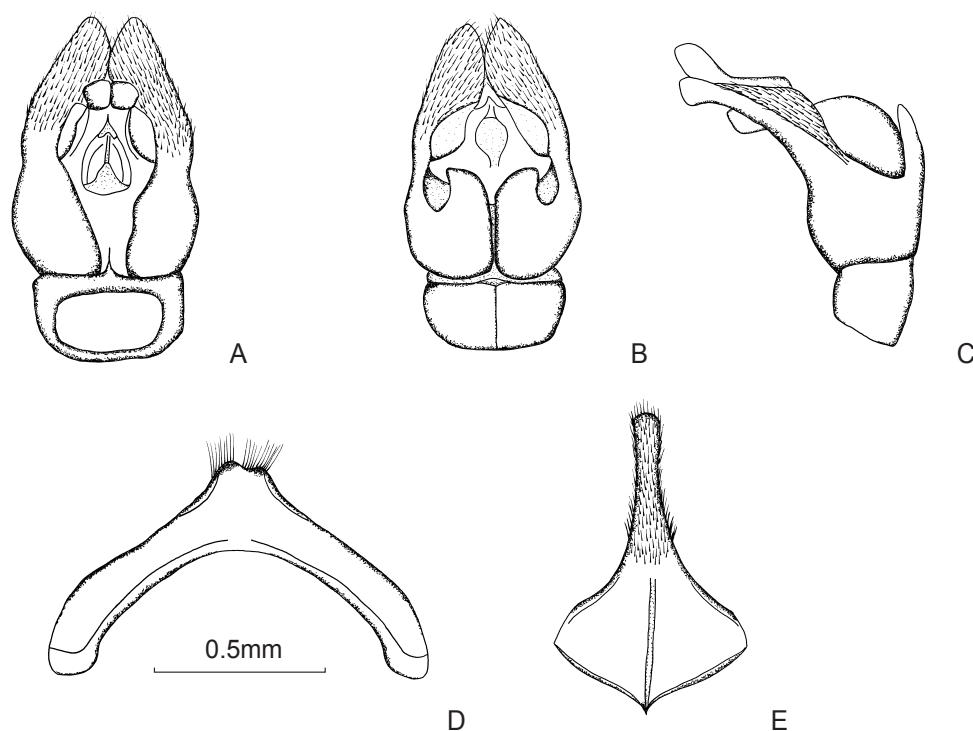


Fig. 9. *Andrena (Andrena) valentinae* Osytshnjuk, male. Genital capsule and subgenital sternum. A: dorsal view of genital capsule; B: ventral view of genital capsule; C: lateral view of genital capsule; D: metasomal sternum 7; E: metasomal sternum 8.

brownish, veins and pterostigma brownish; tibial spur pale brownish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 400-500µm, whitish, with lateral fringes, those on vertex long 450-550µm, dull whitish, those on genal area dense, dull whitish, long, 500-650µm. Hairs on mesoscutum dense, long 400-550µm, yellowish; those on scutellum slightly dense, long 400-500µm, yellowish, those on mesepisternum dense, dull whitish, long, 900-1000µm. Metasomal tergum T₁ with dense, dull whitish, long 400-500µm hairs, T₂₋₄ with dense, long 200-300µm, dull whitish hairs, metasomal terga T₁₋₄ without hair bands; caudal fimbria golden; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.4mm, head width 3.1mm, HL/HW = 0.77. HW: MsW: MtW: 3.1: 2.1: 2.9. Vertex rounded in frontal view, shagreening surface, shiny, with fine, distinct PP 30µm, IS = 1. OOD: POD: OCD: = 0.65: 0.45: 0.2. FL₁ < FL₂ + FL₃, FL₂ = FL₃ which are longer than broad. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial

quadrangle broader than long (3.1:2.4). Clypeus convex, punctate with dense, distinct PP 30µm, IS = 1, without longitudinal median impunctate space, CPL = 1.1mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area shiny, weakly tessellate, punctate with dense, minute PP 25-30µm, IS = 1. Malar space linear. Genal area broader than eye GW: EW = 1.0:0.75 surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate, shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, small PP 25µm, IS = 2-3. Scutellum densely tessellate, punctate, shiny with fine, small PP 30µm, IS = 1-2. Propodeal enclosure large, triangular, well indicated, tessellate; dorsal face of propodeum tessellate with roughened, small PP 30µm. Mesepisternum tessellate, punctate, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, punctate, shiny, T₁₋₄ with dense, fine, small PP 20µm, IS = 2; posterior depressions of terga weakly indicated. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female, Issyk-Kulskaya Obi, S Teploklyochenka, 2000-2300m,

18-20. vi. 1995 (H & R. Rausch, P. Ressi); 2 males, Tchujskaya Obi, Kirg. Khrebet, 8km S Sosnoka, 1500-1800m, 26-29. v. 1995 (H & R. Rausch, P. Ressi); 1 male, Issyk-Kul'skaya Obi, S Teploklyochenka, 2000-2300m, 18-20. vi. 1995 (H & R. Rausch, P. Ressi); 1 male, Oshskaya Obi, Freg. Khrebet, NE PaBhohe, Urumbash, 2000m, 13-15. vi. 1995, (H & R. Rausch, P. Ressi); 1 male, Talasskaya Obi, Talas Alatau, FluB Uzun-Akmat, 1500m, 2-4. vi. 1995 (H & R. Rausch, P. Ressi); 3 males, mer-west Alma-Arasan, 15km S Alma-Ata, 27. v. 1994 (K. Denes jr); 2 males, Ketmen, 210m, 14. vi. 1998 (V. Gurko); 1 male, Alma-Ata, 30. iv. 1972 (Jiri Niedl); 1 male, Kashi-Kaindy 1700m, Jabagly, S. Kazakhstan Prov., 15. vi. 2003 (O. Tadauchi); 1 male, Medew, Almaty Prov., 24. v. 2000, (O. Tadauchi).

Floral record. *Crataegus* sp.

Distribution. Kazakhstan, Tadjikistan, Kyrgyzstan.

37. *Andrena (Andrena) varians* (Kirby, 1802)
(Figs. 10-12)

Melitta varians Kirby, 1802, Monogr. Apum Angl., 2: 117.

Melitta angulosa Kirby, 1802, Monogr. Apum Angl., 2: 127.

Andrena mesoxantha Imhoff, 1834, Isis (Oken) Jena: 372.

Andrena longula Eversmann, 1852, Bull. Soc. Nat. Moscou, 25: 17.

Andrena mixta Schenck, 1853, Jb. Ver. Naturk. Nassau, 9: 136.

Andrena rectangula Schenck, 1853, Jb. Ver. Naturk. Nassau, 9: 133.

Andrena varians var. *conjungens* Blüthgen, 1916, Dt. Ent. Z., 1916: 312.

Andrena (Andrena) varians: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 803-805.

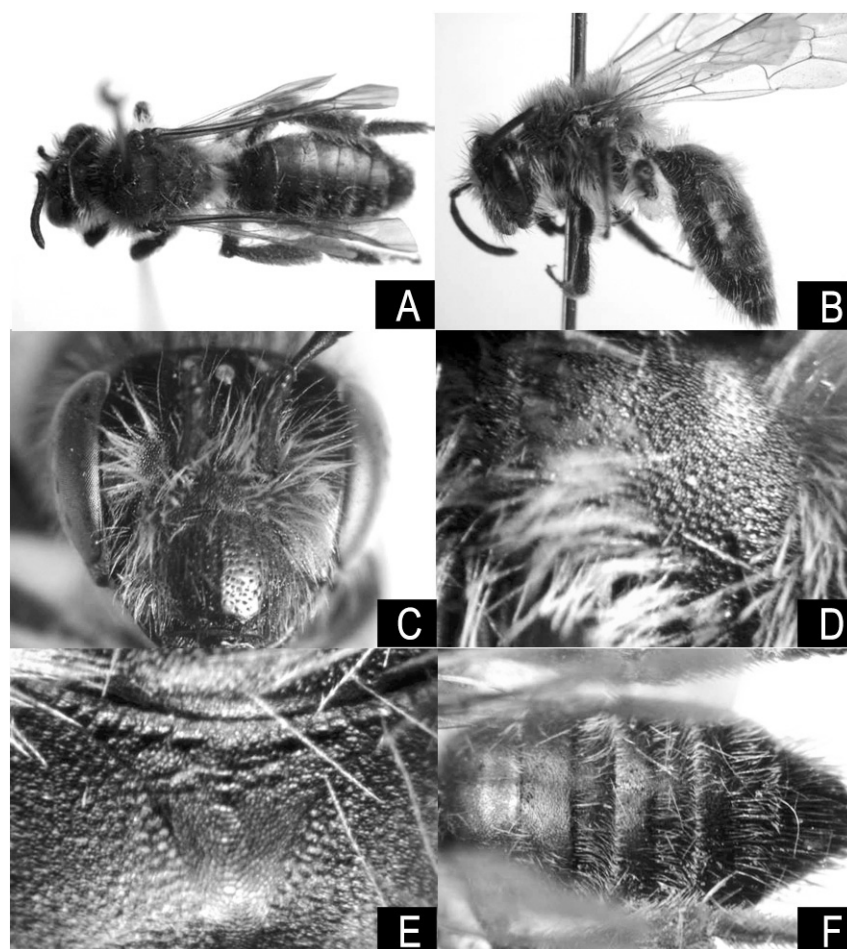


Fig. 10. *Andrena (Andrena) varians* (Kirby), female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

Redescription.**Female.**

Body length 8.7mm, wing length 7.5mm.

Color. Flagellum brownish beneath; mandibles black with apical third reddened; wing membranes subhyaline, moderately brown, veins and pterostigma brownish; tibial spur pale brownish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 300-350µm, whitish, with lateral fringes, those on vertex long 450-550µm, brownish, those on genal area dense, whitish, long, 350-400µm, facial fovea brownish above, whitish below. Hairs on mesoscutum dense, long 300-350µm, yellowish; those on scutellum dense, long 400-500µm, yellowish, those on mesepisternum dense, whitish, long, 600-800µm, propodeal corbicula well developed, whitish, with internal simple, sparse hairs, trochanteral floccus perfect, whitish, femoral

floccus dense, long, brownish, tibial scopa developed, simple, whitish hairs. Metasomal tergum T₁ with dense except medial part, long 400-500µm, whitish hairs, T₂₋₄ with dense, long 250-400µm, whitish hairs, metasomal terga T₁₋₄ without hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.6mm, head width 2.9mm, HL/HW = 0.90. HW: MsW: MtW: 2.9: 2.3: 2.9. Vertex flat in frontal view, tessellate surface, shiny, with fine, distinct PP 25-30µm, IS = 1. OOD: POD: OCD: = 0.6: 0.4: 0.2. FL₁ = FL₂ + FL₃, FL₂ < FL₃ which are longer than broad. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with small PP. Facial fovea long, broad, occupying 1/2 space between eye and lateral ocellus, extending to a line at lower margins of antennal fossae, FVL = 1.2mm, FVW = 0.35mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial

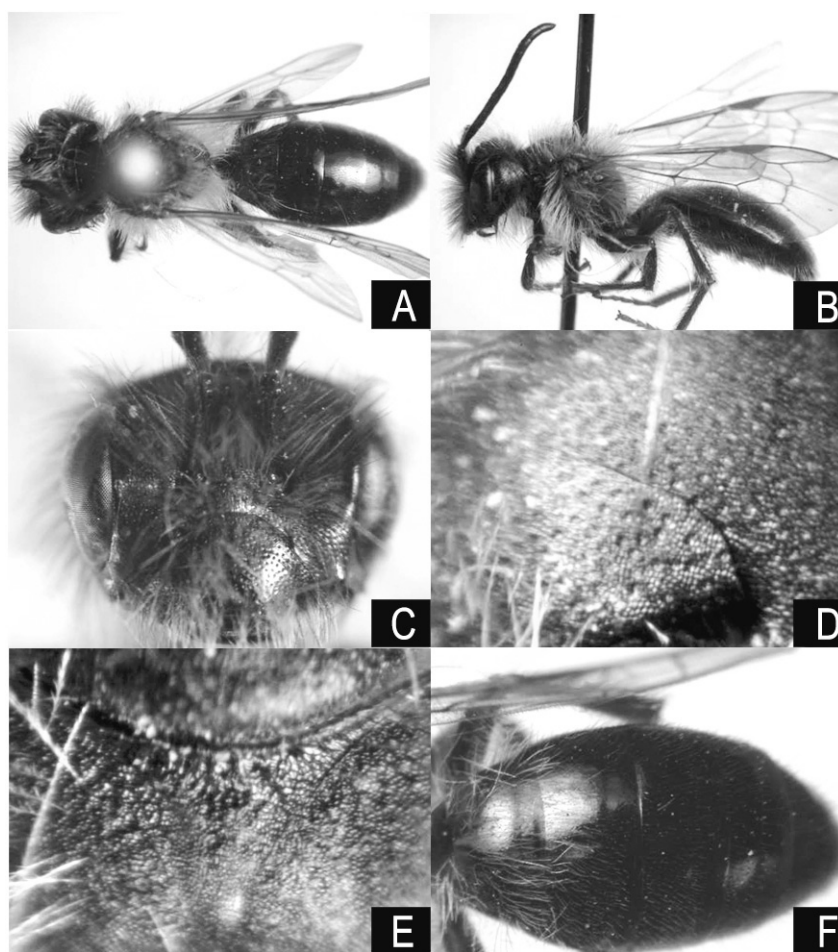


Fig. 11. *Andrena (Andrena) varians* (Kirby), male. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

quadrangle broader than long (2.9:2.5). Clypeus convex, shagreening surface, punctate with dense, distinct PP 30µm, IS = 1, with longitudinal median impunctate space, CPL = 1.1mm. Process of labrum broad, trapezoidal. Lower paraocular area shiny, shagreening, punctate with dense, minute PP 25µm, IS = 1. Malar space linear. Genal area broader than eye GW: EW = 0.8:0.65 surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate, shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS = 1. Scutellum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS = 1. Propodeal enclosure large, triangular, well indicated, tessellate apically; dorsal face of propodeum tessellate with roughened, small PP 30µm. Mesepisternum tessellate, punctate, with fine, small PP 40µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga densely tessellate, punctate, shiny, T₁ with finely dense, small PP 25µm, IS = 1, T₂₋₄ with dense, fine, small PP 20µm, IS = 1-2; posterior depressions of terga well indicated; pygidial plate U shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute

PP 20µm.

Male.

Body length 8.0mm, wing length 6.8mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, moderately brown, veins and pterostigma pale brownish; tibial spur pale brownish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish mixed with brownish; those on clypeus dense, long 350-500µm, dull whitish, with lateral fringes, those on vertex long 550-700µm, pale brownish, those on genal area dense, whitish, long, 300-400µm. Hairs on mesoscutum dense, long 300-500µm, pale yellowish; those on scutellum dense, long 250-300µm, yellowish, those on mesepisternum dense, whitish, long, 700-900µm. Metasomal tergum T₁ with dense, long 250-500µm, whitish hairs, T₂₋₄ with dense, short 100-200µm, whitish hairs, metasomal terga T₁₋₄ without hair bands; caudal fimbria pale brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.3mm, head width 2.8mm, HL/HW = 0.82. HW: MsW: MtW: 2.8: 1.73: 2.3. Vertex rounded in frontal view, densely tessellate surface, shiny, with fine, distinct PP 30µm, IS = 1. OOD: POD: OCD:

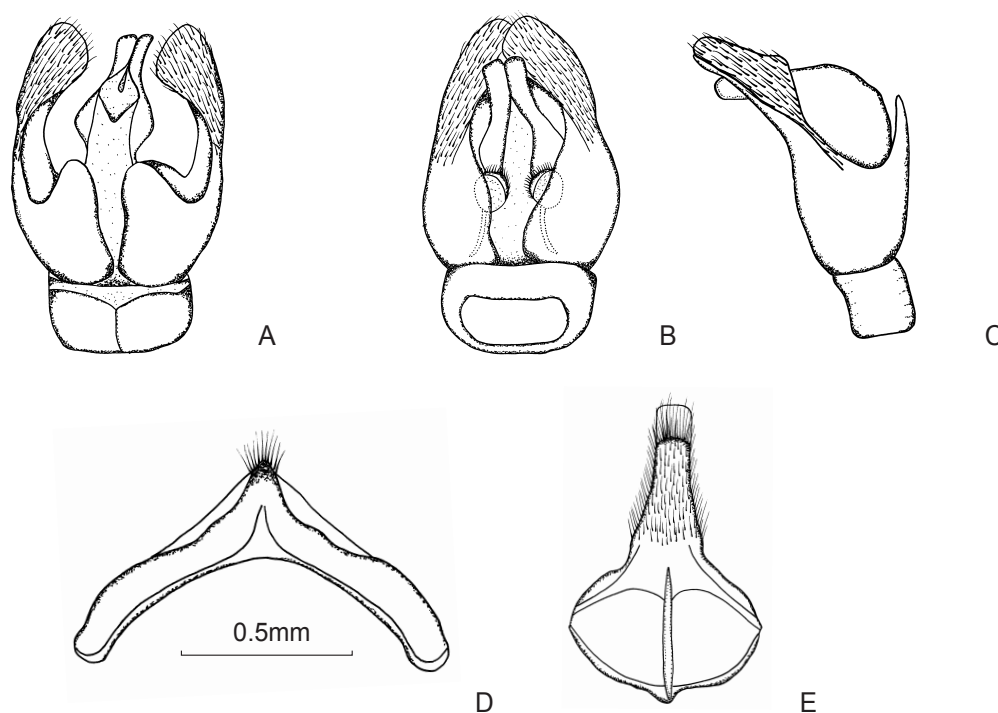


Fig. 12. *Andrena (Andrena) varians* (Kirby), male. Genital capsule and subgenital sterna. A: dorsal view of genital capsule; B: ventral view of genital capsule; C: lateral view of genital capsule; D: metasomal sternum 7; E: metasomal sternum 8.

