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Subgeneric Positions and Redescriptions of Cockerell's Siberian *Andrena* Preserved in the British Museum (Natural History) (Hymenoptera, Andrenidae)^{1),2)}

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Abstract. Ten species of the genus *Andrena* described by Cockerell from Siberia are examined. Seven species/subspecies are redescribed and given their subgeneric positions for the first time. One new synonymy and 2 new status are recognized as follows: *Andrena epimelaena* Cockerell = *A. denticulata* (Kirby); *A. brassicae* Hirashima = *A. semirugosa brassicae*; *A. baicalensis* Cockerell = *A. tarsata baicalensis*.

Key words: taxonomy, Hymenoptera, Andrenidae, *Andrena*, Siberia, types of Cockerell, new synonymy, new status.

Introduction

Cockerell (1924, 1929) described 5 and 11 species of the genus *Andrena* from East Siberia near the Baikal Lake. Among them, Osytshnjuk (1995) treated 4 species in "Key to the Insects of Russian Far East in Six Volumes" and recognized 3 synonymies. Recently we examined 10 holotypes and syntypes including the above 4 species studied by Osytshnjuk, preserved in the Natural History Museum of London. They are *Andrena semirugosa*, *A. amaguensis*, *A. phaneroleuca*, *A. epimelaena*, *A. meraca*, *A. jasnitzkii*, *A. baicalensis*, *A. kudiana*, *A. angarensis*, and *A. belikovi*. In this paper, we redescribe 7 species and give their subgeneric positions for the first time. *Andrena epimelaena* Cockerell is recognized as a synonym of *A. denticulata* (Kirby). *Andrena brassicae* Hirashima and *A. baicalensis* Cockerell are lowered to the subspecies of *A. semirugosa* Cockerell and *A. tarsata* Nylander, respectively.

1-1. *Andrena (Micrandrena) semirugosa* Cockerell (Figs. 1-5)

Andrena semirugosa Cockerell, 1924, Ann. Mag. nat. Hist., (9) 14: 180-181 [female,

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Siberia].

Redescription of the holotype: **Female**, BL 7.4 mm, WL 5.5 mm.

Color: Flagellum brown beneath; mandible with apical one-half reddened; wing membranes subhyaline, veins and pterostigma yellowish brown; tibial spurs ochraceous; posterior depressions of metasomal terga brown transparent.

Pubescence: Hairs on head sparse, dull whitish without brown hairs on vertex; those on clypeus very sparse and short (150-200 μ); those on vertex longer (250-300 μ); facial fovea light brown above, silvery below. Hairs on thorax sparse, dull whitish; those on mesoscutum shorter (200 μ); those on scutellum and metanotum longer and a little denser; propodeal corbícula not long, not well arranged, with sparse, simple internal hairs; trochanteral floccus imperfect; femoral floccus dense; tibial scopa well developed, with long, simple white hairs. Hairs on metasomal terga very sparse, whitish; T2-4 with whitish hair bands only laterally; caudal fimbria pale brown; S2-5 with whitish, long, subapical fimbriae.

Structure: Head: HL/HW = 0.88. HW:MsW:MtW = 2.1 : 2.15 : 2.15. Vertex densely tessellate to weakly shagreened with small PP. OOD:POD:OCD = 0.8 : 0.5 : 0.2. FL1 = FL2+3, FL2 = FL3. Eyes with inner margins subparallel. Facial fovea narrow, FVL = 0.95 mm, FVW = 0.25 mm. Facial quadrangle longer than broad (about 2.35 : 1.4). Clypeus well convex, densely tessellate; surface without median longitudinal impunctate space; surface with small, sparse PP, \varnothing 20 μ , IS < 1, CPL = 0.6 mm. Process of labrum small, entire. Lower paraocular area smooth and shiny to weakly tessellate with small and coarse PP. Malar space linear. Genal area broader than eye, GW:EW = 0.95 : 0.75, surface shagreened, narrowly weakly shiny near eye. **Mesosoma:** Pronotum weakly tessellate and weakly shiny without humeral angle. Mesoscutum weakly tessellate with minute PP, \varnothing 20 μ , IS = 1 in the middle. Scutellum weakly tessellate with minute PP anteriorly, shagreened posteriorly. Propodeal enclosure rugose all over; dorsal face roughened. Mesepisternum weakly tessellate. **Metasoma:** Metasomal terga densely tessellate, impunctate; posterior depressions of terga weakly indicated; pygidial plate large, V-shaped, with raised triangular area. S2-4 with close PP.

Type material examined: Holotype **female**, Kongaus, Siberia, August, 1923, Cockerell (B.M. Type, Hym., 14a, 1335).

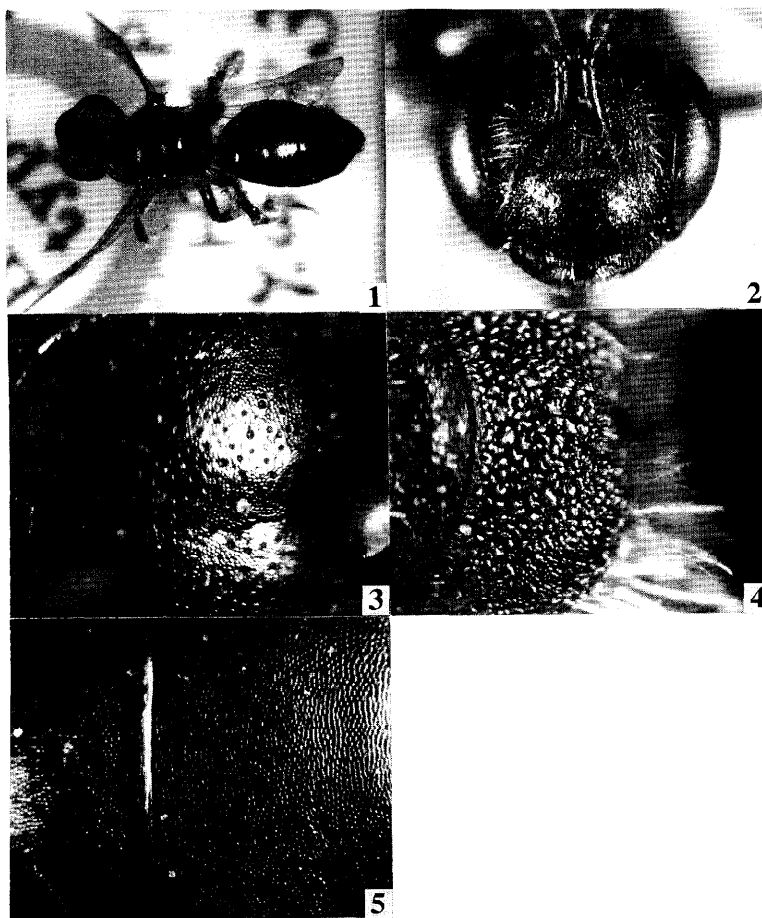
Remarks: This species is divided into two subspecies. The nominate subspecies has the process of labrum a little narrower, the mesepisternum with coarser tessellation and the metasomal terga with less development of apical fringes.

