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## The Subgenera *Margandrena*, *Leimelissa*, *Stenomelissa* and *Zonandrena* of the Genus *Andrena* of Eastern Asia (Hymenoptera, Andrenidae)

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The subgenera *Margandrena*, *Leimelissa*, *Stenomelissa* and *Zonandrena* of the genus *Andrena* of eastern Asia are reported. Female of *Andrena* (*Leimelissa*) *beijingensis* is described for the first time. *Andrena* (*Margandrena*) *marginata*, *A.* (*Stenomelissa*) *halictoides* and *A.* (*Zonandrena*) *flavipes* are newly recorded from China.

### INTRODUCTION

In the present paper we report four subgenera of the genus *Andrena*, *Margandrena*, *Leimelissa*, *Stenomelissa* and *Zonandrena* from eastern Asia. Female of *Andrena* (*Leimelissa*) *beijingensis* Xu is described for the first time. *Andrena* (*Margandrena*) *marginata*, *A.* (*Stenomelissa*) *halictoides* and *A.* (*Zonandrena*) *flavipes* are newly recorded from China.

#### 1. Subgenus *Margandrena* Warncke

*Margandrena* Warncke, 1968, Mem. Est. Mus. Zool. Univ. Coimbra, (307): 91–92; Osytshnjuk, 1977; Faun. Ukraini, 12 (5): 248; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 37. Type species: *Andrena marginata* Fabricius, 1776, by original designation.

Diagnosis: Medium-sized bees; facial quadrangle longer than broad; facial fovea deep; Eyes with inner margins paralleled; clypeus protuberant; process of labrum large; maxillary palpus short, not exceeding to tip of galea; labial palpus normal; malar space short; genal area narrow; pronotum with humeral angle and ridge; propodeal corbicula not well developed; trochanteral floccus perfect; tibial scopal hairs long, weakly plumose throughout; tibial spur normal; three subgenal cells present; metasomal terga finely punctate. Male clypeus yellow; first flagellar segment long; genal area weakly carinate posteriorly; sterna with short, complete subapical fimbriae.

#### (1) *Andrena* (*Margandrena*) *marginata* Fabricius

*Andrena marginata* Fabricius, 1776, Gen. Insect., 246 [female, Germany]; Stöckhert, 1930, Hym. Nord- und Mitteleurop., 912, 944 [female & male, in key]. *Andrena* (*Margandrena*) *marginata*: Warncke, 1968,

Mem. Est. Mus. Zool. Univ. Coimbra, (307): 88; Osytshnjuk, 1977, Faun. Ukraini, 12 (5): 249–250; Osytshnjuk, 1995, Key Insects Russian Far East, Vol. IV, Part 1, 512, 516 [female & male, in key]; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 458.

*Apis Cetti* Schrank, 1781, Enum. Insect. Austr. 405–406 [female, Austria].

Other synonymies: See Gusenleitner & Schwarz (2002).

*Specimen examined.* [CHINA] Hebei Province: 1 male, Mt. Xiaowutaishan, 1,200–1,600 m, 18. viii. 1964 (Y-h. Han).

*Remarks.* Although only one male of this species is recorded, it is readily recognized by the reflexed process of labrum and the elevated apicolateral margin of clypeus forming characteristic angle.

*Distribution.* China (new record, Hebei Prov.), Russia (Far East area), European Russia, Turkey, Europe.

*Floral association.* Not available.

#### 2. Subgenus *Leimelissa* Osytshnjuk

*Leimelissa* Osytshnjuk, 1984, Vestn. Zool., 1: 20–21; Xu, 1994, Sinozoologia, (11): 197; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 36. Type species: *Andrena bairacumensis* Morawitz, 1876, by original designation.

Diagnosis: Medium-sized bees; facial quadrangle distinctly longer than broad; clypeus weakly to finely granulate, protuberant; process of labrum broad, short, rounded apically; glossa elongate, labial palpus distinctly elongate especially first two segments; genal area narrow; pronotum with weak humeral angle, dorsoventral ridges lacking; three submarginal cells present; propodeal corbicula well arranged; tibial scopal hairs short to long, simple; metasomal terga with hair bands. Male clypeus yellow; first flagellar segment long; pronotum with distinct humeral angle and ridge; sterna with incomplete subapical fimbriae.

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**(1) *Andrena (Leimelissa) mimetes* Cockerell**

*Andrena mimetes* Cockerell, 1929, Entomologist, 62: 206–207 [female, China]; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 278 [in list]; Hirashima, 1952, Mushi, 24: 30.

*Andrena (Leimelissa) mimetes*: Xu, 1994, Sinozoologia, (11): 201.

*Andrena (?Orandrena) mimetes*: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 480.

*Specimens examined*. [CHINA] Beijing: 1 female, 1938 (K. Tsuneki). Inner Mongolia: 2 females, Apaka, 1–10, vi. 1939 (K. Tsuneki).

*Remarks*. This species is similar to *Andrena beijingensis* Xu in having the elongated glossa and labial palpus. It can be separated from the latter by the clypeus shiner with relatively denser punctures, the mesoscutum and metasomal terga distinctly punctate with close punctures, the tergal hair bands well formed, and the caudal fimbria and sternal fimbriae brown.

*Distribution*. China (Beijing, Shandong, Inner Mongolia).