=0.6: 0.4: 0.25. FL1 < FL2+FL3, FL2 < FL3 which are longer than broad. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with small PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.8:2.3). Clypeus convex, weakly shagreening, punctate with dense, distinct PP 30µm, IS = 1, without longitudinal median impunctate space, CPL = 0.8mm. Process of labrum small, trapezoidal. Lower paraocular area shiny, shagreening, punctate with dense, minute PP 25-30µm, IS = 1. Malar space linear. Genal area broader than eye GW: EW = 0.9:0.7 surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, punctate, shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS = 1. Scutellum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS = 1. Propodeal enclosure large, triangular, well indicated, rugulose basally, tessellate apically; dorsal face of propodeum tessellate with roughened, small PP 30µm. Mesepisternum tessellate, punctate, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, punctate, shiny, T₁ with fine sparse, small PP 25µm, IS=2-3, T₂₋₄ with dense, fine, small PP 20µm, IS = 2-3; posterior depressions of terga well indicated. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female, Jabagly, 1150-1250m, S. Kazakhstan Prov., 3. v. 2004 (V. Lina); 1 female, Tshernaja Retshika, 30. v. 2000 (V. Gurko); 1 female, Alma-Arasan, Alma-Ata, 30. iv. 1972 (Jiri Niedl); 1 male, Ketmen Mts., 2100m, SE. Kazakhstan Prov., 14. vi. 1998 (V. Gurko); 1 female, Alma-Arasan, Alma-Ata, 30. iv. 1972 (Jiri Niedl).

Floral record. Not available.

Distribution. Baltic states, Russia, Moldova, Ukraine, Poland, Hungary, Rumania, former Czechoslovakia, former Yugoslavia, Austria, Germany, Belgium, Netherlands, Great Britain, Kazakhstan.

38. *Andrena (Carandrena) semiflava* Lebedev, 1932 (Fig. 13)

Andrena (Carandrena) semiflava Lebedev, 1932, Konowia 11: 70; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 682.

Redescription.

Female.

Body length 6.8mm, wing length 4.7mm.

Color. Flagellum pale brownish beneath; mandibles black reddened apically; wing membranes subhyaline, yellowish, veins and pterostigma yellowish brown; tibial spur yellowish; metasomal terga T₁₋₄ yellowish brown except apical part of T₄ black, posterior depressions of metasomal terga yellowish brown.

Pubescence. Hairs on head sparse except antennal area, whitish; those on clypeus sparse, short 150-200µm, whitish, with lateral fringes, those on vertex long 250-300µm, whitish, those on genal area dense, whitish, slightly long 200-250µm, facial fovea whitish. Hairs on mesoscutum sparse, short 150-200µm, whitish hairs; those on scutellum scanty, short 150µm, whitish hairs, those on mesepisternum dense, whitish, long 350-400µm, propodeal corbícula developed, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, sparse, whitish, femoral floccus dense, long, yellowish, tibial scopa developed, simple, whitish hairs. Metasomal tergum T₁ with sparse, short 200µm, whitish hairs, T₂₋₄ with slightly dense, short, suberect hairs, T₂₋₃ with interrupted whitish hair bands, T₄ with completed whitish hair band; caudal fimbria whitish brown; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 1.6mm, head width 2.3mm, HL/HW = 0.70. HW: MsW: MtW: 2.3: 1.6: 2.0. Vertex flat in frontal view, shagreening, shiny, with fine, sparse PP 25µm, IS = 1. OOD: POD: OCD: = 0.4: 0.4: 0.15. FL1 > FL2+FL3, FL2 = FL3 which are broader than long. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Facial fovea long, occupying 3/4 space between eye and lateral ocellus, attaining to a line at lower margins of antennal fossae, FVL = 0.8mm, FVW = 0.3mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.3:1.6). Clypeus convex, finely tessellate, punctate with distinct, fine, small PP 25µm, IS = 1, with longitudinal median impunctate space, CPL = 0.65mm. Process of labrum broad, semicircular. Lower paraocular area shiny, tessellate, punctate with dense, minute PP 20µm, IS = 1. Malar space linear, small. Genal area broader than eye, GW: EW = 0.65:0.55, surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum with lateral suture and without humeral angle, pronotum shagreening surface, punctate, shiny with fine, sparse PP 20µm. Mesoscutum weakly shagreening, shiny with fine, sparse, small PP 20µm, IS = 2-3. Scutellum shiny with fine, sparse, small PP 20µm, IS = 1-2. Propodeal enclosure

large, triangular, weakly indicated, tessellate; dorsal face of propodeum tessellate with fine, small PP 30µm. Mesepisternum shagreening, with fine, small PP 25µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga finely shagreening, shiny, T₁₋₄ with fine scattered, small PP 20µm; posterior depressions of terga well indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female, Togusken, semi-desert near Janatas, S. Kazakhstan Prov. 7. vi. 2003 (O. Tadauchi).

Floral record. Not available.

Distribution. Russia, (South-East of European part), Kazakhstan, Tadjikistan, Turkmenistan.

39. *Andrena (Carandrena) splendidicollis* Morawitz, 1895
(Fig. 14)

Andrena (Carandrena) splendidicollis Morawitz, 1895, Hor. Soc. Ent. Ross., 29: 63; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 712-713.

Andrena (Carandrena) quadraticeps Morawitz, 1895, Hor. Soc. Ent. Ross., 29: 64.

Redescription.

Female.

Body length 6.5mm, wing length 5.6mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, yellowish brown, veins and pterostigma yellowish brown; tibial spur yellowish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on

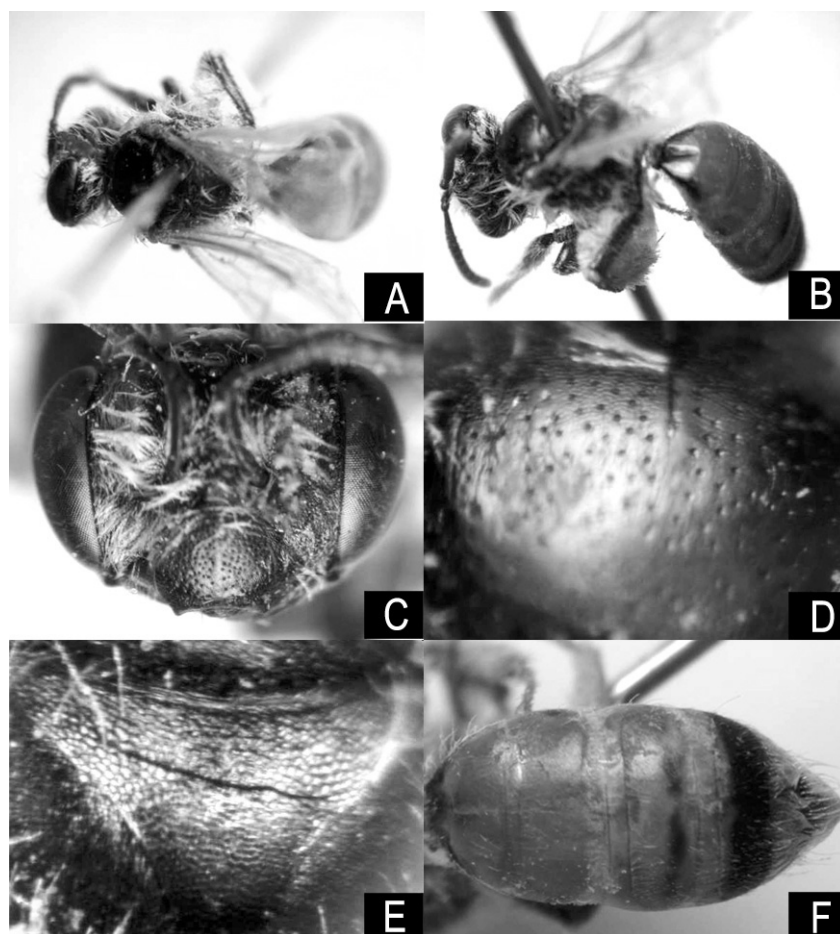


Fig. 13. *Andrena (Carandrena) semiflava* Lebedev, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

clypeus dense, slightly long 200-250 μ m, whitish, with lateral fringes, those on vertex long 300-350 μ m, whitish, those on genal area dense, whitish, slightly long 200-250 μ m, facial fovea whitish. Hairs on mesoscutum sparse, short 100-150 μ m, whitish; those on scutellum scanty, short 100 μ m, whitish, those on mesepisternum dense, whitish, long 400-500 μ m, propodeal corbícula developed, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, sparse, whitish, femoral floccus dense, long, yellowish, tibial scopa developed, simple, whitish. Metasomal tergum T₁ with sparse, short 100-150 μ m, whitish hairs, T₂₋₄ with slightly dense, short, suberect hairs, T₁ with interrupted whitish hair band, T₂₋₄ with completed whitish hair bands; caudal fimbria golden; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 1.7mm, head width 2.3mm, HL/HW = 0.74. HW: MsW: MtW: 2.3: 1.5: 2.1. Vertex flat in frontal view, tessellate surface, shiny, with fine, sparse PP 25 μ m, IS =1. OOD: POD: OCD: =0.4: 0.3: 0.15. FL1<

FL2+FL3, FL2 < FL3 which are broader than long. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Facial fovea long, occupying 3/4 space between eye and lateral ocellus, attaining to a line at lower margins of antennal fossae, FVL = 0.9mm, FVW = 0.3mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.3:1.7). Clypeus convex, tessellate, punctate with sparse, distinct PP 25 μ m, IS = 1, with longitudinal median impunctate space, CPL = 0.6mm. Process of labrum broad, semicircular. Lower paraocular area shiny, tessellate, punctate with dense, minute PP 25 μ m, IS =1. Malar space linear, small. Genal area slightly smaller than eye, GW: EW =0.5:0.6, surface tessellate and shiny with minute PP 25 μ m, IS =1. Mesosoma: Pronotum with lateral suture and without humeral angle, pronotum shagreening surface, punctate, shiny with fine, sparse PP 25 μ m. Mesoscutum polished, shiny with fine, sparse, small PP 20 μ m, IS =1-2. Scutellum

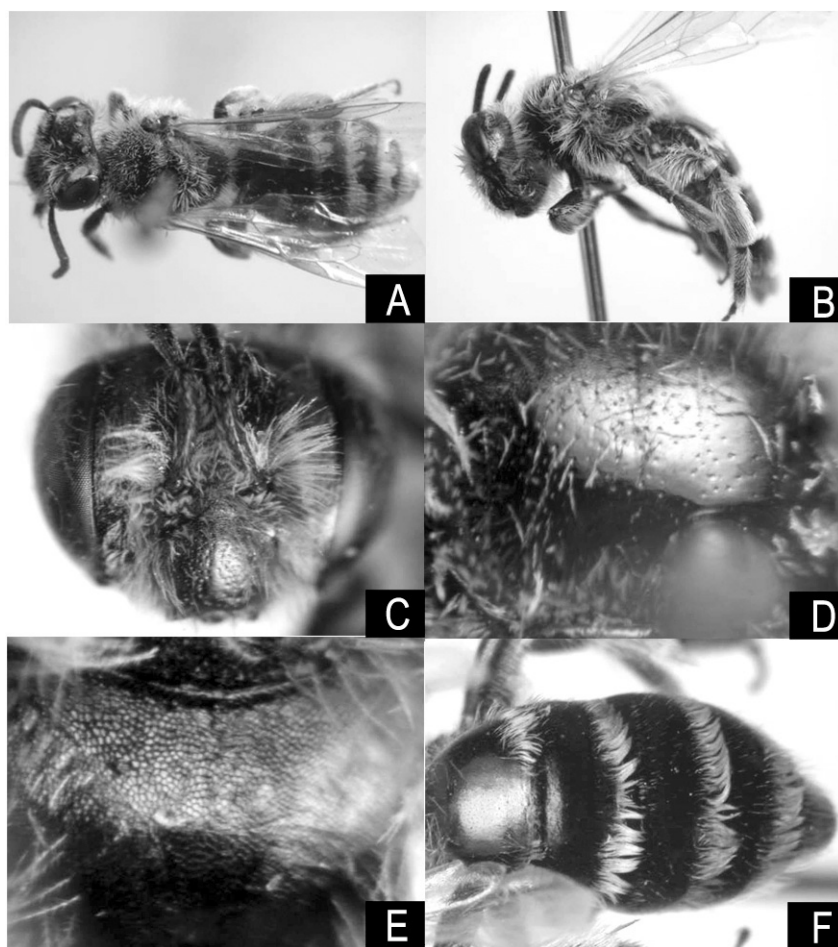


Fig. 14. *Andrena (Carandrena) splendidicollis* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

polished, shiny with fine, sparse, small PP 20µm, IS =1-2. Propodeal enclosure large, triangular, weakly indicated, tessellate; dorsal face of propodeum tessellate with fine, small PP 25µm. Mesepisternum shagreening, with fine, small PP 25µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, shiny, T₁₋₄ with fine scattered, small PP 20µm; posterior depressions of terga weakly indicated; pygidial plate V shaped with raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP20µm.

Specimens examined. [KAZAKHSTAN] 1 female, W of Kamsomolskoe, Kyzylkum desert, S. Kazakhstan Prov. 1. v. 2004 (O. Tadauchi).

Floral record. Not available.

Distribution. Tadjikistan, Turkmenistan, Uzbekistan, Kazakhstan.

40. *Andrena (Chlorandrena) taraxaci* Giraud, 1861
(Fig. 15)

Andrena taraxaci Giraud, 1861, Verh. Zool. –bot. Ges. Wien, 11: 459.

Andrena curtivalvis Morice, 1899, Trans. ent. Soc. London: 247, 252.

Andrena truncata Pérez, 1903 (nec *Andrena truncata* Viereck, 1903), P.-v. Soc. Inn. Bordeaux, 58: LXXX.

Andrena humilis var. *orienticola* Strand, 1915, Ent. Mitt., 4: 72.

Andrena truncatiformis Cockerell, 1922, Ann. Mag. Nat. Hist., (9) 9: 243, nom. nov. for *Andrena truncata* Pérez, 1903.

Andrena (Chlorandrena) taraxaci: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 745-747.

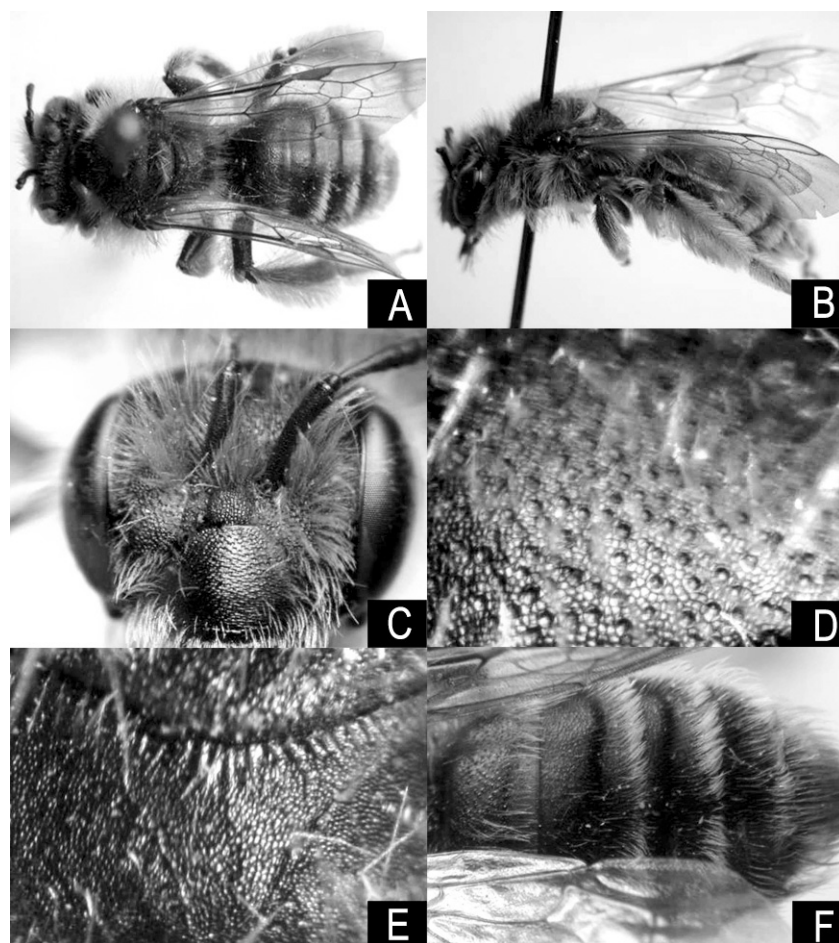


Fig. 15. *Andrena (Chlorandrena) taraxaci* Giraud, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

Redescription.**Female.**

Body length 8.9mm, wing length 7.9mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, yellowish, veins and pterostigma yellowish; tibial spur yellowish; posterior depressions of metasomal terga golden.

Pubescence. Hairs on head dense, pale yellowish; those on clypeus dense, long 300-400µm, pale yellowish, with lateral fringes, those on vertex long 300-400µm, pale yellowish, those on genal area dense, pale yellowish, long, 300-500µm, facial fovea brownish above, whitish below. Hairs on mesoscutum slightly dense, long 300-400µm, pale yellowish; those on scutellum sparse, long 400-500µm, pale yellowish, those on mesepisternum dense, long 750-850µm, pale yellowish, propodeal corbicular well arranged with pale yellowish hairs, long, with internal simple, sparse hairs, trochanteral floccus perfect, dense, pale yellowish, femoral floccus dense, long, golden, tibial scopa long, simple, golden hairs. Metasomal tergum T₁ medially with sparse, long 350-500µm, yellowish hairs, T₂ medially with sparse, short 250µm, yellowish hairs, T₃₋₄ with short, suberect, sparse, yellowish hairs, T₂₋₄ with complete white hair bands; caudal fimbriae golden; S₂₋₅ with long, dense, yellowish subapical fimbriae.