Distribution: Siberia (Kongaus).

Floral association: Not available.

1-2. *Andrena (Micrandrena) semirugosa brassicae* Hirashima stat. nov.

Andrena (Micrandrena) brassicae Hirashima, 1957, Mushi, 30: 52; Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 464; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 95, 117; Kim & Kim, 1983, Kor. J. Ent., 13: 7; Tadauchi, 1985, J. Fac. Agr., Kyushu Univ., 30: 67, 89; Tadauchi, 1988, Bull. Nagasaki Biol. Soc., (33): 6; Tadauchi, 1989, Check List Jap. Ins., 684; Tadauchi & Lee, 1992, Esakia, (32):



Figs. 1-5. *Andrena (Micrandrena) semirugosa* Cockerell, type. 1: dorsal view of the whole body; 2: head in frontal view; 3: mesoscutum; 4: propodeum; 5: metasomal terga.

53; Osytsnjuk, 1995, Key Ins. Rus. Far East Six Vol., 4(1): 499, 519 [in key, female & male, Russian Far East]; Tadauchi *et al.*, 1997, Esakia, (37): 200.

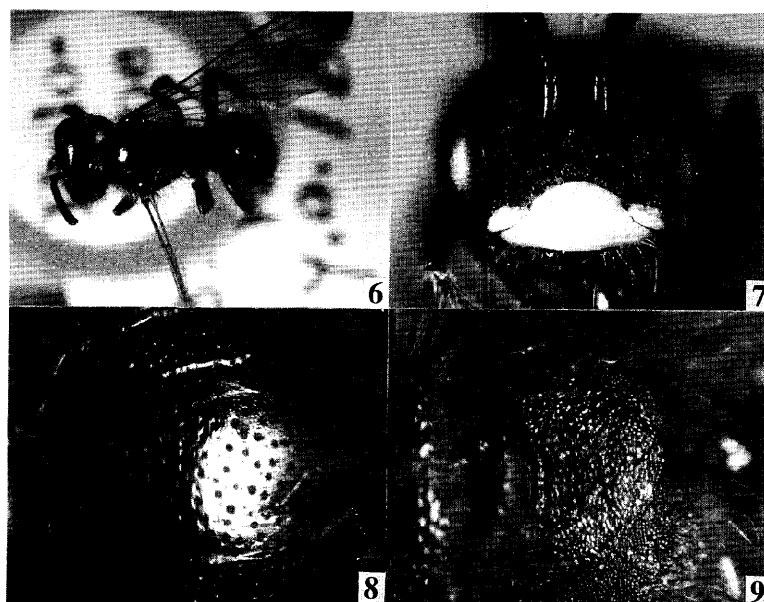
Distribution: Japan; Korea.

Floral association: See Tadauchi (1985).

2. *Andrena (Oreomelissa) coitana* (Kirby) (Figs. 6-9)

Melitta coitana Kirby, 1802, Monogr. Apum Angl., 2: 147-148 [male, England].

- Andrena coitana*: Illiger, 1806, Mag. Insektenk., Braunschweig, 5: 70; Dalla Torre, 1896, Cat. Hymenop. 10: 113; Perkins, 1919, Trans. Entomol. Soc. London, 1919: 283, 302 [in key, male & female, England]; Cockerell, 1929, Ann. Mag. nat. Hist., 10(3): 393 [female, Siberia]; Stöckhert, 1930, in Schmiedeknecht, Hymenop. Nord. Mitteleurop. 939, 951 [in key, female & male, north and central Europe]; Kocouvek, 1966, Acta Ent. Mus., Nat. Pragae, 73-74 [Czechoslovakia]; Warncke, 1967, Eos, 43: 261 [in list]; Dylewska, 1987, Acta Zool. Cracov., 30: 578-579; Schmid-Egger & Scheuchl, Ill. Bestim. Wildbienen Deut. Öster., 3: 28, 151 [in key, female & male].
- Andrena (Stenomelissa) coitana*: Warncke, 1968, Mem. Est. Mus. Zool. Univ. Coimbra, (307): 42 [in list]; Osytsnjuk, 1977, Fauna Ukraini, 12 (5): 76-77; Svensson *et al.*, 1990, Ent. Tidskr., 111: 48 [in list, Sweden].
- Andrena (Oreomelissa) coitana*: Osytsnjuk, 1995, Key Ins. Rus. Far East Six Vol., 4 (1): 494, 517 [in key, female & male, Russian Far East].
- Melitta shawella* Kirby, 1802, Monogr. Apum Angl., 2: 160 [female, England].
- Andrena shawella*: Illiger, 1806, Mag. Insektenk., Braunschweig, 5: 72; Schmiedeknecht, 1883, Apid. Europ., 1: 763-765; Stöckhert, 1930, in Schmiedeknecht, Hym. Nord. Mitteleurop., 763-765 [in key, female, north and central Europe].
- Andrena nylanderi* F. Morawitz, 1864, Bull. Soc. Nat., Moscou, 37 (2): 445-446 [female & male, Finland].
- Andrena amaguensis* Cockerell, 1924, Ann. Mag. nat. Hist., (9) 14: 179-180 [male, Siberia].



Figs. 6-9. *Andrena (Oreomelissa) coitana* (Kirby) (= *Andrena amaguensis* Cockerell, type). 6: dorsal view of the whole body; 7: head in frontal view; 8: mesoscutum; 9: propodeum.

Type material examined (*Andrena amaguensis* Cockerell): Holotype **male**, Kudia River, Amagu, Siberia, July, 1923, Cockerell (B.M. Type, Hym., 14a, 1334).

Remarks: This species is divided into two subspecies. The nominate subspecies, *Andrena coitana coitana*, is different from *A. coitana pilosodorsata* Alfken from Hokkaido, the Kuril Islands and Kamchatka by the head and thorax with shorter and sparser hairs, the clypeus with denser and stronger punctures, and the mesoscutum nearly smooth and shiny. Osytshnjuk (1995) recorded *Andrena amaguensis* F. Morawitz was a synonymy of *A. coitana* Kirby. However, *A. amaguensis* F. Morawitz was not described and is a mistake.

Distribution: Central and north Europe; European Russia, Siberia.

Floral association: Not available (Siberia).

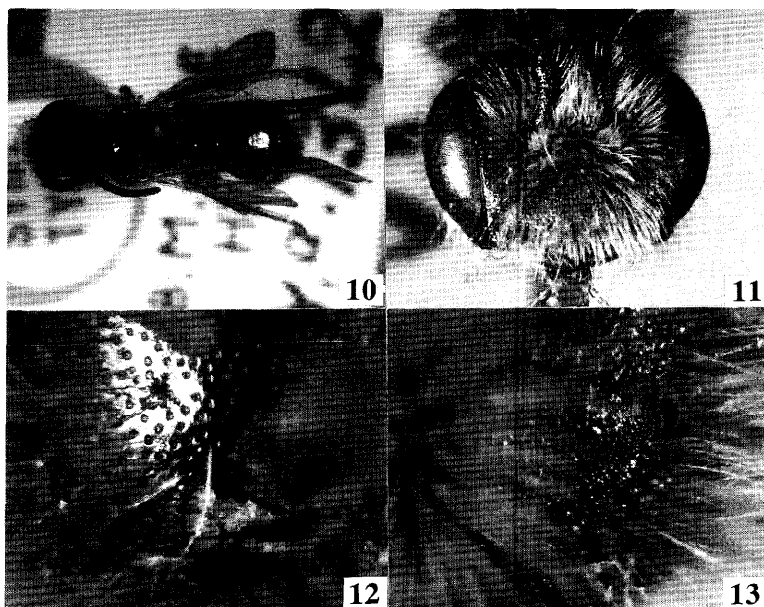
3. *Andrena* (*Melandrena*) *phaneroleuca* Cockerell

(Figs. 10-13)

Andrena phaneroleuca Cockerell, 1929, Ann. Mag. nat. Hist., (10) 3: 396-397 [male, Siberia].

Redescription of the syntype: **Male**, BL 9.5 mm, WL 8.0 mm.

Color: Flagellum reddish brown beneath except FL1, black; mandible with apical third reddened; wing membranes subhyaline, veins and pterostigma yellowish brown; tibial



Figs. 10-13. *Andrena* (*Melandrena*) *phaneroleuca* Cockerell, syntype. 10: dorsal view of the whole body; 11: head in frontal view; 12: mesoscutum; 13: propodeum.

spurs ochraceous; posterior depressions of metasomal terga reddish brown translucent.

Pubescence: Hairs on head and thorax long, dense, whitish to pale yellow; those on clypeus dense, long (400-600 μ), whitish; those on vertex sparse, brownish, shorter (200-400 μ); those on dorsum of thorax long (400-600 μ), pale yellow; those on mesepisternum and propodeum area denser and longer; those on T1-4 short to long, white (100-500 μ); T2-4 with white apical hair fringes, interrupted medially; S2-5 with white, long (300-500 μ) suberect subapical fimbriae.

Structure: Head: HL/HW = 0.86. HW:MsW:MtW = 2.85 : 2.5 : 2.7. Vertex densely tessellate. OOD:POD:OCD = 0.6 : 0.4 : 0.4. FL1 > FL2, FL1 < FL3. FL2 broader than long. Eyes with inner margins subparaellated. Facial quadrangle longer than broad (about 2.45 : 2.0). Clypeus convex, smooth and shiny, with close, large PP, \varnothing 30-40 μ . IS < 0.5, clypeus without median impunctate space; CPL = 0.9 mm. Process of labrum smooth and shiny, short, emarginate in the middle. Lower paraocular area as in clypeus. Malar space nearly linear. Genal area broader than eye, GW:EW = 0.75 : 0.45, surface weakly tessellate posteriorly, broadly shiny and smooth near eye. **Mesosoma:** Pronotum without humeral angle, weakly tessellate. Mesoscutum and Scutellum very weakly tessellate to smooth and shiny with PP \varnothing 20-30 μ , IS = 0.5-1. Propodeal enclosure small, weakly wrinkled basally, densely and broadly tessellate apically; dorsal face roughened. Mesepisternum weakly tessellate with indication of obscure PP. **Metasoma:** Metasomal terga smooth and shiny; with small PP, \varnothing 20-30 μ . IS = 0.5-2; Posterior depressions of terga weakly indicated.

Type material examined: Syntype **male**, Irkutsk, Siberia, July, W. P. Cockerell (B.M. Type, Hym., 14a, 1342).

Remarks: This species is similar to *Andrena watasei* Cockerell. It is different from *watasei* by the head without black hairs, the clypeus with denser and stronger punctures, the mesoscutum nearly smooth and shiny with distinct punctures.

Distribution: Siberia (Irkutsk).

Floral association: Not available.

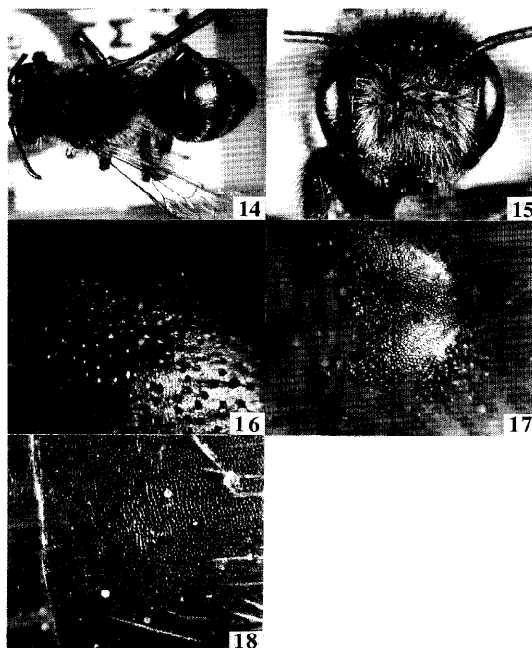
4. *Andrena (Cnemidandrena) denticulata* (Kirby)

(Figs. 14-18)

Melitta denticulata Kirby, 1802, Monogr. Apum. Angl, 2: 133-134 [male, England].

Andrena denticulata: Illiger, 1806, Mag. Insektenk., Braunschweig, 5: 68; Eversmann, 1852, Bull. Soc. Nat. Moscou, 25, P3: 22 [male]; Smith, 1855, Catal. Brit. Hymen. Brit. Mus., I: 81 [female & male]; H. Müller, 1872, Verh. Naturh. Ver. Preuss. Rheinl., 29: 55; H. Müller, 1873, Befrucht. D. Blumen, 1873: 458; Smith, 1876, Catal. Brit. Hymenop. Brit. Mus., 2nd ed., 1: 53 [female & male]; Saunders, 1882, Trans. Entomol. Soc. London, 1882: 261; Perkins, 1919, Trans. Entomol. Soc. London, 1919: 287, 298 [in key, male & female, England]; Stöckhert, 1930, in Schmiedeknecht, Hymenop. Nord. Mitteleurop. 928, 972-973 [in key, female & male, north and central Europe]; Kocouvek, 1966, Acta Ent. Mus., Nat. Pragae, 41-42 [Czechoslovakia]; Warncke, 1967, Eos, 43: 265 [in list]; Dylewska, 1987, Acta Zool.