Structure. Head length 2.5mm, head width 3.0mm, HL/HW = 0.83. HW: MsW: MtW: 3.0: 2.3: 3.0. Vertex flat in frontal view, tessellate, punctuate, shiny, with fine PP 30µm, IS = 1. OOD: POD: OCD: = 0.6: 0.45: 0.15. FL₁ > FL₂+FL₃, FL₂= FL₃ which are broader than long. Eyes with inner margins subparallel. Facial fovea long, narrowing toward below, much extending to a line at lower margins of antennal fossae, FVL = 1.1mm, FVW = 0.4mm. Supraclypeal area convex, shiny, with small, fine PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (3.0:2.5). Clypeus convex, strongly tessellate surface, with fine, PP 30µm, IS =1, without longitudinal median impunctate space, CPL = 1.0mm. Process of labrum broad, trapezoidal. Lower paraocular area shiny, tessellate surface, with fine, minute PP 30µm, IS =1. Malar space linear, small. Genal area broader than eye, GW: EW = 0.75 : 0.65, surface tessellate and shiny with minute PP 25µm. Mesosoma: Pronotum without lateral suture and humeral angle, pronotum, densely tessellate, shiny with fine, small PP 20µm. Mesoscutum densely tessellate, shiny with fine, distinct, small PP 30µm, IS =1. Scutellum tessellate, shiny with dense, fine PP 30µm, IS =1. Propodeal enclosure triangular, well indicated, rugulose basally, densely tessellate;

dorsal face of propodeum densely tessellate, with fine, sparse, small PP 30µm. Mesepisternum densely tessellate, punctuate with PP 25µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, T₁ with fine, dense, distinct, small PP 40µm, IS=1, T₂₋₄ with fine, dense, small PP 25µm, IS =1; posterior depressions of terga weakly indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ densely tessellate and shiny with dense, minute PP25µm.

Specimens examined. [KAZAKHSTAN] 1 female, Chordara, 200m, W of Tashkent, S. Kazakhstan Prov., 30. iv. 2004 (O. Tadauchi); 2 females, Achisai, 670-700m, Mts. Karatau, S. Kazakhstan Prov., 4. vi. 2003 (K. Mitai); 2 females, Darbaza, 30 km NW Tashkent, 11. iv. 1992 (S. Becvar).

Floral record. Not available.

Distribution. Trans-Palaearctic: South Europe, southern part of Europe, Caucasus, Kazakhstan, South Primorye (Russia), China, Japan, Turkey, Israel, Iran, North Africa.

**41. *Andrena (Chrysandrena) maculipes*
Morawitz, 1876
(Fig. 16)**

Andrena maculipes Morawitz, 1876, in Fedtschenko, Izv. Imp. Obshch. Ljubit. Estest. Antrop. Etong.: 178.

Andrena (Chrysandrena) maculipes: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 448-449.

Redescription.**Female.**

Body length 7.8mm, wing length 6.1mm.

Color. Flagellum brownish beneath; mandibles with apical half reddened, basal half black; wing membranes subhyaline, moderately brown, veins and pterostigma reddish brown; tibial spur pale brown; posterior depressions of metasomal terga brown.

Pubescence. Hairs on head dense, dull whitish; those on clypeus dense, slightly long 200-300µm, dull whitish, with lateral fringes, those on vertex slightly long 300-400µm, dull whitish, those on genal area dense, whitish mixed with brownish, slightly long, 200-300µm, facial fovea brownish. Hairs on mesoscutum slightly dense, slightly long 250-350µm, whitish; those on scutellum slightly dense, long 300-400µm, whitish, those on mesepisternum dense, long 650-750µm, whitish, propodeal corbicular well arranged with whitish hairs, long, with internal simple, trochanteral floccus perfect, dense, whitish, femoral floccus dense, long, yellowish, tibial

scopa long, simple, yellowish. Metasomal terga T₁₋₄ with scanty, short, yellowish hairs, terga T₂₋₄ with interrupted white hair bands; caudal fimbria yellowish; S₂₋₅ with long, dense, whitish subapical fimbriae.

Structure. Head length 2.1mm, head width 2.4mm, HL/HW = 0.88. HW: MsW: MtW: 2.4: 1.9: 2.6. Vertex flat in frontal view, tessellate, shiny, with fine, PP 25µm, IS = 1. OOD: POD: OCD: = 0.45: 0.45: 0.15. FL₁ > FL₂+FL₃, FL₂ > FL₃ which are broader than long. Eyes with inner margins paralleled. Facial fovea occupying 1/2 space between eye and lateral ocellus, short, narrowing toward below, not extending to a line at lower margins of antennal fossae, FVL = 0.85mm, FVW = 0.2mm. Supraclypeal area slightly convex, tessellate, shiny, with small, fine PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle weakly broader than long, rather as long as broad (2.4:2.1). Clypeus convex with anterior lateral projection, densely tessellate, punctuate, with fine, dense,

distinct PP 30µm, IS = 0.5, without longitudinal median impunctate space, CPL = 0.8mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area shiny, tessellate, with fine, minute PP 25µm, IS = 0.5. Malar space linear, small. Genal area slightly broader than eye, GW: EW = 0.7:0.6, surface weakly tessellate and shiny with minute PP 25µm. Mesosoma: Pronotum with lateral suture and without humeral angle, pronotum tessellate shiny with fine, small PP 25µm. Mesoscutum tessellate, punctuate, shiny with fine, distinct, small PP 30µm, IS = 1. Scutellum weakly tessellate, shiny with dense, fine, distinct PP 30µm, IS = 1. Propodeal enclosure triangular, small, weakly indicated, rugulose; dorsal face of propodeum weakly tessellate, with fine, dense, small PP 30µm. Mesepisternum tessellate, punctuate with distinct PP 40µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: T₁ smooth with sparse, fine PP <20 µm, T₂₋₄ tessellate, with fine, dense, small PP <20, IS = 2; posterior depressions

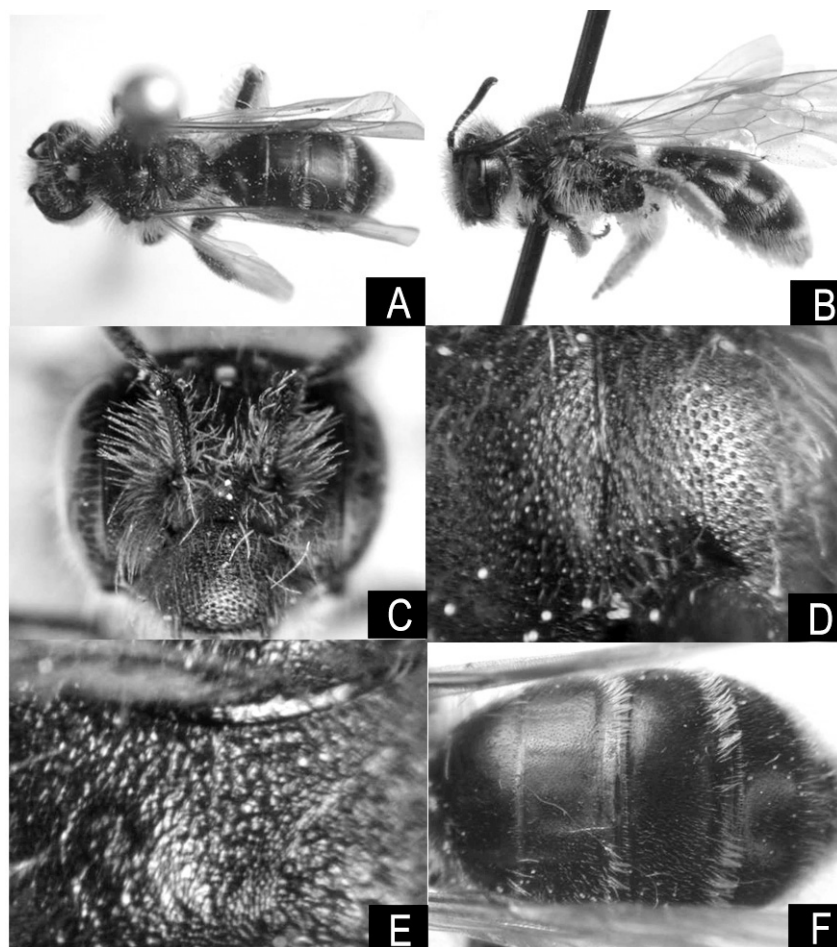


Fig. 16. *Andrena (Chrysandrena) maculipes* Morawitz female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

of terga weakly indicated; pygidial plate V shaped with raised internal triangular area. S₂₋₅ tessellate and shiny with dense, minute PP20µm.

Specimens examined. [KYRGYZSTAN] 3 females, Chuy, Suusamyр Valley, W side Kichi-Korumdy R, 14. vi. 1999 (J. G. Rozen, J. K. Bouseman).

Floral record. Not available.

Distribution. Kyrgyzstan.

**42. *Andrena (Cnemidandrena) dolosa*
Morawitz, 1894
(Fig. 17)**

Andrena dolosa Morawitz, 1894, Hor. Soc. ent. Ross., 28: 63.

Andrena (Cnemidandrena) dolosa: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 233.

Redescription.

Female.

Body length 11.9mm, wing length 8.5mm.

Color. Flagellum brownish beneath; mandibles black with apical third reddened; wing membranes subhyaline, moderately brownish, veins and pterostigma reddish brown; tibial spur yellowish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, dull whitish; those on clypeus dense, slightly long 250-350µm, dull whitish, with lateral fringes, those on vertex long 350-500µm, dull whitish, those on genal area dense, dull whitish, slightly long, 250-300µm, facial fovea brownish. Hairs on mesoscutum dense, long 300-400µm, yellowish; those on scutellum dense, slightly long, 200-300µm, yellowish, those on mesepisternum dense, long 550-700µm, dull whitish, propodeal corbicula developed, yellowish, without internal simple, trochanteral floccus imperfect, whitish, femoral floccus dense, long, brownish, tibial

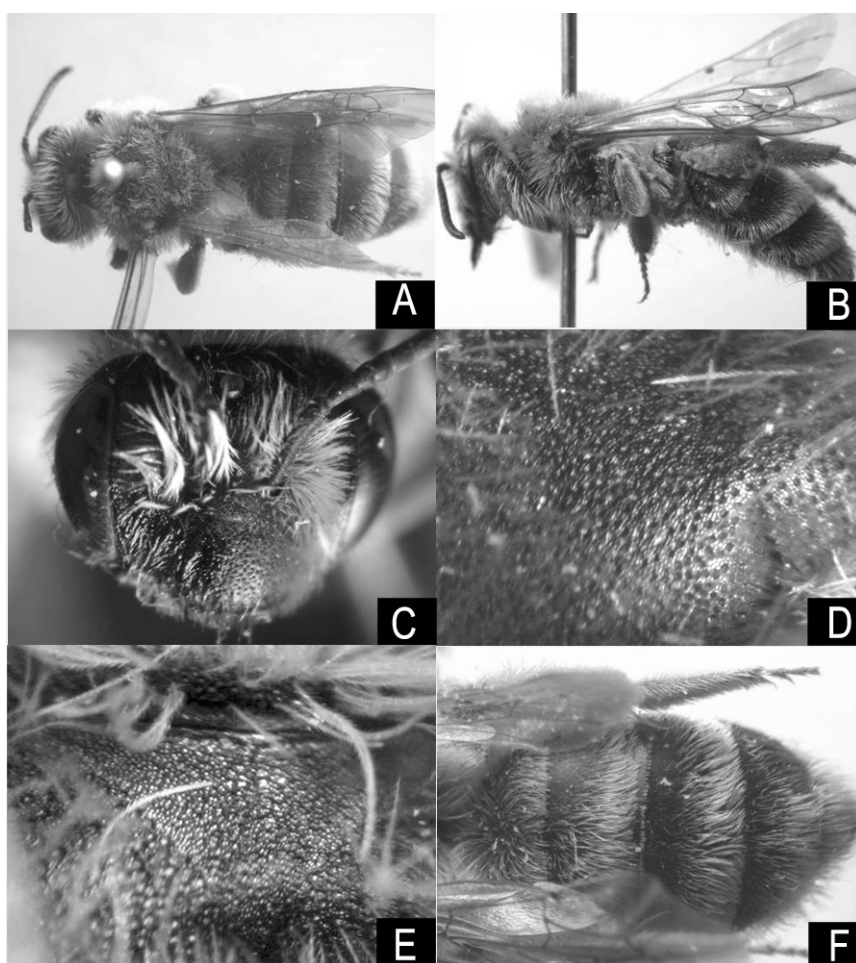


Fig. 17. *Andrena (Cnemidandrena) dolosa* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

scopa short, compact, simple, whitish hairs. Metasomal terga T₁₋₄ with dense, slightly long 200-400µm, yellowish hairs, T₁ with interrupted whitish hair band, T₂₋₄ with complete hair bands; caudal fimbria golden; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.8mm, head width 3.4mm, HL/HW = 0.82. HW: MsW: MtW: 3.4: 2.8: 3.7. Vertex flat in frontal view, tessellate surface, shiny, with PP 30µm, IS = 0.5. OOD: POD: OCD: = 0.7: 0.5: 0.2. FL₁ < FL₂+FL₃, FL₂ = FL₃ which are broader than long. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Facial fovea long, broad, occupying 1/2 space between eye and lateral ocellus, much extending to a line at lower margins of antennal fossae, FVL = 1.3mm, FVW = 0.35mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (3.4:2.8). Clypeus convex, tessellate, punctate with dense, obscure PP 30µm, IS = 1, without longitudinal median impunctate space, CPL = 1.1mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area punctate with dense, shiny with minute PP 30µm, IS = 0.5-1. Malar space linear. Genal area broader than eye, GW: EW = 0.9:0.8 surface tessellate and shiny with minute PP 25µm, IS = 1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, distinct, dense, small PP 30µm, IS = 0.5. Scutellum finely essellate, punctate, shiny with dense, distinct, fine, small PP 30µm, IS = 1. Propodeal enclosure triangular, well indicated, rugose basally, tessellate apically; dorsal face of propodeum tessellate with roughened, small PP 40µm. Mesepisternum densely tessellate, with roughened, small PP 40µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: metasomal terga densely tessellate, shiny, T₁₋₄ with indistinct, small PP 20-25µm, IS = 1-2; posterior depressions of terga weakly indicated; pygidial plate V shaped with large raised internal triangular area. S₂₋₅ tessellate and shiny with dense, minute PP 25µm.

Specimens examined. [KAZAKHSTAN] 1 female, Jabagly 1080-1200m, S. Kazakhstan Prov., 28. v. 2003. (O. Tadauchi); 1 female, Riverside, Iii R., NW of Kapchagay, Almaty Prov., 19. v. 2004. (O. Tadauchi); 1 female, Achisai, 670-700m, Mts. Karatau, S. Kazakhstan Prov., 5. vi. 2003. (K. Mitai). [CHINA] 1 female, Sayram Lake 2030m, Ili Prov., Xinjiang Uygur Aut. Reg., 25. viii. 2002. (A. Dawut).

Floral record. *Ferula tenuisecta*.

Distribution. Tadzhikistan, Kazakhstan, China (Xinjiang Uygur).

43. *Andrena (Cnemidandrena) tridentata* (Kirby, 1802)

Melitta tridentata Kirby, 1802, Monogr. Apum Angl., 2: 132.

Melitta rufitarsis Kirby, 1802, (nec *Andrena rufitarsis* Zetterstedt 1838), Monogr. Apum Ngl., 2: 135.

Andrena (Cnemidandrena) tridentata: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 774-775.

Redescription.

Female.

Body length 8.3mm, wing length 6.7mm.

Color. Flagellum brownish beneath; mandibles black with apical third reddened; wing membranes subhyaline, moderately brown, veins and pterostigma brown; tibial spur yellowish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 300-400µm, whitish, with lateral fringes, those on vertex long 400-500µm, whitish, those on genal area dense, whitish, slightly long, 250-300µm, facial fovea brownish. Hairs on mesoscutum dense, short 150-250µm, yellowish; those on scutellum dense, short, 100-300µm, yellowish, those on mesepisternum dense, long 550-650µm, whitish, propodeal corbícula developed, whitish, without internal simple, trochanteral floccus perfect, whitish, femoral floccus dense, long, whitish brown, tibial scopa short, simple, whitish hairs. Metasomal terga T₁₋₄ with dense, long 300-400µm, yellowish hairs; caudal fimbria brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.2mm, head width 2.9mm, HL/HW = 0.76. HW: MsW: MtW: 2.9: 2.1: 3.0. Vertex flat in frontal view, tessellate surface, shiny, with PP 30µm, IS = 1. OOD: POD: OCD: = 0.55: 0.5: 0.2. FL₁ > FL₂+FL₃, FL₂ < FL₃ which are longer than broad. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Facial fovea long, broad, occupying 1/2 space between eye and lateral ocellus, much extending to a line at lower margins of antennal fossae, FVL = 1.0mm, FVW = 0.3mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.9:2.2). Clypeus convex, weakly tessellate, punctate with dense, obscure PP 30µm, IS = 1, without longitudinal median impunctate space, CPL = 0.95mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area punctate with dense, shiny with minute PP 30µm, IS = 0.5-1. Malar space linear. Genal area broader than eye, GW: EW = 0.9:0.8 surface tessellate and shiny with

minute PP 25µm, IS =1. Mesosoma: Pronotum without lateral suture and with humeral angle, pronotum tessellate, shiny with fine PP 25µm. Mesoscutum densely tessellate, punctate, shiny with fine, distinct, small PP 30µm, IS =1. Scutellum tessellate, punctate, shiny with dense, distinct, fine, small PP 30µm, IS =1. Propodeal enclosure triangular, well indicated, rugulose basally, tessellate apically; dorsal face of propodeum tessellate with roughened, small PP 30µm. Mesepisternum densely tessellate, with roughened, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: metasomal terga densely tessellate, shiny, T₁₋₄ with indistinct, small PP 25µm, IS =1-2; posterior depressions of terga weakly indicated; pygidial plate V shaped, with indistinct shaped without raised internal triangular area. S₂₋₅ tessellate and shiny with dense, minute PP 25µm.

Specimens examined. [KAZAKHSTAN] 1 female, Near Sternjak, Kokchetav District, N. Kazakhstan Prov., 25. vii. 2002 (V. Kazenas, A. Jdanko & V. Rascheev).