- Cracov., 30: 598-599; Schmid-Egger & Scheuchl, Ill. Bestim. Wildbienen Deut. Öster., 3: 45, 124 [in key, female & male].
- Andrena (Cnemidandrena) denticulata*: Warncke, 1968, Mem. Est. Mus. Zool. Univ. Coimbra, (307): 101 [in list]; Osytsnjuk, 1977, Fauna Ukraini, 12 (5): 275-276; Svensson *et al.*, 1990, Ent. Tidskr., 111: 48 [in list, Sweden].
- Andrena (Cnemidandrena) denticulata denticulata*: Osytsnjuk, 1995, Key Ins. Rus. Far East Six Vol., 4 (1): 509-510, 520 [in key, female & male, Russian Far East].
- Andrena epimeraena* Cockerell, 1924, Ann. Mag. nat. Hist., (9) 14: 181-182 [female, Siberia]. **new synonymy**
- Melitta listerella* Kirby, 1802, Monogr. Apum Angl., 2: 137-138 [female, England].
- Andrena listerella*: Illiger, 1806, Mag. Insektenk., Braunschweig, 5: 68; Smith, 1847, Zoologist, 5: 1752 [female & male]; Nylander, 1848, Notis. Saellsk. Faun. & Fl. Fenn. Förh., 1: 219 [female & male]; Schenck, 1851, Jahrb. Ver. Naturk. Nassau, 7: 39 [female]; Eversmann, 1852, Bull. Soc. Nat. Moscou, 25: 25 [female]; Schenck, 1853, Jahrb. Ver. Naturk. Nassau, 9: 124, 279 [female & male]; Schenck, 1856, Jahrb. Ver. Naturk. Nassau, 11: 95 [male]; Schenck, 1859, Jahrb. Ver. Naturk. 218, 232, 249; Schenck, 1867/68, Jahrb. Ver. Naturk. Nassau, 21/22: 291; Thomson, 1870, Opusc. Entomol., 2: 148 [female & male]; Thomson, 1872, Hymen. Scandin., 2: 88 [female & male]; Schenck, 1874, Berlin. Entomol. Zeitschr., 18: 350 [male]; Schmiedeknecht, 1883, Apid. Europ, 1 (6): 460 [female], (7): 499 [male], 1884, (10): 812 [female & male].
- Andrena edentata* Friese, 1922, Konowia, 1: 215 [male, West Austria].



Figs. 14-18. *Andrena (Cnemidandrena) denticulata* (Kirby) (= *Andrena epimeraena* Cockerell, type). 14: dorsal view of the whole body; 15: head in frontal view; 16: mesoscutum; 17: propodeum; 18: metasomal terga.

Type material examined (*Andrena epimeraena* Cockerell): Holotype **female**, Okeanskaja, Siberia, August 18, Cockerell (B.M. Type, Hym., 14a, 1336).

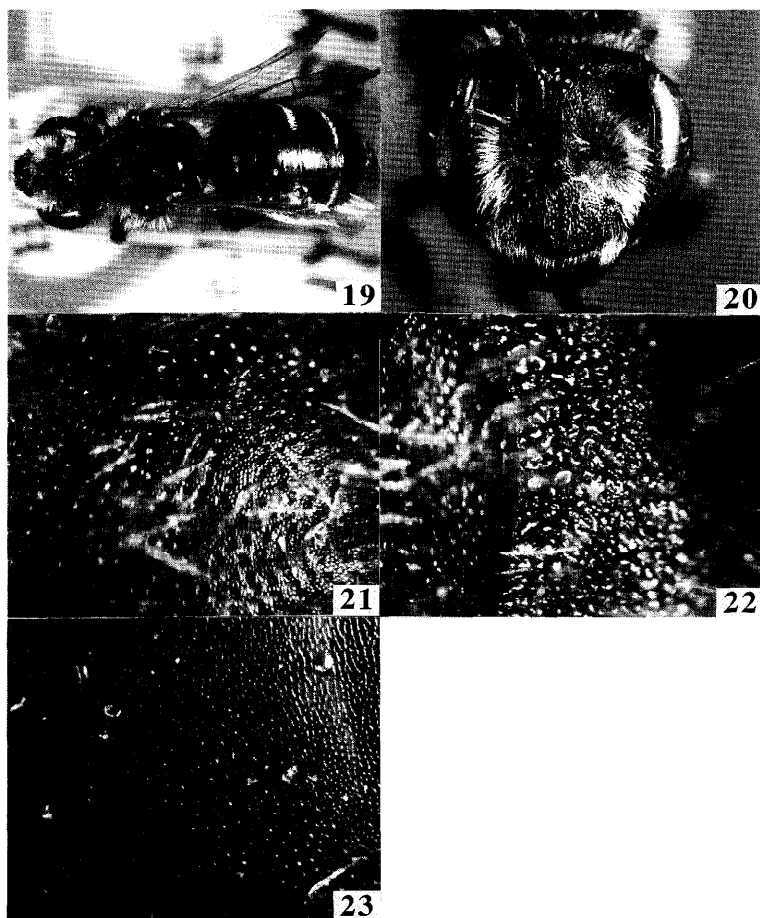
Distribution: Central and north Europe; European Russia, Siberia (Okeanskaja).

Floral association: Not available (Siberia).

5. *Andrena* (*Taeniandrena*) *meraca* Cockerell

(Figs. 19-23)

Andrena meraca Cockerell, 1924, Ann. Mag. nat. Hist., (9) 14: 182-183 [female, Siberia]; Cockerell, 1929, Ann. Mag. nat. Hist., (10) 3: 393.



Figs. 19-23. *Andrena* (*Taeniandrena*) *meraca* Cockerell, type. 19: dorsal view of the whole body; 20: head in frontal view; 21: mesoscutum; 22: propodeum; 23: metasomal terga.

Redescription of the holotype: **Female**, BL 11.0 mm, WL 8.7 mm.

Color: Flagellum reddish brown beneath; mandible with apical third reddened; wing membranes subhyaline, veins and pterostigma yellowish brown; hind tibia and tarsi brown, not ferruginous; tibial spurs ochraceous; posterior depressions of metasomal terga brownish transparent.

Pubescence: Hairs on head not dense, dull whitish with pale yellowish hairs on vertex; those on clypeus sparse and short (250-300 μ); those on vertex denser and longer (500-600 μ); facial fovea brownish above, silvery white below. Hairs on thorax not dense; those on mesoscutum dull whitish and shorter (300-400 μ) medially; those on scutellum longer; propodeal corbícula not well developed with short, not well arranged hairs with simple internal hairs; trochanteral floccus nearly perfect and dense; femoral floccus dense, white; tibial scopa well developed, with long, simple white hairs. Hairs on metasomal terga very short (50-100 μ), whitish; T2-4 with dense white apical hair bands, interrupted on T2, complete on T3-4; caudal fimbria pale yellow; S2-5 with whitish, subapical fimbriae.

Structure: Head: HL/HW = 0.82. HW:MsW:MtW = 3.6 : 3.4 : 3.45. Vertex densely tessellate with close shallow PP. OOD:POD:OCD = 0.65 : 0.40 : 0.35. FL1 = FL2+3, FL2 = FL3. Eyes with inner margins subparallelled. Facial fovea broad, FVL = 1.3 mm, FVW = 0.5 mm. Facial quadrangle longer than broad (about 2.85 : 2.45). Clypeus nearly flat, densely tessellate, surface with narrow median longitudinal impunctate space; surface with small and close PP, \emptyset 30-40 μ , IS = 0.2-0.6, CPL = 1.0 mm. Process of labrum very small, emarginate in the middle. Lower paraocular area smooth and shiny with small close PP. Malar space linear. Genal area as broad as eye, GW:EW = 0.6 : 0.6, surface weakly tessellate all over. **Mesosoma:** Pronotum weakly tessellate with small PP without humeral angle. Mesoscutum densely tessellate with small, weak PP, \emptyset 20-30 μ , IS = 0.5-1 in the middle. Scutellum smooth and shiny with small PP anteriorly, shagreened posteriorly. Propodeal enclosure rugose at basal half, densely tessellate at posterior half; dorsal face roughened. Mesepisternum weakly tessellate with indication of obscure PP. **Metasoma:** Metasomal terga densely tessellate, with small PP, \emptyset 20 μ , IS = 0.5-1.5; posterior depressions of terga weakly indicated; pygidial plate large, V-shaped, with mild raised triangular area. S2-4 weakly tessellate with small PP.

Type material examined: Holotype **female**, Kudia River, Amagu, Siberia, July 1923, Cockerell (B.M. Type, Hym., 14a, 1337).

Remarks: This species is very similar to *Andrena ezoensis* Hirashima, but it is separated from *ezoensis* by the process of labrum deeply emarginate apically and the enclosure of propodeum rugose basal 2/3 (1/2 in *ezoensis*).

Distribution: Siberia (Amagu).

Floral association: Not available.

6. *Andrena (Euandrena) fulvida* Schenck (Figs. 24-27)

Andrena fulvida Schenck, 1853, Jahrb. Ver. Naturk. Nassau, 9: 130-131 [female, West Germany]; Schenck, 1859, Jahrb. Ver. Naturk. Nassau, 14: 215, 228, 241; Schenck,

1873, Berlin. Entomol. Zeitschr., 17: 254 [female & male]; Schmiedeknecht, 1883, Apid. Europ., 1: 454, 493, 581-583 [female & male]; Stöckert, 1930, in Schmiedeknecht, Hymenop. Nord. Mitteleurop. 917, 971 [in key, female & male, north and central Europe]; Kocouvek, 1966, Acta Ent. Mus., Nat. Pragae, 66-67 [Czechoslovakia]; Warncke, 1967, Eos, 43: 273 [in list]; Dylewska, 1987, Acta Zool. Cracov., 30: 531-532; Schmid-Egger & Scheuchl, Ill. Bestim. Wildbienen Deut. Öster., 3: 87, 130, 137, 144 [in key, female & male].

Andrena (Euandrena) fulvida: Warncke, 1968, Mem. Est. Mus. Zool. Univ. Coimbra, (307): 85 [in list]; Osytsnjuk, 1977, Fauna Ukraini, 12 (5): 228-229; Svensson *et al.*, 1990, Ent. Tidskr., 111: 48 [in list, Sweden]; Osytsnjuk, 1995, Key Ins. Rus. Far East Six Vol., 4 (1): 499, 525 [in key, female & male, Russian Far East].

Andrena fasciatella Schenck, 1853, Jahrb. Ver. Naturk. Nassau, 9: 236 [male, West Germany]; Schenck, 1859, Jahrb. Ver. Naturk. Nassau, 14: 232, 260 [male].

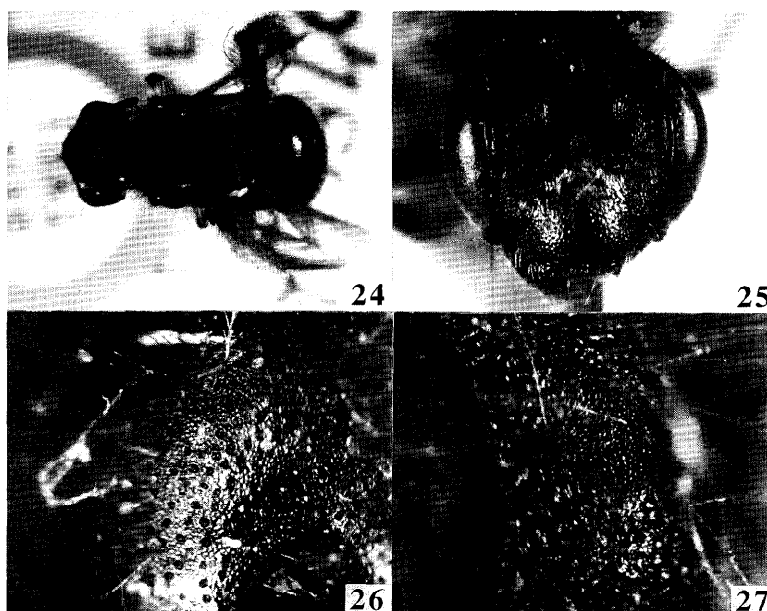
Andrena jasnitzkii Cockerell, 1929, Ann. Mag. nat. Hist., (10) 3: 401-402 [female, Siberia].

Type material examined (*Andrena jasnitzkii* Cockerell): Syntype **female**, Baikal University Station, Siberia, August, Cockerell (B.M. Type, Hym., 14a, 1346).

Remarks: The syntype of *jasnitzkii* has the process of labrum not emarginate apically.

Distribution: Central Europe; Siberia (Baikal).

Floral association: Not available (Siberia).



Figs. 24-27. *Andrena (Euandrena) fulvida* Schenck (= *Andrena jasnitzkii* Cockerell, syntype). 24: dorsal view of the whole body; 25: head in frontal view; 26: mesoscutum; 27: propodeum.

7. *Andrena (Tarsandrena) tarsata baicalensis* Cockerell stat. nov.
(Figs. 28-31)

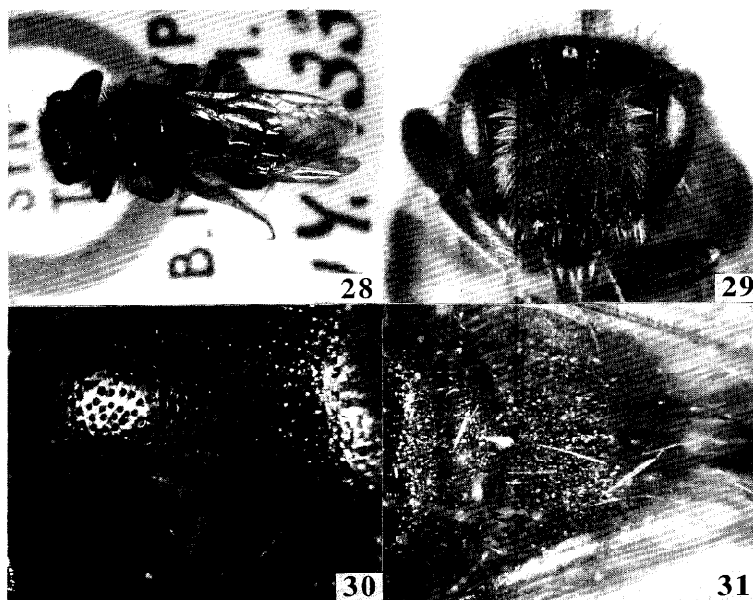
Andrena baicalensis Cockerell, 1929, Ann. Mag. nat. Hist., (10) 3: 395 [female, Siberia].

Andrena (Tarsandrena) tarsata: Osytshnjuk, 1984, Vestn. Zool., (2): 26 [female & male, in key]; Osytshnjuk, 1995, Key Ins. Rus. Far East Six Vol., 4 (1): 511-512, 517 [female & male, in key, Russian Far East].