Floral record. Not available.

Distribution. Russia, Ukraine, Austria, France, England, Kazakhstan.

44. *Andrena (Cordandrena) cordialis*

Morawitz, 1877

(Figs. 18-20)

Andrena cordialis Morawitz, 1877, Hor. Soc. ent. Ross., 14: 74.

Andrena (Cordandrena) cordialis: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 200-202.

Redescription.

Female.

Body length 8.7mm, wing length 6.8mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, brownish, veins and pterostigma brownish; tibial spur yellow-

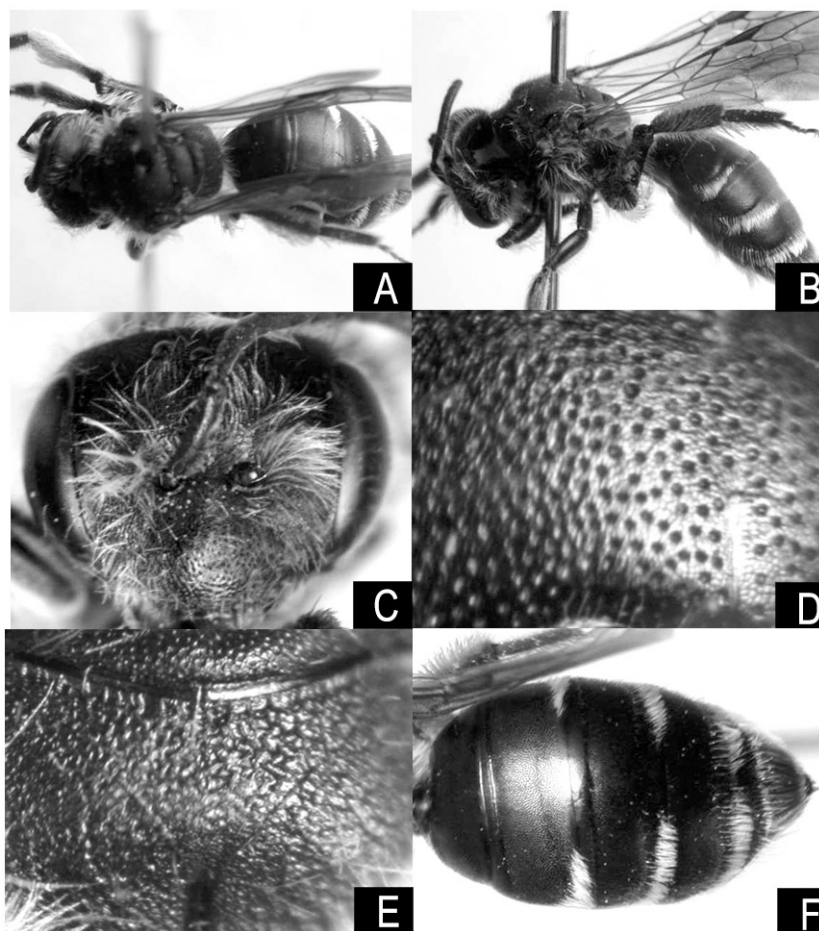


Fig. 18. *Andrena (Cordandrena) cordialis* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

ish; posterior margins of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, short 200-250µm, whitish, with lateral fringes, those on vertex long 450-500µm, whitish, those on genal area dense, whitish, short, 200-250µm, facial fovea brownish above, whitish below. Hairs on mesoscutum sparse, short 100-150µm, whitish; those on scutellum slightly sparse, short, 100-200µm, whitish, those on mesepisternum dense, long 300-400µm, whitish, propodeal corbicula not well developed, long, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, short, scanty, whitish, femoral floccus dense, short, pale brownish, tibial scopa long, simple, whitish hairs. Metasomal terga T₁₋₄ with scanty, short 100µm, whitish hairs, T₂₋₃ with interrupted hair bands; T₄ with complete hair band, caudal fimbria pale brownish; S₂₋₅ with long, complete, whitish subapical fimbriae.

Structure. Head length 2.2mm, head width 2.7mm, HL/HW = 0.81. HW: MsW: MtW: 2.7: 2.2: 2.9. Vertex flat

in frontal view, shagreened surface, shiny, with dense, minute PP 25µm, IS = 0.5. OOD: POD: OCD: =0.6: 0.45: 0.2. FL₁ < FL₂+FL₃, FL₂ < FL₃ which are as broad as long. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with fine, small PP. Facial fovea long, narrow, occupying 1/2 space between eye and lateral ocellus, much extending to a line at lower margins of antennal fossae, separated from eye by narrow punctate space, FVL = 1.3mm, FVW = 0.35mm. Face above antennal fossae with fine longitudinal rugulae and weak inter-rugal PP, shagreening surface. Facial quadrangle broader than long (2.7:2.2). Clypeus convex, tessellate, shiny, punctate with dense, obscure PP 25-30µm, IS =1, without longitudinal median impunctate space, CPL = 1.0mm. Process of labrum broad, short, semicircular. Lower paraocular area dull with fine, minute PP 25µm, IS =0.5. Malar space linear. Genal area broader than eye, GW: EW =0.8:0.6 surface densely tessellate and shiny with minute PP 25µm, IS =1. Mesosoma: Pronotum with

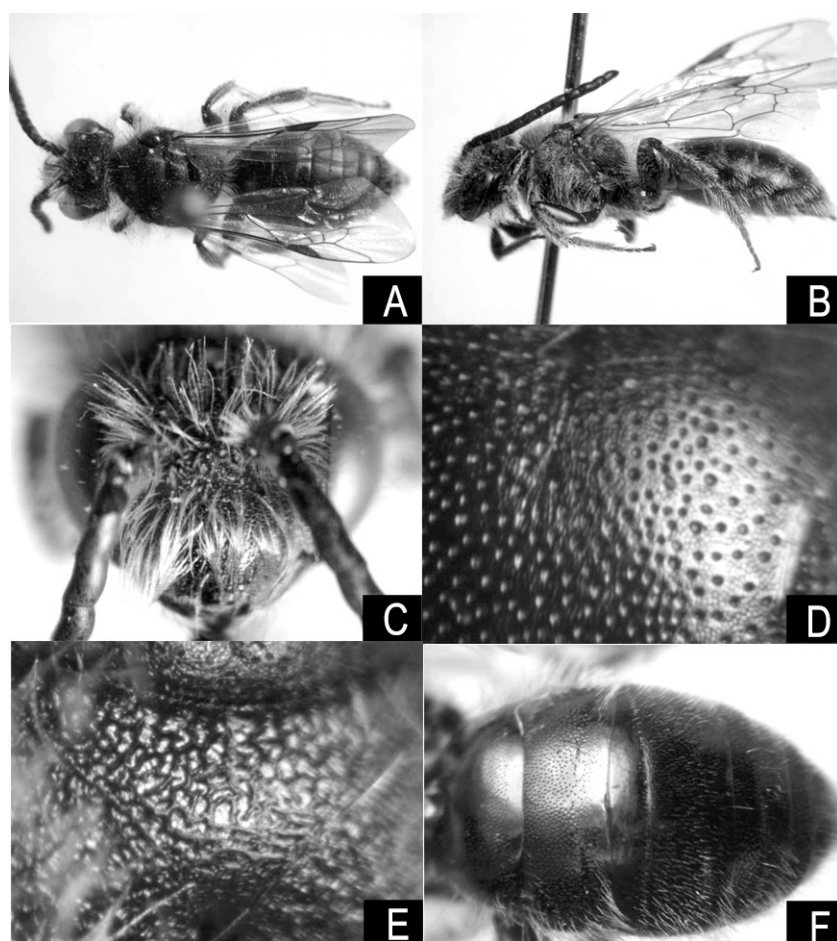


Fig. 19. *Andrena (Cordandrena) cordialis* Morawitz, 1877, male. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

lateral suture and without humeral angle, densely tessellate, shiny with sparse, fine PP 20 μ m. Mesoscutum densely tessellate, shiny with fine, dense, distinct, small PP 25 μ m, IS = 0.5. Scutellum tessellate, shiny with fine, dense, distinct, small PP 25 μ m, IS = 0.5-1. Propodeal enclosure triangular, well indicated, rugose; dorsal face of propodeum roughened. Mesepisternum shagreened, with fine, dense, roughened PP 30 μ m. First transverse cubital vein far from pterostigma. Metasoma: Metasomal terga finely tessellate, shiny, T₁₋₄ with fine, dense, distinct PP 25 μ m, IS = 0.5; posterior depressions of terga well indicated; pygidial plate U shaped without raised internal triangular area, with dense PP. S₂₋₅ finely tessellate and shiny with dense, minute PP 20 μ m.

Male.

Body length 7.3mm, wing length 6.2mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, brownish, veins and pterostigma brownish; tibial spur yellowish; posterior depression of metasomal terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 250-350 μ m, whitish, with lateral fringes, those on vertex long 500-750 μ m, whitish, those on genal area dense, whitish, long, 500-600 μ m. Hairs on

mesoscutum sparse, short 200-250 μ m, whitish; those on scutellum sparse, short, 100-150 μ m, whitish, those on mesepisternum dense, long 600-700 μ m, whitish. Metasomal terga T₁₋₄ with scanty, short 50-100 μ m, whitish hairs, T₂₋₃ with interrupted hair bands; T₄ with complete hair band, caudal fimbria whitish brown; S₂₋₅ with long, complete, whitish subapical fimbriae.

Structure. Head length 2.1mm, head width 2.6mm, HL/HW = 0.81. HW: MsW: MtW: 2.6: 1.8: 2.5. Vertex rounded in frontal view, shagreened surface, shiny, with dense, minute PP 25 μ m, IS = 0.5. OOD: POD: OCD: = 0.6: 0.45: 0.2. FL₁ < FL₂ + FL₃, FL₂ > FL₃ which are longer than broad. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with fine, small PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.6:2.1). Clypeus convex, finely tessellate, shiny, punctate with dense, obscure PP 25-30 μ m, IS = 1, without longitudinal median impunctate space, CPL = 0.8mm. Process of labrum small, trapezoidal, emarginated apically. Lower paraocular area dull with fine, minute PP 25 μ m, IS = 0.5. Malar space linear. Genal area smaller than eye, GW: EW = 0.55:0.65 surface tessellate and shiny with minute PP

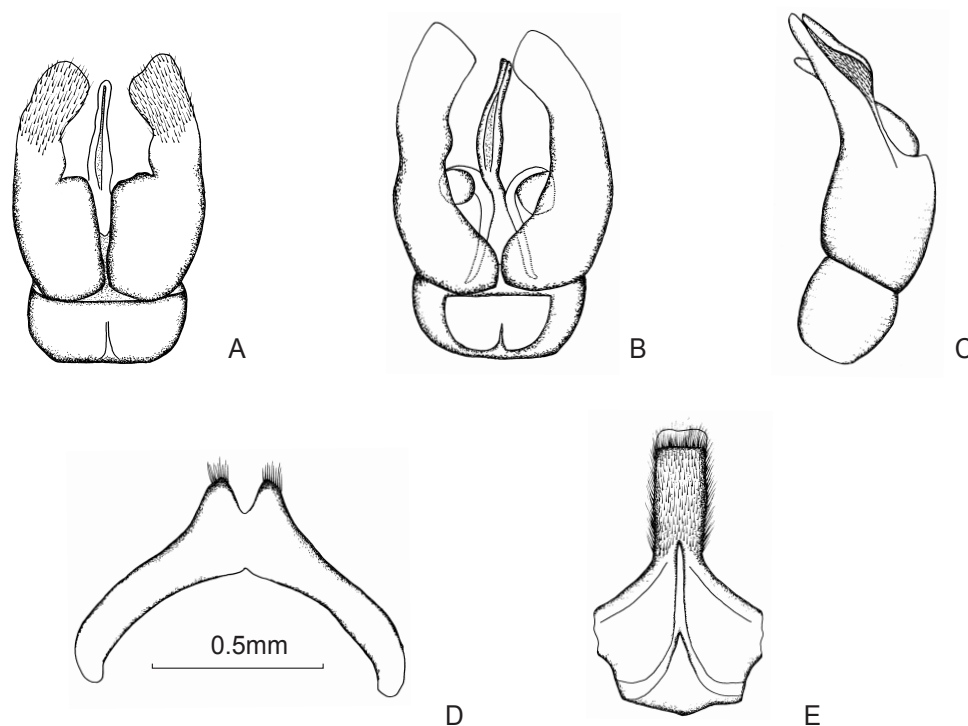


Fig. 20. *Andrena (Cordandrena) cordialis* Morawitz, male. Genital capsule and sub-genital sternum. A: dorsal view of genital capsule; B: ventral view of genital capsule; C: lateral view of genital capsule; D: metasomal sternum 7; E: metasomal sternum 8.

25µm, IS =1. Mesosoma: Pronotum with lateral suture and without humeral angle, densely tessellate, shiny with sparse, fine PP 20µm. Mesoscutum tessellate, shiny with fine, dense, distinct, small PP 25µm, IS =1. Scutellum tessellate, shiny with fine, dense, distinct, small PP 25-30µm, IS =1. Propodeal enclosure triangular, well indicated, rugose; dorsal face of propodeum roughened. Mesepisternum shagreened, with fine, dense, roughened PP 40µm. First transverse cubital vein far from pterostigma. Metasoma: Metasomal terga finely tessellate, shiny, T₁₋₄ with fine, dense, distinct PP 20-25µm, IS=1; posterior depressions of terga well indicated. S₂₋₅ finely tessellate and shiny with dense, minute PP 25µm.

Specimens examined. [KAZAKHSTAN] 1 female, Achisai, 670-700m, Mts. Karatau, S. Kazakhstan Prov., 5. vi. 2003 (O. Tadauchi); 2 males, Jabagly 1080-1200m, S. Kazakhstan Prov., 27. v. 2003 (O. Tadauchi); 1 male, Jabagly 1080-1250m, S. Kazakhstan Prov., 28. v. 2003 (K. Mitai); 1 male, Kemertogan, Almaty Prov., 26. v. 2000 (D. Ahmatjan); 1 male, mer-west, Alma-Arasan, 15km, S. Alma-Ata, 27. v. 1994. (K. Denes jr); 1 male, Alma Ata onv.- Axaj, 29. v. 2003. (Z. Padr); [KYRGYZSTAN] 1 male, Krasnayarichika, 800m, 27. v. 2003 (D. Ahmatjan); 2 males, Issyk-ata, 1300m, 27. v. 2003 (D. Ahmatjan); 1 male, Dzhahalal-abad, Chatkal R., 2240m, 19. vi. 1999 (J. G. Rozen, J. K. Bousemen).

Floral record. Umbelliferae, Leguminosae.

Distribution. From Balkans Hungry, Slovakia, former Yugoslavia to Turkey, North Africa (Morocco), Moldova, Ukraine, Transcaucasia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, China.

45. *Andrena (Euandrena) capillosa* Morawitz, 1876 (Fig. 21)

Andrena capillosa Morawitz, 1876, in Fedtschenko, Izv. imp. Obshch. Ljubit. Estest. Antrop. Etnog.: 205.

Andrena (Euandrena) capillosa: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 154-155.

Redescription.

Female.

Body length 8.6mm, wing length 6.8mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, moderately brownish, veins and pterostigma yellowish brown; tibial spur pale yellowish; posterior depressions of metasomal terga brownish.

Pubescence. Hairs on head sparse except antennal area, brownish; those on clypeus sparse, long 250-300µm,

brownish, with lateral fringes, those on vertex long 350-400µm, dull whitish without brownish, those on genal area dense, brownish, long 450-600µm, facial fovea brownish. Hairs on mesoscutum dense, long 250-300µm, dull whitish hairs; those on scutellum dense, long 300-350µm, dull whitish hairs, those on mesepisternum dense, brownish, long 550-650µm, propodeal corbícula not developed, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, sparse, whitish, femoral floccus dense, long, brownish, tibial scopa developed, simple, pale brownish hairs. Metasomal tergum T₁ medially with sparse, short 100µm, whitish hairs, T₂₋₄ with slightly dense, short, suberect, brownish hairs, T₁₋₃ with interrupted whitish hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, brownish subapical fimbriae.