Redescription of the syntype of *A. baicalensis* (flagellum lacking): **Female**, BL 8.65 mm, WL 7.15 mm.

Color: Mandible with apical third reddened; wing membranes subhyaline, veins and pterostigma brownish; hind legs normal, not ferruginous; tibial spurs ochraceous; posterior depressions of metasomal terga brownish transparent.

Pubescence: Hairs on head dull whitish mixed with brown hairs on vertex; those on clypeus short (400-500 μ); those on vertex longer (500-600 μ); facial fovea brownish above, light brown below. Hairs on thorax not dense; those on mesoscutum dull whitish mixed with brown, not long (200-400 μ) in the middle, whitish laterally; those on scutellum as in mesoscutum; propodeal corbicular moderately developed with long, well arranged hairs with simple internal hairs; trochanteral floccus nearly perfect, long, white; femoral floccus dense, white; tibial scopa poorly developed, with short, simple fine pale brownish hairs. Hairs on metasomal terga very short, brownish on T2-4 (50-100 μ);



Figs. 28-31. *Andrena (Tarsandrena) tarsata baicalensis* Cockerell, syntype. 28: dorsal view of the whole body; 29: head in frontal view; 30: mesoscutum; 31: propodeum.

T2-4 with white apical hair bands laterally; caudal fimbria dark brown; S2-5 with dull whitish, subapical fimbriae.

Structure: Head: $HL/HW = 0.83$. $HW:MsW:MtW = 2.7 : 2.6 : 2.65$. Vertex densely roughened with obscure PP. $OOD:POD:OCD = 0.45 : 0.40 : 0.25$. Eyes with inner margins subparallel. Facial fovea moderate, $FVL = 1.1$ mm, $FVW = 0.35$ mm, parallel with eye, but with narrow shiny space in the middle. Facial quadrangle longer than broad (about $2.25 : 1.85$). Clypeus convex, shagreened above, densely tessellate below, with shallow more or less roughened PP, $\varnothing 20-30\mu$, $IS = 0.5-1$, surface with median longitudinal impunctate space; $CPL = 0.85$ mm. Process of labrum large, semi-circular, not emarginate in the middle. Lower paraocular area densely tessellate to shagreened with small close PP. Malar space nearly linear. Genal area narrower than eye, $GW:EW = 0.55 : 0.6$, surface shagreened all over except narrowly weakly tessellated area near eye. **Mesosoma:** Pronotum densely tessellate with small PP, with humeral angle. Mesoscutum smooth and shiny with small PP, $\varnothing 20-30\mu$, $IS = 0.5-1$ in the middle. Scutellum smooth and shiny with distinct PP anteriorly, shagreened posteriorly. Propodeal enclosure rugose all over; dorsal face roughened. Mesepisternum densely tessellate with indication of obscure PP. Hind tibia widened apically. **Metasoma:** Metasomal terga weakly tessellate with small close PP, $\varnothing 20\mu$, $IS = 0.5-1$; posterior depressions of terga well indicated. S2-4 weakly tessellate with fine PP.

Type material examined: Syntype **female**, Baikal University Station, Siberia, August, Cockerell (B.M. Type, Hym., 14a, 1339).

Remarks: Osytshnjuk (1995) synonymized *Andrena baicalensis* Cockerell with European *A. tarsata* Nylander. But we recognize *A. baicalensis* as a subspecies of *A. tarsata* because *A. baicalensis* has the hind legs not ferruginous, but normal. This subspecies has the clypeus shagreened above, densely tessellate below, with shallow, more or less roughened punctures, surface with median longitudinal impunctate space.

Distribution: Siberia (Baikal).

Floral association: Not available (Siberia).

8. *Andrena (Euandrena) kudiana* Cockerell

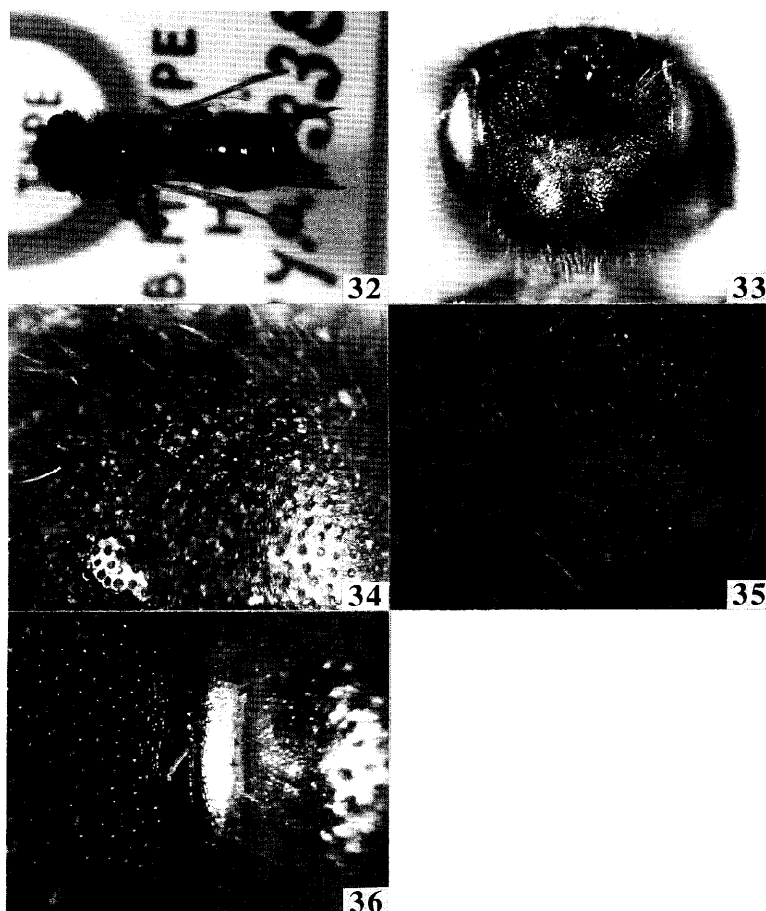
(Figs. 32-36)

Andrena kudiana Cockerell, 1924, Ann. Mag. nat. Hist., (9) 14: 179-189 [male, Siberia].

Redescription of the syntype (flagellum lacking): **Male**, BL 8.75 mm, WL 6.75 mm.

Color: Mandible with apical third reddened; wing membranes subhyaline, veins and pterostigma yellowish brown; tibial spurs ochraceous; posterior depressions of metasomal terga yellowish brown translucent.

Pubescence: Hairs on head and thorax moderately dense; those on clypeus dense, black ($300-450\mu$); those on antennal area black mixed with white; those on vertex whitish mixed with black, long ($500-600\mu$); those on dorsum of thorax not long ($300-400\mu$), black mixed with white; those on scutellum short and black anteriorly, long and white posteriorly; those on mesepisternum and propodeum area long, black; those on T1-2



Figs. 32-36. *Andrena (Euandrena) kudiana* Cockerell, syntype. 32: dorsal view of the whole body; 33: head in frontal view; 34: mesoscutum; 35: propodeum; 36: metasomal terga.

white, long (200-300 μ) anteriorly and laterally; T2-5 short black (100-150 μ) in the middle, T2-4 with white apical hair fringes, interrupted medially on T2-4, completely on T4; S2-5 with white, long (400-500 μ), suberect subapical fimbriae.

Structure: Head: $HL/HW = 0.84$. $HW:MsW:MtW = 2.45 : 2.25 : 2.45$. Vertex roughened with obscure roughened PP. $OOD:POD:OCD = 0.45 : 0.35 : 0.15$. Eyes with inner margins subparallel. Facial quadrangle longer than broad (about 2.05 : 1.65). Clypeus strongly convex, smooth and shiny, with distinct PP, \varnothing 30-40 μ , $IS < 0.5$, clypeus without longitudinal median impunctate space; $CPL = 0.7$ mm. Process of labrum smooth and shiny, transverse, not emarginate in the middle. Lower paraocular area as in clypeus. Malar space nearly linear. Genal area as broad as eye. $GW:EW = 0.5 : 0.5$, surface weakly tessellate posteriorly, broadly shiny and smooth with small PP near eye. **Mesosoma:** Pronotum without humeral angle, weakly tessellate with PP.

Mesoscutum and scutellum smooth and shiny to very weakly tessellate with distinct PP, \varnothing 20-30 μ , IS = 0.5-1. Propodeal enclosure small, wrinkled basally, broadly roughened apically; dorsal face roughened. Mesepisternum densely tessellate with indication of obscure PP. *Metasoma*: Metasomal terga weakly tessellate anteriorly, smooth and shiny posteriorly on each tergum, with small PP, \varnothing 20 μ , IS = 1-2; Posterior depressions of terga weakly indicated.

Type material examined: Syntype **male**, Kudia River, Amagu, Siberia, July, 1923, Cockerell (B.M. Type, Hym., 14a, 1338).

Remarks: This species is similar to *Andrena hebes* Pérez by having black hairs on the head and thorax, but it is easily separated from *hebes* by the larger size, the clypeus, mesoscutum and metasomal terga shiner and smoother with more distinct punctures and the propodeal enclosure rugose only basally.

Distribution: Siberia (Irkutsk).

Floral association: Not available.

9. *Andrena (Tarsandrena) angarensis* Cockerell

(Figs. 37-41)

Andrena angarensis Cockerell, 1929, Ann. Mag. nat. Hist., (10) 3: 394-395 [female and male, Siberia].

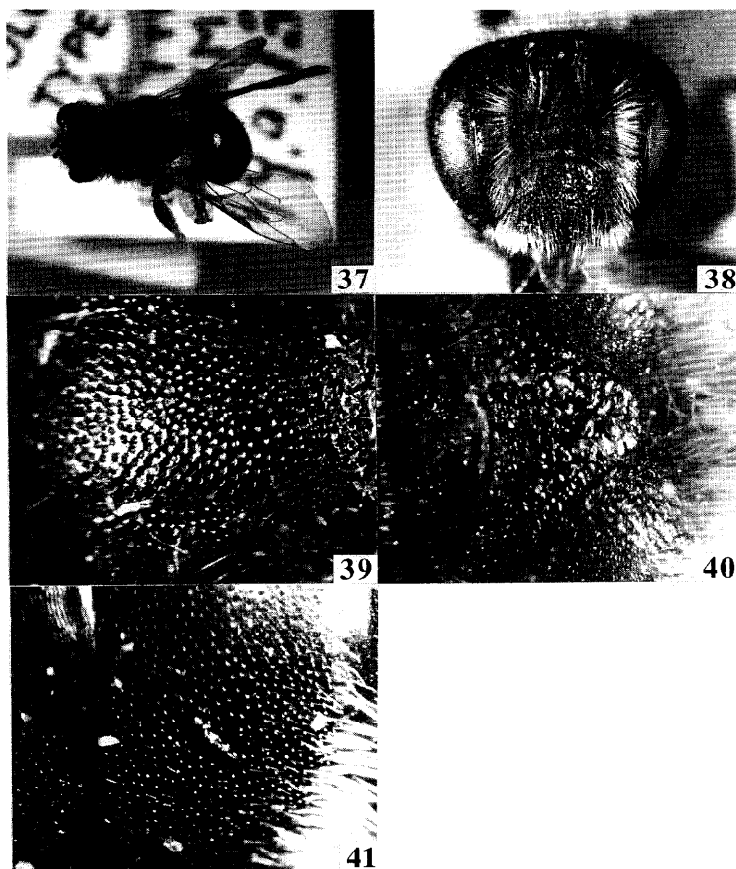
Andrena (Tarsandrena) angarensis: Osytsnjuk, 1995, Key Ins. Rus. Far East Six Vol., 4 (1): 11-512, 517 [in key, female & male, Russian Far East].

Redescription of the holotype (flagellum lacking): **Female**, BL 8.5 mm, WL 7.5 mm.

Color: Mandible with apical third reddened; wing membranes subhyaline, veins and pterostigma brownish; tibial spurs ochraceous; posterior depressions of metasomal terga reddish brown transparent.

Pubescence: Hairs on head whitish not mixed with brown hairs on vertex; those on clypeus not dense, short (300-400 μ); those on vertex a little longer (400-500 μ); facial fovea light brown above, whitish below. Hairs on thorax not dense; those on mesoscutum whitish, sparse, not long (200-400 μ) in the middle; those on scutellum as in mesoscutum; propodeal corbícula moderately developed with long, well arranged hairs with simple internal hairs; trochanteral floccus nearly perfect and dense; femoral floccus dense, white; tibial scopa poorly developed, with short, fine simple pale yellowish hairs. Hairs on metasomal terga very short, brownish on T2-4 (80-150 μ); T1 with long white hairs laterally and anteriorly, T2-4 with white apical hair bands, T2 interrupted medially, T3-4 completely; caudal fimbria dark brown; S2-5 with dull whitish, subapical fimbriae.

Structure: *Head*: HL/HW = 0.83. HW:MsW:MtW = 2.7 : 2.5 : 2.75. Vertex weakly tessellate with obscure PP. OOD:POD:OCD = 0.5 : 0.35 : 0.15. Eyes with inner margins subparallel. Facial fovea moderate, FVL = 1.2 mm, FVW = 0.3 mm, deep above, shallow below, paralleled with eye but narrow shiny space in the middle. Facial quadrangle longer than broad (about 2.25 : 1.75). Clypeus slightly convex, more or less roughened with rugoso-punctate above, weakly tessellate and shiny below with small



Figs. 37-41. *Andrena (Tarsandrena) angarensis* Cockerell, type. 37: dorsal view of the whole body; 38: head in frontal view; 39: mesoscutum; 40: propodeum; 41: metasomal terga.