Structure. Head length 2.1mm, head width 2.8mm, HL/HW = 0.75. HW: MsW: MtW: 2.8: 2.0: 2.9. Vertex flat in frontal view, shagreening surface, shiny, with fine, PP 30µm, IS =1. OOD: POD: OCD: =0.55: 0.4: 0.2. FL₁> FL₂+FL₃, FL₂ = FL₃ which are broader than long. Eyes with inner margins subparallel. Supraclypeal area flattened, rather convex, shiny, with small PP. Facial fovea narrow, short, attaining to a line at lower margins of antennal fossae, FVL = 0.8mm, FVW = 0.25mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.8:2.1). Clypeus convex, tessellate basally, smooth apically, punctate with dense, distinct PP 30-40µm, IS =1, with a narrow longitudinal median impunctate space, CPL =0.95mm. Process of labrum trapezoidal. Lower paraocular area shiny, smooth, punctate with dense, minute PP 25µm, IS =0.5. Malar space linear, small. Genal area broader than eye, GW: EW=0.8:0.65, surface shagreening and shiny with minute PP 25µm, IS =1. Mesosoma: Pronotum without lateral suture and humeral angle, pronotum tessellate surface, punctate, shiny with fine, sparse PP 20µm. Mesoscutum tessellate, with fine, dense, small PP 40µm, IS =1. Scutellum tessellate, shiny with fine, dense, small PP 30µm, IS =1. Propodeal enclosure large, triangular, weakly indicated, rugulose basally, tessellate apically; dorsal face of propodeum densely tessellate with roughened, small PP 40µm. Mesepisternum tessellate, with roughened, small PP 30µm. Vein 1st m-cu meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga finely tessellate, shiny, T₁₋₄ with finely sparse, small PP 20µm, IS=2-3; posterior depressions of terga weakly indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ densely tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female,

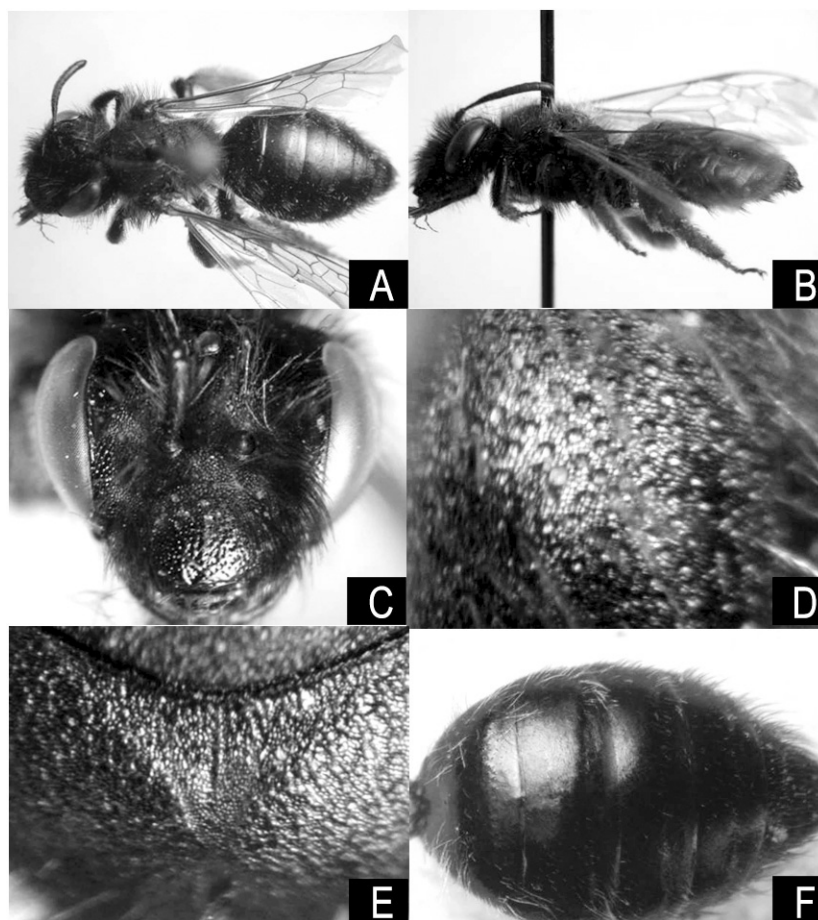


Fig. 21. *Andrena (Euandrena) capillosa* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

Alma-Ata, All-Tan 3000m, 10. vi. 1981 (Svverak).

Floral record. Not available.

Distribution. Uzbekistan, Tadjikistan, Kazakhstan.

46. *Andrena (Euandrena) majalis* Morawitz, 1876
(Figs. 22-24)

Andrena majalis Morawitz, 1876, in Fedtschenko, Izv. imp. Obshch. Ljubit. Estest. Antrop. Etnog.: 182.

Andrena (Euandrena) majalis: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 453-454.

Redescription.

Female.

Body length 9.0mm, wing length 6.4mm.

Color. Flagellum brownish beneath; mandibles with apical third reddened; wing membranes subhyaline, brown, veins and pterostigma yellowish brown; tibial spur pale brownish; posterior depressions of metasomal

terga brownish.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, slightly long 200-250µm, whitish, with lateral fringes, those on vertex long 350-450µm, whitish, those on genal area dense, whitish mixed with brownish, slightly long 250-300µm, facial fovea brownish. Hairs on mesoscutum dense, slightly long 200-250µm, whitish hairs; those on scutellum sparse, short 150-200µm, whitish hairs, those on mesepisternum dense, whitish, long 400-500µm, propodeal corbícula moderately developed, whitish, with internal simple, sparse hairs, trochanteral floccus perfect, dense, whitish, femoral floccus dense, long, brownish, tibial scopa developed, simple, yellowish hairs. Metasomal tergum T₁ medially with sparse, long 400µm, whitish hairs, T₂₋₄ with slightly dense, short, suberect hairs, T₁₋₂ with interrupted whitish hair bands, T₃₋₄ with completed whitish hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.3mm, head width 2.9mm, HL/HW = 0.79. HW: MsW: MtW: 2.9: 2.0: 2.7. Vertex flat in frontal view, shagreening surface, shiny, with fine, sparse PP 25µm, IS =1. OOD: POD: OCD: =0.55: 0.45: 0.2. FL1 < FL2+FL3, FL2 < FL3 which are broader than long. Eyes with inner margins subparallel. Supraclypeal area slightly convex, shiny, with small PP. Facial fovea narrow, attaining to a line at lower margins of antennal fossae, FVL =1.0mm, FVW =0.2mm. Face above antennal fossae with fine longitudinal rugulae and weak inter-rugal PP, shagreening surface. Facial quadrangle broader than long (2.9:2.3). Clypeus convex, smooth, punctate with dense, distinct PP 30-40µm, IS =1, with a narrow longitudinal median impunctate space, CPL = 0.8mm. Process of labrum transverse, emarginate apically. Lower paraocular area shiny, smooth, punctate with dense, minute PP 25µm, IS =1. Malar space linear, small. Genal area broader than eye, GW: EW =0.75:0.65, surface tessellate and shiny with minute PP 25µm, IS =1. Mesosoma:

Pronotum without lateral suture and without humeral angle, pronotum tessellate surface, punctate, shiny with fine, sparse PP 20µm. Mesoscutum weakly tessellate anteriorly, smooth and shiny posteromedially, with fine, sparse, small PP 30µm, IS =1. Scutellum smooth, shiny with fine, dense, small PP 30µm, IS =1. Propodeal enclosure large, triangular, weakly indicated, tessellate; dorsal face of propodeum tessellate with fine, small PP 25µm. Mesepisternum tessellate, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga smooth, shiny, T₁₋₄ with fine sparse, small PP 20µm; posterior depressions of terga weakly indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Male.

Body length 7.9mm, wing length 6.1mm.

Color. Flagellum chocolate beneath; mandibles black with apical third reddened; wing membranes subhyaline,

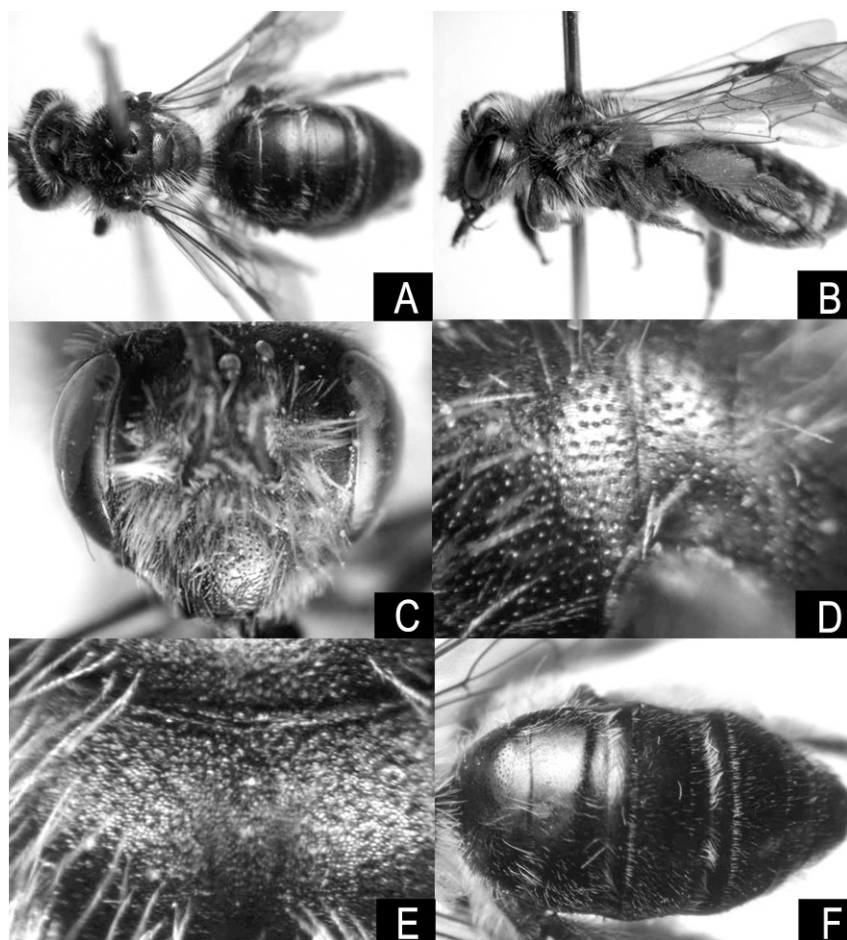


Fig. 22. *Andrena (Euandrena) majalis* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

brownish, veins and pterostigma reddish brown; hind tibia and tarsi pale brownish; tibial spur pale brownish; posterior depressions of metasomal terga bronze.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, long 300-350µm, whitish, with lateral fringes, those on vertex long 350-450µm, whitish, those on genal area dense, whitish, long 300-400µm. Hairs on mesoscutum dense, long 300-400µm, whitish; those on scutellum dense, long 300-400µm, whitish, those on mesepisternum dense, whitish, long 400-600µm. Metasomal tergum T₁ medially with sparse, long 250-300µm, whitish hairs, T₂₋₄ with slightly dense, short, sub-erect hairs, T₁ with interrupted whitish hair band, T₂₋₄ with completed whitish hair bands; caudal fimbria whitish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.0mm, head width 2.4mm, HL/HW = 0.83. HW: MsW: MtW: 2.4: 1.5: 2.0. Vertex flat in frontal view, tessellate surface, shiny, with fine, sparse

PP 30µm, IS =1. OOD: POD: OCD: =0.5: 0.4: 0.15. FL₁< FL₂+FL₃, FL₂ < FL₃ which are longer than broad. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with small PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.4:2.0). Clypeus convex, smooth, punctate with dense, distinct PP 30-40µm, IS = 0.5, without a longitudinal median impunctate space, CPL = 0.75mm. Process of labrum small. Lower paraocular area shiny, smooth, punctate with dense, minute PP 25µm, IS =1. Malar space linear, small. Genal area as broad as eye, GW: EW =0.60, surface tessellate and shiny with minute PP 25µm, IS =1. Mesosoma: Pronotum without lateral suture and without humeral angle, pronotum tessellate surface, punctate, shiny with fine, sparse PP 20µm. Mesoscutum tessellate, with fine, dense, small PP 30µm, IS =1. Scutellum tessellate, shiny with fine, dense, small PP 30µm, IS =1. Propodeal enclosure large, triangular, weakly indicated,

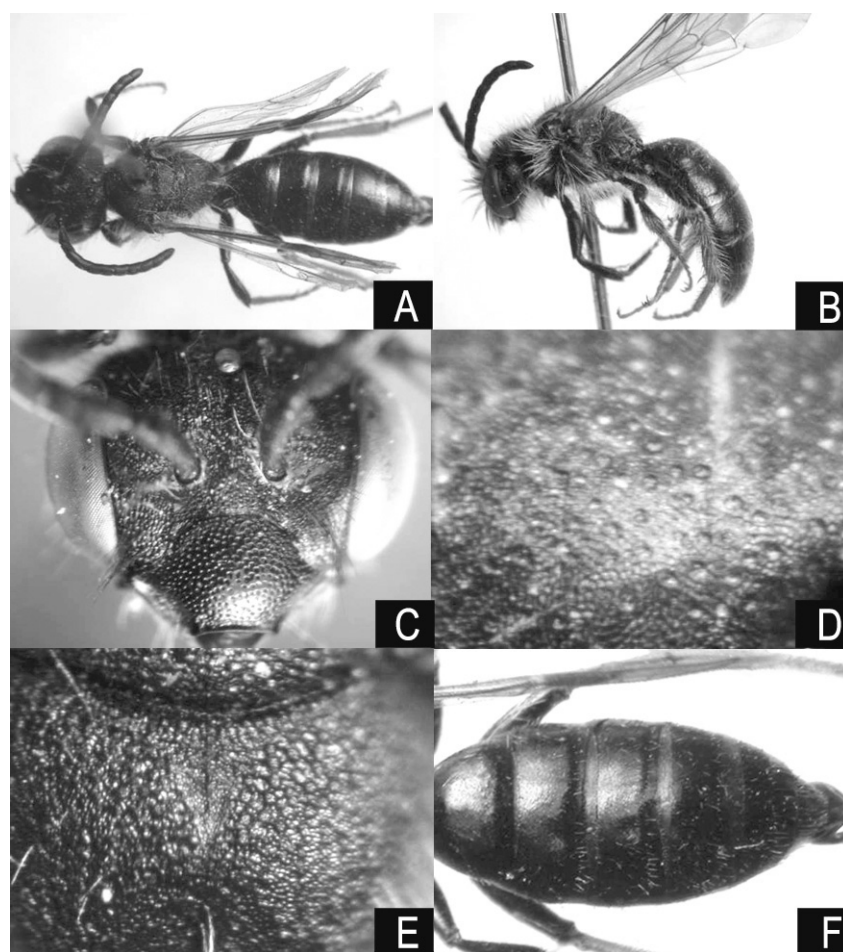


Fig. 23. *Andrena (Euandrena) majalis* Morawitz, male. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

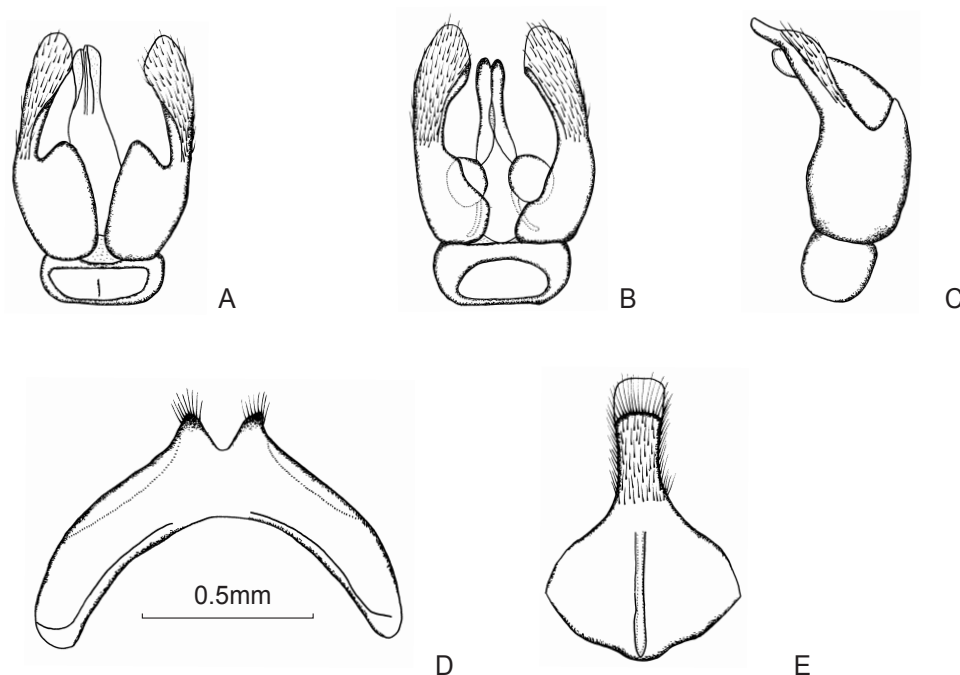


Fig. 24. *Andrena (Euandrena) majalis* Morawitz, male. Genital capsule and subgenital sternum. A: dorsal view of genital capsule; B: ventral view of genital capsule; C: lateral view of genital capsule; D: metasomal sternum 7; E: metasomal sternum 8.

tessellate; dorsal face of propodeum tessellate with fine, small PP 25µm. Mesepisternum tessellate, with fine, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, shiny, T₁₋₄ with finely sparse, small PP 25µm; posterior depressions of terga weakly indicated. S₂₋₅ strongly tessellate and shiny with dense, minute PP 25µm.

Specimens examined. [KAZAKHSTAN] 3 females, W of Kamsomolskoe, Kyzylkum desert, S. Kazakhstan Prov., 1, 2. v. 2004 (O. Tadauchi); 2 females, Seslavino, 960m, Daubaba River, S. Kazakhstan Prov., 11. vi. 2004 (O. Tadauchi); 1 female, Moyenkum-Chu, Jambul Prov., 13. v. 2004 (R. Murao); 1 female, Karatau-Janatas 680m, Jambul Prov., 17. v. 2004 (R. Murao); 1 female, Achisai, 670-700m, Mts. Karatau, S. Kazakhstan Prov., 4. vi. 2003 (K. Mitai); 2 females, Dzambul onv. 3. vi. 1980, (Dr. Z. Padr); 1 female, Alma-Arasan. vii. 1976 (Dr. Svozil); 1 male, Muyunkum-Kumozek, 325m, Muyunkum desert, Jambul Prov., 16. v. 2004 (O. Tadauchi); 1 male, Almaty-Big, Almaty Lake, 1560-1360m, Almaty Prov., 22. v. 2004 (O. Tadauchi); [KYRGYZSTAN] 1 male, Talasskaya Obl., Ferg Khrebet, Kara-Suu, 2000-2200m,

6. 8. vi. 1995 (H & R. Rausch, P. Ressi).

Floral record. Not available.

Distribution. Turkmenistan, Uzbekistan, Kazakhstan.

47. *Andrena (Euandrena) nupta* Morawitz, 1876 (Figs. 25-27)

Andrena nupta Morawitz, 1876, in Fedtschenko, *Izv. imp. Obshch. Ljubit. Estest. Antrop. Etnog.*, 191.

Andrena (Euandrena) nupta: Gusenleitner & Schwarz, 2002, *Entomofauna, Suupl.*, 12: 547.

Redescription.

Female.