PP, \varnothing 30-40 μ , IS < 0.5, surface without median longitudinal impunctate space; CPL = 0.85 mm. Process of labrum large, semicircular, not emarginate in the middle. Lower paraocular area smooth and shiny with small close PP. Malar space linear. Genal area as broad as eye, GW:EW = 0.55 : 0.55, surface very weakly tessellate posteriorly, smooth and shiny near eye. *Mesosoma*: Pronotum very weakly tessellate with small PP, with humeral angle. Mesoscutum smooth and shiny with dense distinct PP \varnothing 20 μ , IS < 0.5 in the middle. Scutellum smooth and shiny with distinct PP anteriorly, narrowly shagreened posteriorly. Propodeal enclosure rugose all over; dorsal face roughened. Mesepisternum densely tessellate with indication of obscure PP. Hind tibia widened apically. *Metasoma*: Metasomal terga weakly tessellate with small close PP, \varnothing 20 μ , IS = 0.5-1; posterior depressions of terga weakly indicated. S2-4 weakly tessellate with fine PP.

Type material examined: Holotype **female**, Irkutsk, Siberia, July, W. P. Cockerell (B.M. Type, Hym., 14a, 1340).

Remarks: This species is similar to *Andrena tarsata* Nylander, but it is easily separated from *tarsata* by the clypeus rugoso-punctate without median longitudinal impunctate space and the vertex without brown hairs.

Distribution: Siberia (Irkutsk).

Floral association: Not available.

10. *Andrena (Tarsandrena) belikovi* Cockerell

(Figs. 42-46)

Andrena belikovi Cockerell, 1929, Ann. Mag. nat. Hist., (10) 3: 402 [female, Siberia].

Redescription of the holotype: **Female**, BL 10.4 mm, WL 9.05 mm.

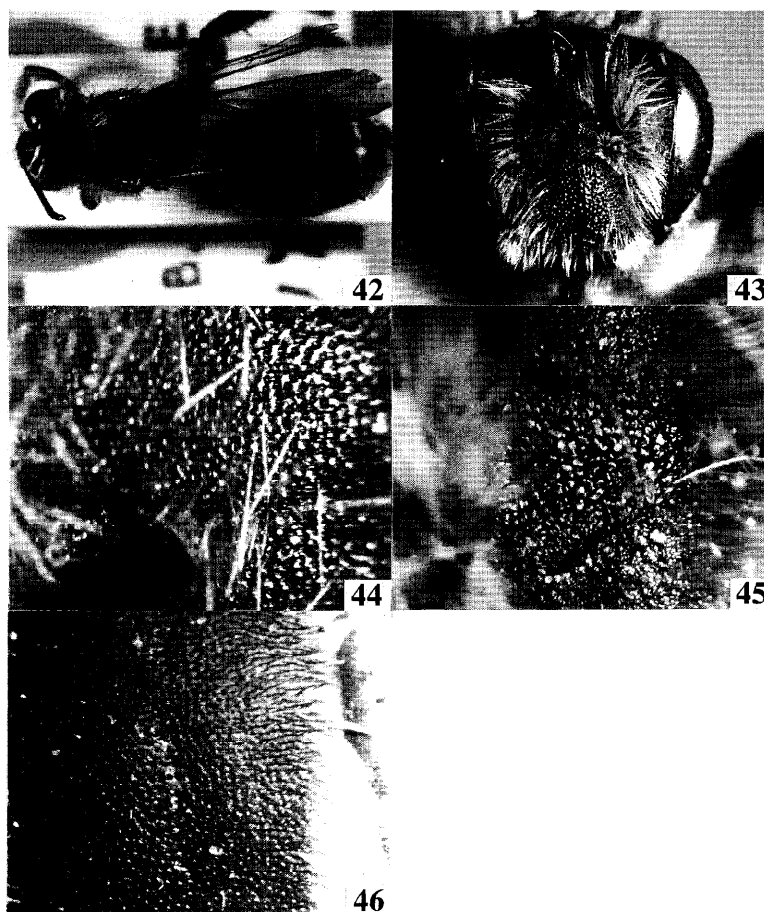
Color: Flagellum brownish beneath; mandible with apical third reddened; wing membranes subhyaline, veins and pterostigma yellowish brown; tibial spurs ochraceous; posterior depressions of metasomal terga reddish brown transparent.

Pubescence: Hairs on head whitish mixed with yellowish hairs on vertex; those on clypeus not dense, long (400-500 μ); those on vertex a little longer (600-800 μ); facial fovea light brown above, whitish below. Hairs on thorax more or less dense; those on mesoscutum yellowish, moderately long (600-800 μ) in the middle; those on scutellum as in mesoscutum; propodeal corbicular moderately developed with long, well arranged hairs with simple internal hairs; trochanteral floccus nearly perfect and dense; femoral floccus dense, white; tibial scopa poorly developed, with short, simple yellowish hairs. Hairs on metasomal terga very short, brownish on T2-4 (80-100 μ); T1 with long white hairs laterally and anteriorly, T2-4 with white apical hair bands, narrowly interrupted in the middle; caudal fimbria dark brown; S2-5 with dull whitish, subapical fimbriae.

Structure: Head: HL/HW = 0.85. HW:MsW:MtW = 3.25 : 2.95 : 3.45. Vertex weakly tessellate with large PP. OOD:POD:OCD = 0.6 : 0.45 : 0.3. FL1 > FL2+3, FL2 = FL3. Eyes with inner margins subparallel. Facial fovea moderate, FVL = 1.3 mm, FVW = 0.45 mm. Facial quadrangle longer than broad (about 2.75 : 2.15). Clypeus convex, weakly tessellate with small PP, \varnothing 30-40 μ , IS < 0.5, surface without median longitudinal impunctate space; CPL = 1.1 mm. Process of labrum large, semicircular, not emarginate in the middle. Lower paraocular area smooth and shiny with small close PP. Malar space linear. Genal area narrower than eye, GW:EW = 0.65 : 0.75, surface very weakly tessellate posteriorly, narrowly smooth and shiny near eye. *Mesosoma:* Pronotum very weakly tessellate with small PP, with humeral angle. Mesoscutum smooth and shiny with distinct strong close PP, \varnothing 20-30 μ , IS < 0.5 in the middle. Scutellum smooth and shiny with distinct PP anteriorly, narrowly shagreened posteriorly. Propodeal enclosure rugose all over; dorsal face roughened. Mesepisternum weakly tessellate with indication of shallow PP. Hind tibia widened apically. *Metasoma:* Metasomal terga weakly to densely tessellate with small close weak PP, \varnothing 20 μ , IS = 0.5-1; posterior depressions of terga weakly indicated.

Type material examined: Holotype **female**, Smolenschina, Siberia, Aug. 17, W. P. Cockerell (B.M. Type, Hym., 14a, 1347).

Remarks: This species is very similar to *Andrena tarsata* Nylander, but it is easily



Figs. 42-46. *Andrena (Tarsandrena) belikovi* Cockerell, syntype. 42: dorsal view of the whole body; 43: head in frontal view; 44: mesoscutum; 45: propodeum; 46: metasomal terga.

separated from *tarsata* by the clypeus with larger and more distinct punctures and without a longitudinal median impunctate space, the mesoscutum densely punctate ($IS < 0.4$), and the vertex without brown hairs.

Distribution: Siberia (Smolenschina).

Floral association: Not available.

Acknowledgments

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