Body length 7.2mm, wing length 5.7mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, moderately brownish, veins and pterostigma yellowish brown; tibial spur yellowish; metasomal tergum reddish brown except first metasomal tergum, posterior depressions of metasomal terga reddish bronze.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, slightly long 250-300µm, whitish, with

lateral fringes, those on vertex long 450-500µm, whitish, those on genal area dense, whitish, slightly long 250-300µm, facial fovea brownish above, whitish below. Hairs on mesoscutum dense, slightly long 200-250µm, whitish; those on scutellum dense, long 250-400µm, whitish, those on mesepisternum dense, whitish, long 400-500µm, propodeal corbicula moderately developed, whitish, with internal simple, sparse hairs, trochanteral flocus perfect, dense, whitish, femoral flocus dense, long, whitish, tibial scopa developed, simple, whitish hairs. Metasomal tergum T₁ with sparse, slightly long 250-300µm, whitish hairs, T₂₋₄ with slightly dense, short, whitish hairs, T₂₋₄ with interrupted whitish hair bands; caudal fimbria pale brownish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 1.9mm, head width 2.4mm, HL/HW = 0.79. HW: MsW: MtW: 2.4: 1.8: 2.4. Vertex rounded in frontal view, tessellate surface, shiny, with fine, distinct PP 25µm, IS =1. OOD: POD: OCD: =0.4:

0.4: 0.1. FL₁ < FL₂+FL₃, FL₂ = FL₃ which are broader than long. Eyes with inner margins subparallel. Supraclypeal area slightly convex, shiny, with small PP. Facial fovea narrow, attaining to a line at lower margins of antennal fossae, FVL =0.9mm, FVW =0.2mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quad-angle broader than long (2.4:1.9). Clypeus convex, tessellate, punctate with dense, distinct PP 25µm, IS =1, with a narrow longitudinal median impunctate space, CPL =0.8mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area shiny, tessellate, punctate with dense, minute PP 30µm, IS =1. Malar space linear, small. Genal area broader than eye, GW: EW =0.7:0.6, surface tessellate and shiny with minute PP 25µm, IS =1. Mesosoma: Pronotum without lateral suture and humeral angle, pronotum tessellate surface, punctate, shiny with fine, sparse PP 20µm. Mesoscutum densely tessellate, shiny, with fine, dense,

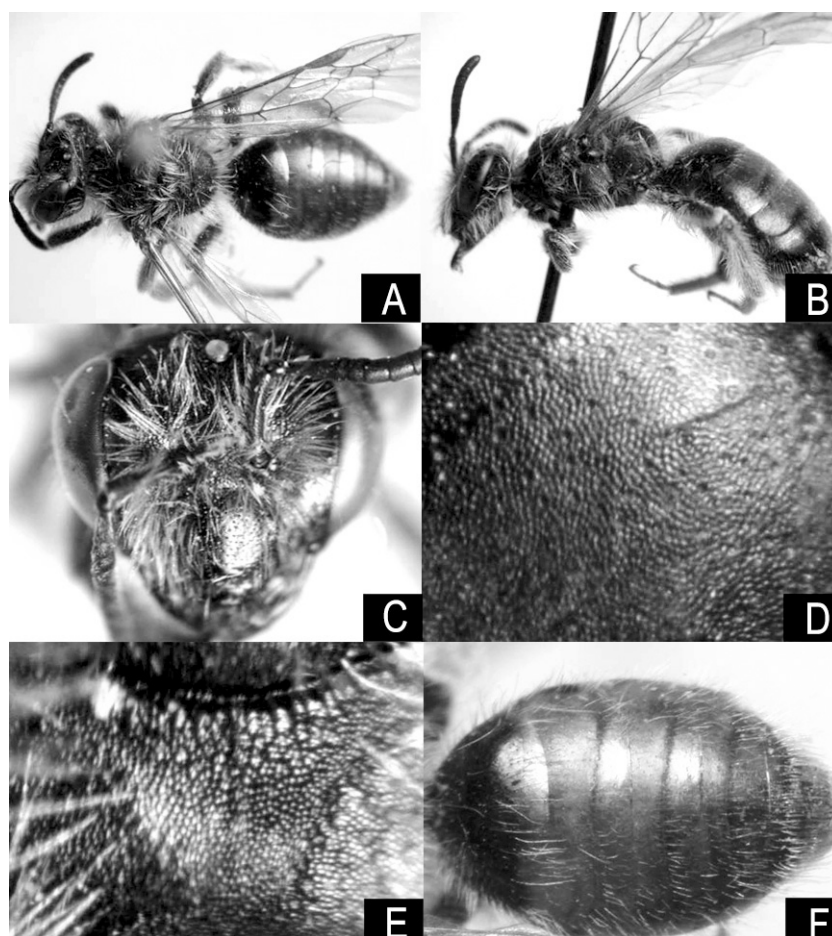


Fig. 25. *Andrena (Euandrena) nupta* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

small PP 40 μ m, IS =1. Scutellum weakly tessellate, shiny with fine, sparse, small PP 30 μ m, IS =1. Propodeal enclosure large, triangular, weakly indicated, rugulose basally, tessellate apically; dorsal face of propodeum tessellate with roughened, small PP 30 μ m. Mesepisternum tessellate, with roughened, small PP 30 μ m. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, shiny, T₁₋₄ with fine, small PP 20 μ m, IS=3-4; posterior depressions of terga well indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20 μ m.

Male.

Body length 6.5mm, wing length 5.2mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, moderately brownish, veins and pterostigma reddish brown; tibial spur yellowish; metasomal tergum reddish brown except first metasomal tergum, posterior depressions of

metasomal terga reddish bronze.

Pubescence. Hairs on head dense, whitish; those on clypeus dense, slightly long 250-350 μ m, whitish, with lateral fringes, those on vertex long 350-500 μ m, whitish, those on genal area dense, whitish, long 250-400 μ m. Hairs on mesoscutum slightly dense, slightly long 250-300 μ m, whitish; those on scutellum dense, long 300-350 μ m, whitish, those on mesepisternum dense, whitish, long 400-500 μ m. Metasomal tergum T₁ with sparse, slightly long 250-300 μ m, whitish hairs, T₂₋₄ with slightly dense, short 100-150 μ m, whitish hairs, T₁₋₄ without hair bands; caudal fimbria yellowish; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 1.7mm, head width 2.3mm, HL/HW = 0.74. HW: MsW: MtW: 2.3: 1.5: 1.9. Vertex rounded in frontal view, shagreening surface, shiny, with fine, distinct PP 25 μ m, IS =2. OOD: POD: OCD: =0.45: 0.4: 0.1. FL₁ < FL₂+FL₃, FL₂ < FL₃ which are longer than broad. Eyes with inner margins subparallel.

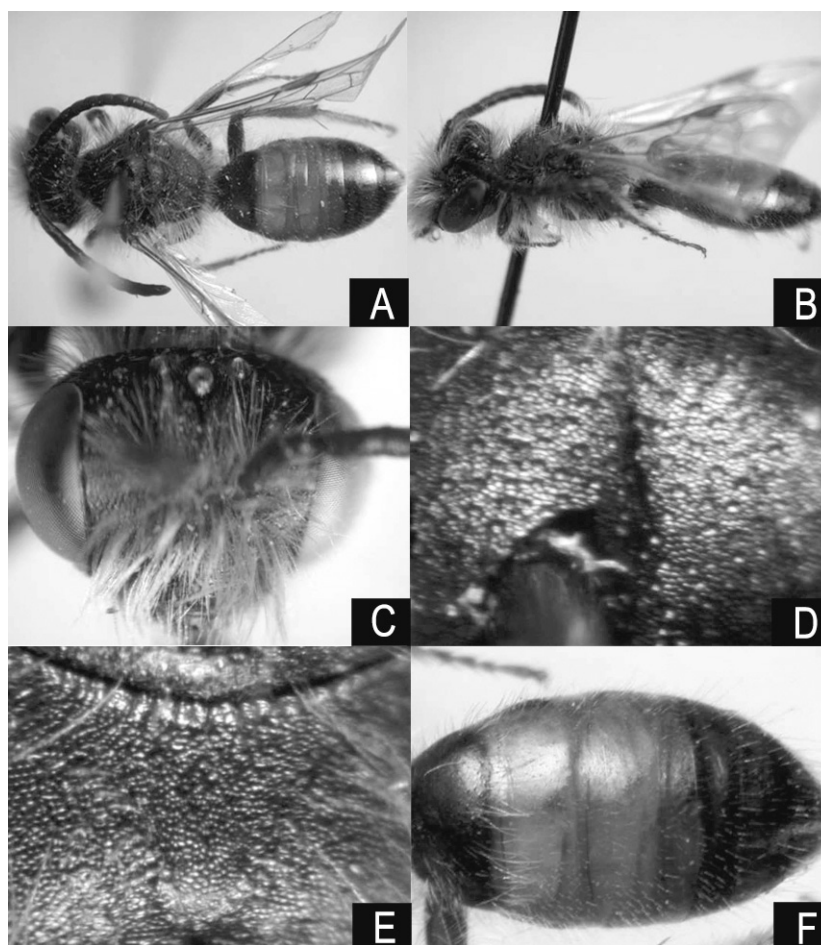


Fig. 26. A-F *Andrena* (*Euandrena*) *nupta* Morawitz, male. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

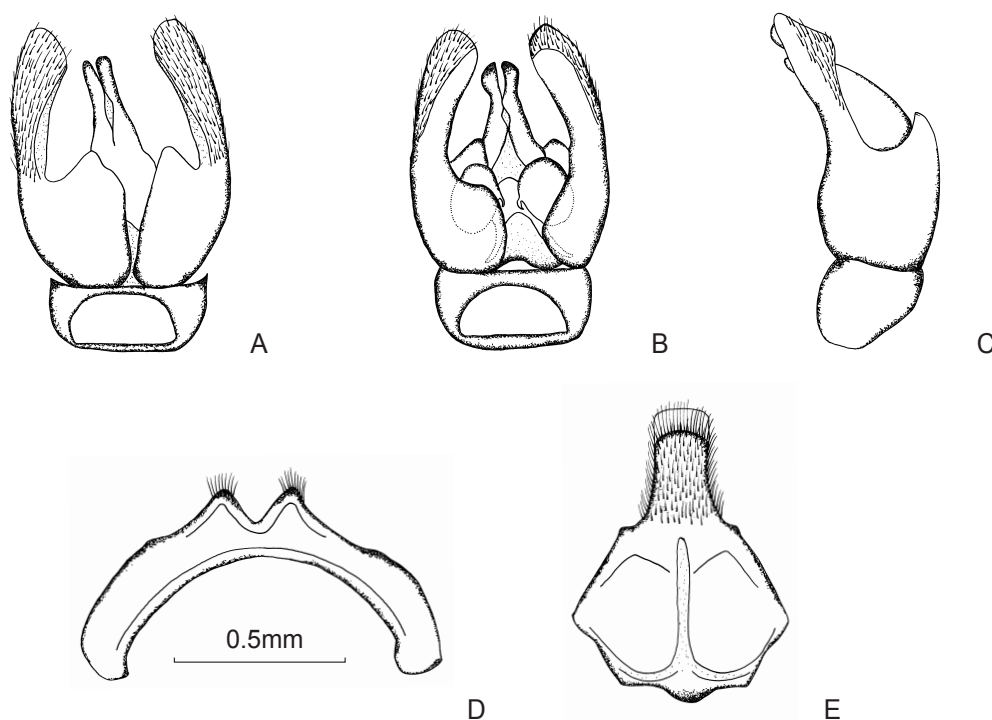


Fig. 27. *Andrena (Euandrena) nupta* Morawitz, male. Genital capsule and subgenital sterna. A: dorsal view of genital capsule; B: ventral view of genital capsule; C: lateral view of genital capsule; D: metasomal sternum 7; E: metasomal sternum 8.

Supraclypeal area slightly convex, shiny, with small PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.3:1.7). Clypeus convex, tessellate, punctate with dense, distinct PP 30µm, IS =1, without longitudinal median impunctate space, CPL =0.7mm. Process of labrum broad, trapezoidal, emarginated apically. Lower paraocular area shiny, punctate with dense, minute PP 30µm, IS =1. Malar space linear, small. Genal area smaller than eye, GW: EW =0.5:0.65, surface tessellate and shiny with minute PP 25µm, IS =1. Mesosoma: Pronotum without lateral suture and humeral angle, pronotum densely tessellate surface, punctate, shiny with fine, sparse PP 20µm. Mesoscutum densely tessellate, shiny, with fine, dense, small PP 30µm, IS =1. Scutellum densely tessellate, shiny with fine, dense, small PP 30µm, IS =1. Propodeal enclosure large, triangular, weakly indicated, rugulose; dorsal face of propodeum tessellate with roughened, small PP 30µm. Mesepisternum tessellate, with roughened, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga tessellate, shiny, T₁₋₄ with fine, small PP 20µm, IS=3-4; posterior depressions of terga well indicated. S₂₋₅ strongly tessellate and shiny

with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 4 females and 3 males, Ili riv. area, Bakanas distr., iv.-v. 2001 (Gurko); 1 female, Jabagly, 1180-1250m, S. Kazakhstan Prov., 11. v. 2004 (O. Tadauchi).

Floral record. Not available.

Distribution. Uzbekistan, Kazakhstan.

48. *Andrena (Euandrena) verae* Osytsnjuk, 1986 (Fig. 28)

Andrena (Euandrena) verae Osytsnjuk, 1986, Ent. Obozr., 65: 413.

Andrena (Euandrena) verae: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 812-813.

Redescription.

Female.

Body length 8.5mm, wing length 6.4mm.

Color. Flagellum brownish beneath; mandibles black with apical half reddened apically; wing membranes subhyaline, moderately brownish, veins and pterostigma brownish; tibial spur pale yellowish; posterior depres-

sions of metasomal terga brownish.

Pubescence. Hairs on head sparse except antennal area, whitish; those on clypeus sparse, short 150-250µm, whitish, with lateral fringes, those on vertex long 350-450µm, whitish without brownish, those on genal area dense, whitish, long 250-300µm, facial fovea brownish above, whitish below. Hairs on mesoscutum dense, long 250-350µm, dull whitish hairs; those on scutellum dense, long 250-300µm, dull whitish hairs, those on mesepisternum dense, whitish, long 450-600µm, propodeal corbicula moderately developed, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, sparse, whitish, femoral floccus dense, long, brownish, tibial scopa developed, simple, pale brownish hairs. Metasomal terga T₁₋₄ with slightly dense, short, suberect, whitish hairs, T₁ with interrupted whitish hair band, T₂₋₄ with completed whitish hair bands; caudal fimbria golden; S₂₋₅ with long, sparse, whitish subapical fimbriae.

Structure. Head length 2.3mm, head width 2.7mm,

HL/HW = 0.85. HW: MsW: MtW: 2.7: 2.0: 2.6. Vertex flat in frontal view, shagreening surface, shiny, with fine, PP 30µm, IS =1. OOD: POD: OCD: =0.4: 0.35: 0.1. FL₁> FL₂+FL₃, FL₂ = FL₃ which are broader than long. Eyes with inner margins subparallel. Supraclypeal area flattened, rather convex, shiny, with small PP. Facial fovea narrow, long, much extending to a line at lower margins of antennal fossae, FVL = 1.1mm, FVW = 0.25mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (2.7:2.3). Clypeus weakly convex, rather flattened, smooth, punctate with dense, distinct PP 20-30µm, IS =1, without a longitudinal median impunctate space, CPL =1.0mm. Process of labrum trapezoidal. Lower paraocular area shiny, smooth, punctate with dense, minute PP 25µm, IS =0.5. Malar space linear, small. Genal area slightly broader than eye, GW: EW =0.7:0.6, surface tessellate and shiny with minute PP 25µm, IS =1. Mesosoma: Pronotum without lateral suture

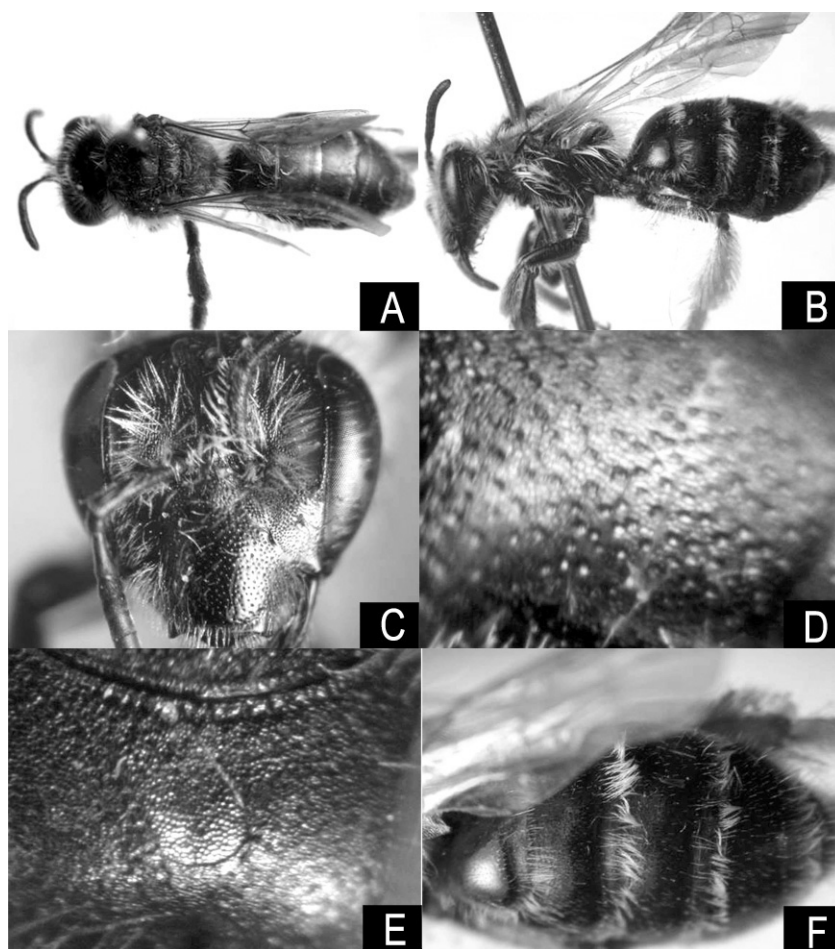


Fig. 28. *Andrena (Euandrena) verae* Osytshnjuk, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

and with humeral angle, pronotum tessellate surface, punctate, shiny with fine, sparse PP 20µm. Mesoscutum tessellate, with fine, dense, distinct, small PP 30µm, IS =1. Scutellum finely tessellate, shiny with fine, dense, distinct, small PP 30µm, IS =1. Propodeal enclosure large, triangular, weakly indicated, rugulose basally, tessellate apically; dorsal face of propodeum densely tessellate with roughened, small PP 40µm. Mesepisternum tessellate, with roughened, small PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga finely tessellate, shiny, T₁₋₄ with finely sparse, small PP 20-25µm, IS=2-3; posterior depressions of terga weakly indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ densely tessellate and shiny with dense, minute PP 25µm.

Specimens examined. [KAZAKHSTAN] 1 female, Muyunkum-Kumozek, 325m, Muyunkum desert, Jambul Prov., 16. v. 2004 (O. Tadauchi); 1 female, Karatau City 600m, Jambul Prov., 13. v. 2004 (O. Tadauchi).

Floral record. Not available.

Distribution. Ukraine, Russia, Kazakhstan.

**49. *Andrena (Hoplandrena) mordax*
Morawitz, 1876
(Figs. 29-31)**

Andrena mordax Morawitz, 1876, in Fedtschenko, Izv. imp. Obshch. Ljubit. Estest. Antrop. Etnog.: 196.

Andrena (Hoplandrena) mordax: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 494-495.

Redescription.

Female.

Body length 12.3mm, wing length 10.3mm.

Color. Flagellum brownish beneath; mandibles black reddened apically; wing membranes subhyaline, brownish, veins and pterostigma brownish; tibial spur brownish; posterior depressions of metasomal terga brownish.

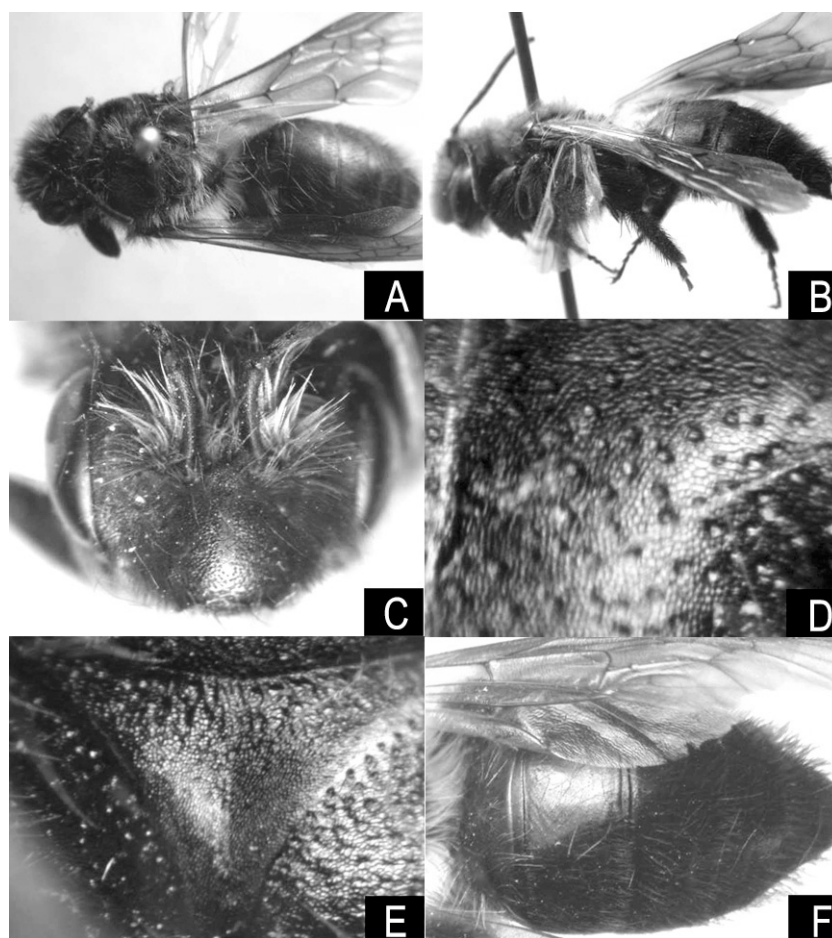


Fig. 29. A-F *Andrena (Hoplandrena) mordax* Morawitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; D: metasomal terga.

Pubescence. Hairs on head dense, brownish; those on clypeus dense, long 450-500 μ m, brownish, with lateral fringes, those on vertex long 600-750 μ m, brownish, those on genal area dense, brownish, long, 600-750 μ m, facial fovea brownish. Hairs on mesoscutum slightly dense, long 450-500 μ m, brownish; those on scutellum slightly dense, long, 500-600 μ m, brownish, those on mesepisternum dense, long 600-750 μ m, brownish, propodeal corbicle developed, long, whitish, with internal simple, sparse hairs, trochanteral floccus imperfect, short, sacate, femoral floccus dense, short, brownish, tibial scopa long, simple, brownish hairs. Metasomal terga T₁₋₄ with dense, long 300-400 μ m, brownish hairs, T₂₋₄ without hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, brownish subapical fimbriae.

Structure. Head length 3.2mm, head width 4.0mm, HL/HW = 0.80. HW: MsW: MtW: 4.0: 3.2: 4.2. Vertex flat in frontal view, shagreened surface, shiny, with dense, distinct PP 30-40 μ m, IS = 0.5. OOD: POD: OCD: = 0.95:

0.55: 0.3. FL₁ > FL₂+FL₃, FL₂ < FL₃ which are longer than broad. Eyes with inner margins subparallel. Supraclypeal area convex, shiny, with fine, small PP. Facial fovea long, broad, occupying full space between eye and lateral ocellus, much extending to a line at lower margins of antennal fossae, FVL = 1.7mm, FVW = 0.75mm. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (4.0:3.2). Clypeus strongly convex, tessellate, shiny, punctate with dense, obscure PP 30-40 μ m, IS = 0.5-1, with longitudinal median impunctate space, CPL = 1.2mm. Process of labrum small, trapezoidal. Lower paraocular area tessellate, shiny with minute PP 25-30 μ m, IS = 1. Malar space linear. Genal area broader than eye, GW: EW = 1.1:0.8 surface densely tessellate and shiny with minute PP 25 μ m, IS = 1. Mesosoma: Pronotum with lateral suture and without humeral angle, densely tessellate, shiny with sparse, fine PP 20 μ m. Mesoscutum densely tessellate, shiny with

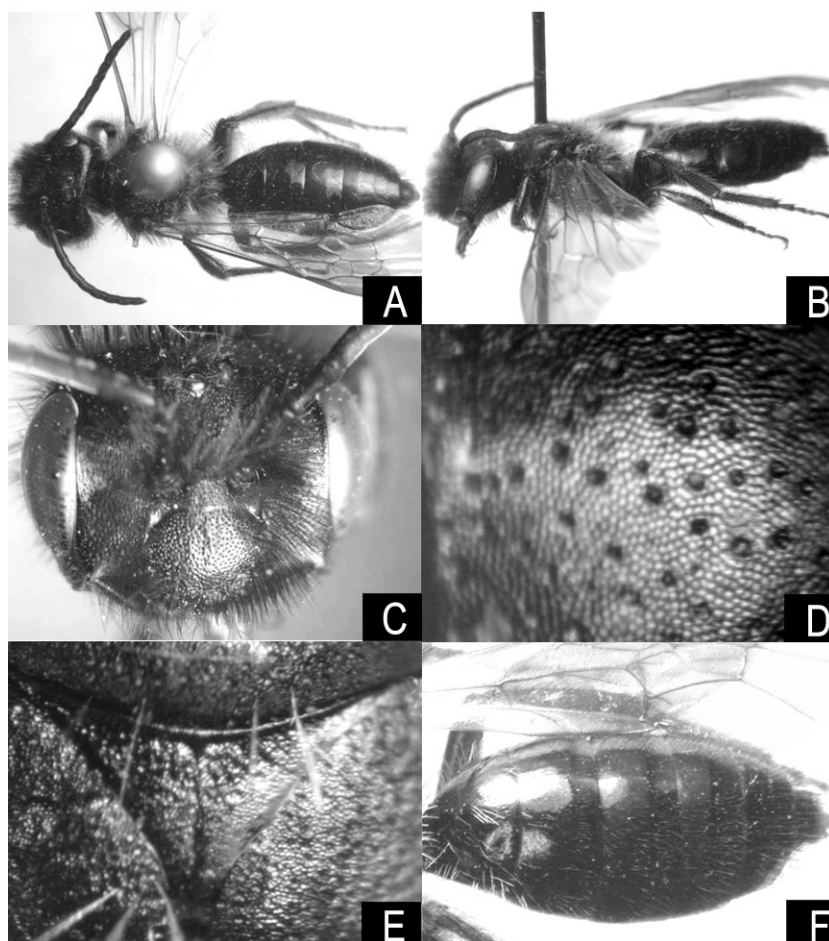


Fig. 30. *Andrena (Hoplandrena) mordax* Morawitz, male. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

fine, obscure, small PP 40 μ m, IS =1-2. Scutellum tessellate, shiny with obscure, fine, small PP 30 μ m, IS = 1. Propodeal enclosure triangular, well indicated, rugulose basally, tessellate apically; dorsal face of propodeum tessellate surface, with fine PP 40 μ m. Mesepisternum densely tessellate, with fine, dense, roughened PP 50 μ m. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga densely tessellate, shiny, T₁ with fine, sparse PP 25 μ m, IS=3; T₂₋₄ with fine sparse, small PP 20 μ m, IS=3; posterior depressions of terga well indicated; pygidial plate V shaped without raised internal triangular area. S₂₋₅ strongly tessellate and shiny with dense, minute PP 25 μ m.

Male.

Body length 10.3mm, wing length 8.0mm.

Color. Flagellum brownish beneath; mandibles black with apical third reddened; wing membranes subhyaline, brownish, veins and pterostigma brownish; tibial spur pale brownish; posterior depressions of metasomal brownish.

Pubescence. Hairs on head dense, brownish; those on clypeus dense, long 300-400 μ m, brownish, with lateral fringes, those on vertex long 500-600 μ m, brownish, those on genal area dense, brownish, long, 300-400 μ m. Hairs on mesoscutum scanty, short 100-200 μ m, brownish; those on scutellum scanty, short 100-200 μ m,

brownish, those on mesepisternum dense, long 500-700 μ m, brownish. Metasomal tergum T₁ with sparse, short 200 μ m, brownish hairs, T₂₋₄ with dense, short 100-150 μ m, brownish hairs, T₂₋₄ without hair bands; caudal fimbria brownish; S₂₋₅ with long, sparse, brownish sub-apical fimbriae.

Structure. Head length 2.5mm, head width 3.3mm, HL/HW = 0.76. HW: MsW: MtW: 3.3: 2.1: 2.7. Vertex rounded in frontal view, tessellate surface, shiny, with dense, distinct PP 40 μ m, IS = 0.5-1. OOD: POD: OCD: =0.8: 0.5: 0.35. FL₁< FL₂+FL₃, FL₂ < FL₃ which are longer than broad. Eyes with inner margins paralleled. Supraclypeal area convex, shiny, with fine, small PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle broader than long (3.3:2.5). Clypeus convex, shiny, punctate with dense, obscure PP 30-40 μ m, IS = 0.5-1, with longitudinal median impunctate space, CPL = 1.1mm. Process of labrum small, trapezoidal, emarginated apically. Lower paraocular area tessellate, shiny with minute PP 30-40 μ m, IS =1. Malar space linear. Genal area broader than eye, GW: EW = 1.0:0.75 surface finely tessellate and shiny with minute PP 25 μ m, IS =1. Mesosoma: Pronotum with lateral suture and without humeral angle, densely tessellate, shiny with sparse, fine PP 20 μ m. Mesoscutum densely tessellate, shiny with

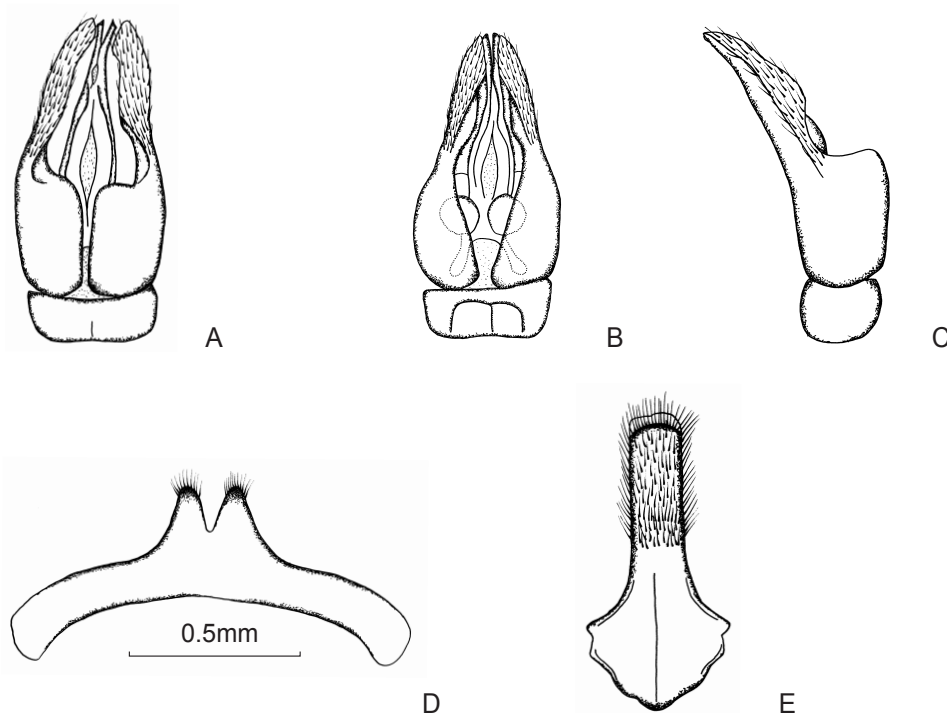


Fig. 31. A-E *Andrena (Hoplandrena) mordax* Morawitz, male. Genital capsule and sub-genital sterna. A: dorsal view of genital capsule; B: ventral view of genital capsule; C: lateral view of genital capsule; D: metasomal sternum 7; E: metasomal sternum 8.

fine, obscure, small PP 30-40µm, IS =1-2. Scutellum finely tessellate, shiny with obscure, fine, small PP 30µm, IS = 1. Propodeal enclosure triangular, well indicated, rugulose basally, finely tessellate apically; dorsal face of propodeum tessellate surface, with roughened PP 40µm. Mesepisternum densely tessellate, with fine, dense, roughened PP 40-50µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga weakly tessellate, shiny, T₁ with fine, sparse PP 20µm, IS=2; T₂₋₄ with fine sparse, small PP 20µm, IS=2-3; posterior depressions of terga weakly indicated. S₂₋₅ strongly tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female, Jabagly, 1180-1250m, S. Kazakhstan Prov., 28. v. 2003 (K. Mitai); 1 male, Talas Mt. R., 3km W Dzhabagly, 5. viii. 2000 (Makogonova); [RUSSIA] 1 male, 2km C.-3 noc., Жабарты. Ю. Ка3, 29. vi. 1998. (Ka3eИac).

Floral record. *Salix* sp.

Distribution. Tadzhikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, Mongolia.

**50. *Andrena (Leimelissa) bairacumensis*
Morawtitz, 1876
(Fig. 32)**

Andrena bairacumensis Morawtitz, 1876, in Fedtschenko, Izv. imp. Obshch. Ljubit. Estest. Antrop. Etnog.: 170.

Andrena (Leimelissa) bairacumensis: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 110-112.

Redescription.

Female.

Body length 10.8mm, wing length 8.0mm.

Color. Flagellum brownish beneath; mandibles with apical half reddened, black in basal half; wing membranes subhyaline, moderately brown, veins and pterostigma reddish brown; tibial spur brown; posterior depressions

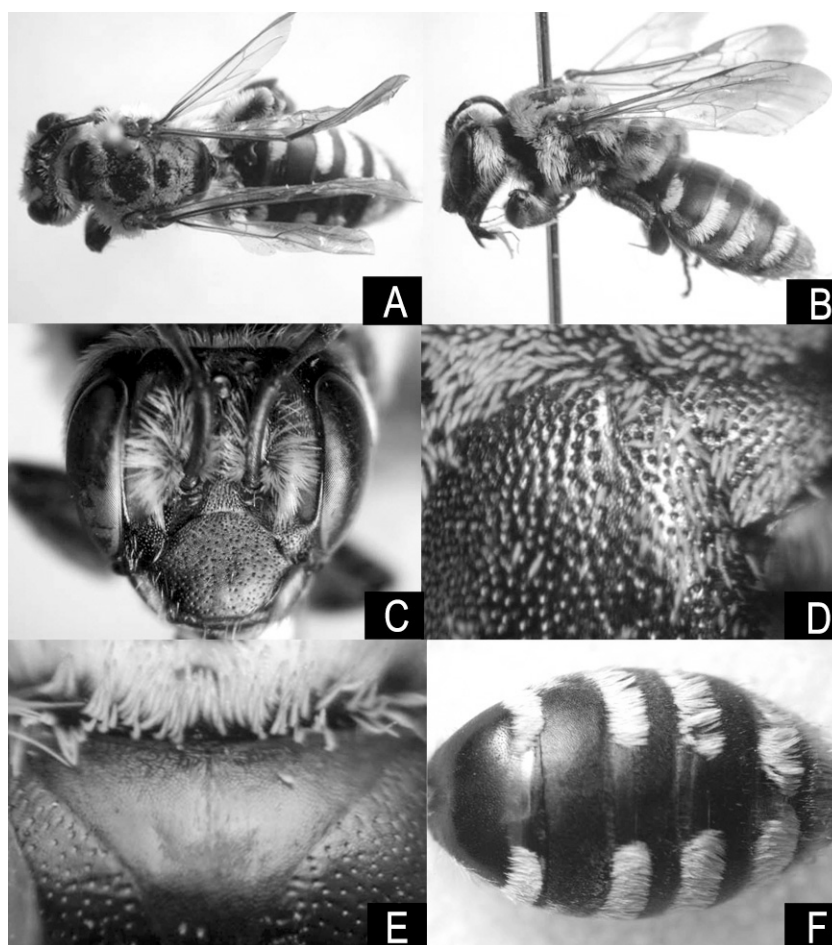


Fig. 32. *Andrena (Leimelissa) bairacumensis* Morawtitz, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

of metasomal terga bronze to yellowish brown.

Pubescence. Hairs on head sparse except antennal area, whitish; those on clypeus sparse, short 150-200µm, dull whitish, with lateral fringes, those on vertex short 200-250µm, whitish, those on genal area dense, whitish, slightly long, 250-400µm, facial fovea whitish. Hairs on mesoscutum slightly dense, short 150-250µm, whitish; those on scutellum dense, short 100-150µm, whitish, those on mesepisternum dense, long 350-400µm, whitish, propodeal corbicular well arranged with whitish hairs, long, without internal simple, trochanteral floccus imperfect, dense, whitish, femoral floccus dense, long, yellowish, tibial scopa long, simple, golden hairs. Metasomal terga T₁₋₄ with scanty, short, pale brownish hairs, terga T₁₋₃ with interrupted white hair bands, T₄ with complete hair band; caudal fimbria pale brownish; S₂₋₅ with long, dense, yellowish subapical fimbriae.

Structure. Head length 2.8mm, head width 3.0mm, HL/HW = 0.93. HW: MsW: MtW: 3.0: 2.4: 3.2. Vertex flat in frontal view, shagreening, shiny, with fine, obscure PP 30µm, IS = 0.5. OOD: POD: OCD: = 0.55: 0.45: 0.13. FL₁ > FL₂+FL₃, FL₂ > FL₃ which are broad as long. Eyes with inner margins paralleled. Facial fovea occupying 1/2 space between eye and lateral ocellus, long, narrowing toward below, much extending to a line at lower margins of antennal fossae, FVL = 1.6mm, FVW = 0.3mm. Supraclypeal area flat, shagreening, shiny, with small, fine PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface. Facial quadrangle slightly broader than long (3.0:2.8). Clypeus flat, densely tessellate, with fine, sparse, obscure PP 25-30µm, IS = 1-3, without longitudinal median impunctate space, CPL = 1.2mm. Process of labrum broad, semicircular. Lower paraocular area shiny, weakly tessellate, with fine, minute PP 25µm, IS = 0.5. Malar space linear, broad. Genal area slightly broader than eye, GW: EW = 0.8 : 0.75, surface tessellate and shiny with minute PP 25µm. Mesosoma: Pronotum without lateral suture and humeral angle, pronotum densely tessellate, shiny with fine, distinct, small PP 30µm. Mesoscutum densely tessellate, shiny with fine, distinct, small PP 30µm, IS = 1-2. Scutellum weakly tessellate, shiny with dense, fine, distinct PP 30µm, IS = 1-2. Propodeal enclosure triangular, large, well indicated, dull, tessellate; dorsal face of propodeum weakly tessellate, with fine, dense, small PP 25µm. Mesepisternum densely tessellate, punctate with PP 25µm. Vein 1st m-cu meeting second submarginal cell at middle of cell. Metasoma: Metasomal terga T₁₋₄ tessellate, with fine, dense, small PP 25µm, IS = 1-2; posterior depressions of terga weakly indicated; pygidial plate V shaped with raised internal triangular

area. S₂₋₅ densely tessellate and shiny with dense, minute PP 20µm.

Specimens examined. [KAZAKHSTAN] 1 female, Janatas, S. Kazakhstan Prov., 7. vi. 2003 (O. Tadauchi).

Floral record. Not available.

Distribution. Kazakhstan.

51. *Andrena (Leimelissa) ponomarevae* Osytsnjuk, 1983 (Fig. 33)

Andrena ponomarevae Osytsnjuk, 1983, Vest. Zool., Kiev, 1983 (1): 24.

Andrena (Leimelissa) ponomarevae: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 603-604.

Redescription.

Female.

Body length 11.2mm, wing length 8.6mm.

Color. Flagellum brownish beneath; mandibles black; wing membranes subhyaline, brown, veins and pterostigma brown; tibial spur brown; posterior depressions of metasomal terga brown.

Pubescence. Hairs on head sparse except antennal area, whitish; those on clypeus sparse, short 150-200µm, brownish, with lateral fringes, those on vertex short 200-300µm, brownish, those on genal area dense, whitish mixed with brownish, slightly long, 250-400µm, facial fovea whitish. Hairs on mesoscutum slightly dense, long 400-550µm, whitish; those on scutellum slightly dense, long 400-550µm, whitish, those on mesepisternum dense, long 650-800µm, whitish, propodeal corbicular well arranged with whitish hairs, long, without internal simple, trochanteral floccus imperfect, sparse, whitish, femoral floccus dense, long, brownish, tibial scopa long, simple, brownish. Metasomal terga T₁₋₄ with scanty, short, pale brownish hairs, terga T₁₋₄ with interrupted white hair bands; caudal fimbria brownish; S₂₋₅ with long, dense, brownish subapical fimbriae.

Structure. Head length 3.2mm, head width 3.3mm, HL/HW = 0.97. HW: MsW: MtW: 3.3: 2.5: 3.5. Vertex flat in frontal view, shagreening, shiny, with fine, obscure PP 30µm, IS = 0.5. OOD: POD: OCD: = 0.6: 0.45: 0.15. FL₁ > FL₂+FL₃, FL₂ < FL₃ which are broad as long. Eyes with inner margins paralleled. Facial fovea occupying 1/2 space between eye and lateral ocellus, long, narrowing toward below, much extending to a line at lower margins of antennal fossae, FVL = 1.6mm, FVW = 0.25mm. Supraclypeal area flat, tessellate, shiny, with small, fine PP. Face above antennal fossae with fine longitudinal rugulae and weak interrugal PP, shagreening surface.

Facial quadrangle weakly broader than long, rather as long as broad (3.3:3.2). Clypeus flat, densely tessellate, with fine, sparse, obscure PP 25-30µm, IS =2-3, without longitudinal median impunctate space, CPL = 1.25mm. Process of labrum broad, semicircular. Lower paraocular area shiny, weakly tessellate, with fine, minute PP 30µm, IS =0.5. Malar space linear, broad. Genal area slightly broader than eye, GW: EW = 0.8 : 0.7, surface weakly tessellate and shiny with minute PP 25µm. Mesosoma: Pronotum without lateral suture and humeral angle, pronotum tessellate, punctuate, shiny with fine, distinct, small PP 40µm. Mesoscutum tessellate, punctuate, shiny with fine, distinct, small PP 30-40µm, IS =0.5. Scutellum weakly tessellate, shiny with desne, fine, distinct PP 30µm, IS =2. Propodeal enclosure triangular, large, well indicated, tessellate; dorsal face of propodeum weakly tessellate, with fine, dense, small PP 30µm. Mesepisternum tessellate, punctuate with PP 30µm. Vein 1st *m-cu* meeting second submarginal cell at middle of cell. Metasoma: T₁

smooth, T₂₋₄ punctuate, with fine, dense, small PP 25µm, IS =1; posterior depressions of terga well indicated; pygidial plate V shaped with raised internal triangular area. S₂₋₅ tessellate and shiny with dense, minute PP 25µm.

Specimens examined. [KYRGYZSTAN] 1 female, Issyk-ata, 27. v. 2000 (O. Tadauchi). [KAZAKHSTAN] 1 female, Cingan/Catkal. Chr, 12. v. 1977 (Jiri Niedl).

Floral record. *Brassica* sp.

Distribution. Kazakhstan, Kyrgyzstan, Uzbekistan.

Acknowledgements

We are grateful to Prof. V. Kastcheev and Dr. R. Jaschenko of the Zoological Institute, Kazakhstan Academy of Sciences, Almaty, Dr. R. Miyanaga of Shimane Univ., Prof. S. Ikudome of Kagoshima Womens' College, Dr. A. Dawut, Dr. R. Murao and Dr. K. Mitai of Kyushu Univ. for their help in our field survey in

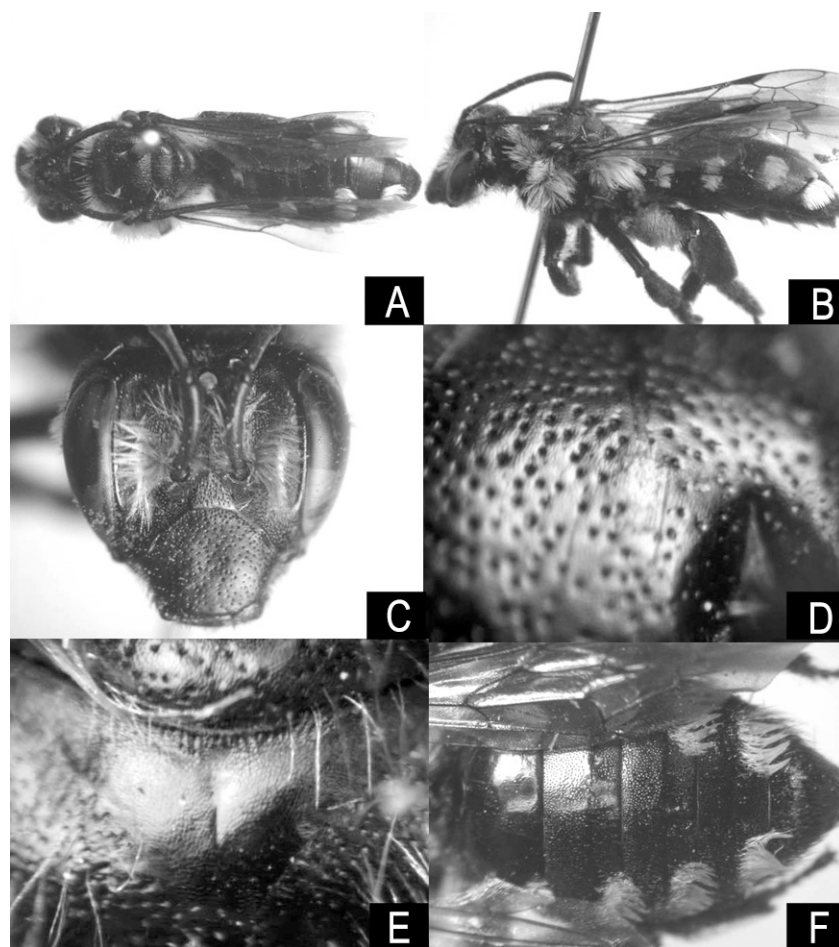


Fig. 33. *Andrena (Leimelissa) ponomarevae* Osytshnjuk, female. A: general habitus in dorsal view; B: the same in lateral view; C: head in frontal view; D: mesoscutum; E: propodeum; F: metasomal terga.

Kazakhstan and Kyrgyzstan. We appreciate to the late Prof. A. Pesenko and Dr. Y. Astafurova of the Zoological Institute, Russian Academy of Sciences, St. Petersburg and Mr. F. Gusenleitner of Oberösterreichischen Landesmuseum, Linz (OLML) for their help in Tadauchi's examining *Andrena* collection in Russia and Austria, respectively. We also thank Mr. F. Gusenleitner of OLML and Dr. J. G. Rozen and Dr. J. S. Ascher of the American Museum of Natural History, New York (AMNH) for their sending valuable collections of Kazakhstan and Kyrgyzstan for loan. This is a Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 6, No. 76). This work was supported by a Grant-in-Aid for Scientific Research (B)(2) from the Japan Society for the Promotion of Science (No. 14405025) (Head Investigator: O. Tadauchi).

References

- Alfken, J. D., 1913. Eine neue deutsche *Andrena*-Art. (Hym.). *Dt. ent. Z.*, **1913**: 709-710.
- Blüthgen, P., 1916. *Andrena varians* K. var. *mixta* Schenck und var. *conjungens* (nov. var.). (Hym.). *Dt. Ent. Z.*, **1916**: 312.
- Cockerell, T. D. A., 1922. Descriptions and records of bees 92. *Ann. Mag. Nat. Hist.*, (9) **9**: 242-249.
- Eversmann, E., 1852. Fauna Hymenopterologica Volgo-Uralensis. *Bull. Soc. Nat. Moscou*, **25**: 1-137.
- Giraud, J., 1861. Fragments entomologiques. *Verh. Zool. bot. Ges. Wien*, **11**: 447-494.
- Gusenleitner, F. & M. Schwarz, 2002. Weltweite Checkliste der Bienengattung *Andrena* mit Bemerkungen und Ergänzungen zu paläarktischen Arten (Hymenoptera, Apidae, Andreninae, *Andrena*). *Entomofauna*, **12** Suppl.: 1-1280.
- Hirashima, Y., 1962. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics 1. *J. Fac. Agr., Kyushu Univ.*, (12): 117-154.
- Imhoff, L., 1834. *Entomologica*. Isis (Oken) Jena: 370-382.
- Jaeger, E., 1934. Kleine Schuppenandrenen (Hym. Apid.). *Prirodosl. Razpr. Izdaja Zologa Prirod. Sekc. Muz. Drust. Slov.*, **2**: 227-230.
- Kirby, W., 1802. *Monographia Apum Angliae.*, (2): 388pp.
- Lebedev, A. G., 1932. Einige neue *Andrena*. Arten aus S.S.S.R. *Konowia*, **11**: 65-73.
- Morawitz, F., 1872. Ein Beitrag zur Bienenfauna Deutschlands. *Verh. Zool. bot. Ges. Wien*, **22**: 355-388.
- Morawitz, F., 1876. Bienen (Mellifera). II. Andrenidae In Fedtschenko, A. P., Reisen in Turkestan II. Izv. Imp. Obsch. Ljubit. Estet. *Antrop. Etnog.*, **21**: 161-303, Tabs., 1-3.
- Morawitz, F., 1877. Nachtrag zur Bienenfauna Caucasiens. *Hor. Soc. ent. Ross.*, **14**: 3-112.
- Morawitz, F., 1894. Beitrag zur Bienenfauna Turkmeniens. *Hor. Soc. ent. Ross.*, **29**: 1-76.
- Morawitz, E., 1895. Beitrag zur Bienenfauna Turkestans. *Hor. Soc. Ent. Ross.*, **29**: 63-64.
- Morice, F. D., 1899. Illustrations of specific characters in the armature and ultimate ventral segments of *Andrena* males. *Trans. ent. Soc. London*: **1899**: 229-243.
- Nylander, W., 1848. Adnotationes in Expositionem Monographicam Apum Borealiu, Notis. Sällsk. *Faun. Fl. fenn. Förh.*, (1): 165-282.
- Osytsnjuk, A. Z., 1977. Bees – Andrenidae (Apoidea, Andrenidae). *Fauna Ukraini*, **12** (5): 5-326.
- Osytsnjuk, A. Z., 1983. Drei neue Arten von *Andrena* (Hymenoptera, Andrenidae) aus Kasachstan. *Vest. Zool.*, **1983**(1): 20-27.
- Osytsnjuk, A. Z., 1986. New Palaearctic species of the subgenus *Euandrena* Hed. (Hymenoptera, Andrenidae, genus *Andrena* F.). *Ent. Obozr.*, **65**: 407-418.
- Osytsnjuk, A. Z., 1993. New subgenera and new species of Palaearctic *Andrena* bees (Hymenoptera, Andrenidae). Communication 1. *Vest. Zool.*, **1993** (3): 17-23.
- Osytsnjuk, A. Z., 1995. *Andrena*. pp. 489-527. In Lehr, P. A. (ed.) Key to the Insects of Russian Far East in Six Volumes. Vol. 4, Neuropteroidea, Mecoptera, Hymenoptera, Part 1. St. Petersburg, Nauka.
- Osytsnjuk, A. Z., L. Romasenko, J. Banaszak & T. Cierznjak, 2005. Andrenidae of the Central and Eastern Palaearctic. Part 1. proDruk, Poznan, 235 pp.
- Osytsnjuk, A. Z., L. Romasenko, J. Banaszak & T. Cierznjak, 2008. Andrenidae of the Central and Eastern Palaearctic. Part 2. proDruk, Poznan, 233 pp.
- Pérez, J., 1903. Espèces nouvelles de Mellifères (palaearctiques). P.-v. Soc. Inn. Bordeaux 58: LXXXVIII-XCIII, CCVIII-CCXXXVI.
- Schenck, A., 1853. Nachtrag zu der Beschreibung nassauischer Bienenarten. *Jb. Ver. Naturk. Nassau*, (9): 88-306.
- Scopoli, J. A., 1763. Entomologia Carniolica exhibens insecta Carnioliae indigena et distribute in ordines, genera, species, varietates. methodo Linnaeana., (36): 420pp.
- Smith, F., 1847. Description of British bees belonging to the genus *Andrena* of Fabricius. *Zoologist*, (5): 1662-1670, 1732-1753, 1916-1931.
- Smith, F., 1855. Catalogue of British Hymenoptera in the collection of the British Museum. Apidae-Bees. *Cat. Hymen. Brit. Mus.*, (1): 1-252.
- Strand, E., 1910. Neue Beiträge zur Arthropoden-Fauna Norwegens nebst gelegentlichen Bemerkungen über deutsche Arten. I-V. *Nytt Mag. Naturvid*, (48): 307-353.
- Strand, E., 1915. Apidae von Vreta. *Arch. Naturgesch.* **81A** (4): 145-168.
- Tadauchi, O., 2005. Field studies on wild bees fauna and pollination biology for combating desertification and planting campaigns in Asian arid areas: A report for the year 2000 to 2004. *Esakia*, (45): 1-8.
- Tadauchi, O., 2006. The genus *Andrena* from Kazakhstan and Kyrgyzstan collected by the Kyushu University Expedition (Hymenoptera, Andrenidae) (1). *Esakia*, (46): 1-19.
- Tadauchi, O., 2008. The genus *Andrena* from Kazakhstan and Kyrgyzstan collected by the Kyushu University Expedition (Hymenoptera, Andrenidae) (2). *Esakia*, (48): 1-18.
- Zetterstedt, J. W., 1838. Insecta Lapponica descripta. Sectio II. Hymenoptera., 315-476. Lipsiae (Voss).