*Floral association*. Not available.

**(2) *Andrena (Leimelissa) beijingensis* Xu**

*Andrena (Leimelissa) beijingensis* Xu, 1994, Sinozoologia, (11): 202 [male, China]; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 119.

**Female** (new to science). BL 12.5 mm, WL 9.0 mm (n=1).

*Color*: Flagellum narrowly reddish yellow beneath except at base; mandible reddened apically; wing membranes dusky, veins and pterostigma reddish brown; tibial spurs reddish brown; posterior margins of metasomal terga yellowish subhyaline.

*Pubescence*: Hairs on head dull white; those on clypeus short (200–300  $\mu$ ), rather sparse; those on vertex 300–500  $\mu$ , dense; those on genal area long; facial fovea whitish. Hairs on dorsum of thorax dull yellow, dense; those on mesoscutum and scutellum about 500  $\mu$ ; those on mesepisternum long, yellowish; propodeal corbicula with long dorsal fringe, not well arranged, internal area with short, simple hairs; trochanteral floccus perfect, whitish; femoral floccus dense; tibial scopal hairs long, simple, yellow. Hairs on metasomal terga short, white; terga 2–4 with not well-formed white hair bands, which interrupted on terga 2–3; caudal fimbria yellow; sterna 2–5 with sparse, incomplete whitish subapical fimbriae.

*Structure*: *Head*: HL/HW=1.0. HW: MsW: MtW=3.2:3.5:3.7. Vertex short, densely tessellate, dulled by minute PP above lateral ocelli. OOD: POD: OCD=0.55:0.4:0.16. FL1>FL2+3, FL2=FL3 with broader than long, intermediate segments about as broad as long. Eyes with inner margins paralleled. Facial fovea deep, far exceeding below a level at lower margins of antennal fossae, FVL=1.7 mm, FVW=0.3 mm. Supraclypeal area weakly tessellate, shiny, PP obscured. Face above antennal fossae with weak longitudinal rugulae and coarse interrugal PP, dulling surface. Facial quadrangle

longer than broad (about 2.7:2.0). Clypeus protuberant, surface finely granulate, scattered small PP (sparser than in *mimetes*), irregular in distribution, CPL=1.4 mm. Process of labrum broad, about one-fourth times as long as broad at base, rounded apically, surface weakly tessellate. Labrum apical to process convex, sulcate with median crista. Galea outer margin straight, surface weakly tessellate. Glossa and labial palpus distinctly elongate, First segment of labial palpus broad, flat apically, segment ratio about 1.1:1.0:0.7:0.5. Lower paraocular area smooth and shiny with close small PP. Malar space short, about one-fifth width of basal mandible. Genal area narrower than eye, GW: EW=0.7:0.8, surface finely tessellate with inner minute PP, IS=1. *Mesosoma*: Pronotum with weak humeral angle, dorsoventral ridge lacking, surface reticularly shagreened. Mesoscutum densely tessellate marginally, weakly tessellate and broadly shiny medially, with PP $\phi$ 20  $\mu$ , IS=1–2. Scutellum broadly smooth and shiny, densely punctate marginally. Propodeal enclosure ill defined, densely tessellate, shagreening surface; dorsal face of propodeum densely tessellate with obscure minute PP. Mesepisternum densely tessellate with minute PP, IS=1 medially. Vein 1st *m-cu* meeting second submarginal cell beyond middle of cell. *Metasoma*: Metasomal terga weakly tessellate, shiny; terga 1–4 with weak minute PP, IS=2–4 or more, denser near apical area, apical margins impunctate; posterior depressions of terga not well indicated; pygidial plate large, V-shaped apically, with large, raised triangular area. Sterna 2–5 weakly tessellate, shiny, impunctate at basal halves, densely punctate at apical halves.

*Specimen examined*. [CHINA] Beijing: 1 female, Miaofengshan, 15. v. 1996 (S. Ikudome).

*Remarks*. This species can be separated from *Andrena mimetes* Cockerell by the clypeus finely granulate with sparser and weaker punctures, the head and facial fovea narrower, the mesoscutum and metasomal terga with less and weaker punctures and the caudal fimbria yellow.

*Distribution*. China (Beijing).

*Floral association*. Not available.

**3. Subgenus *Stenomelissa* Hirashima et LaBerge**

*Stenomelissa* Hirashima et LaBerge, 1965, J. Fac. Agr., Kyushu Univ., 13: 500; Tadauchi & Hirashima, 1988, J. Fac. Agr., Kyushu Univ., 33: 67; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 36. 47. Type species: *Andrena halictoides* Smith, 1869, by original designation.

*Diagnosis*: Medium-sized bees, facial quadrangle distinctly longer than broad, malar space long and propodeum declivous; female with clypeus protuberant, pronotum with indistinct humeral angle, dorsoventral ridge lacking, tibial scopal hairs long, plumose, hind tibial spurs normal. Male head sometimes large, antennae with second flagellar segment or terminal segment uncinately below, clypeus yellow; genal area angulate

posteriorly and pronotum with dull humeral processes, deeply cut by pronotal sutures.

Tadauchi and Hirashima (1988) gave a revision of this subgenus and presented a key to species of this subgenus.

### (1) *Andrena (Stenomelissa) halictoides* Smith

*Andrena halictoides* Smith, 1869, Entomologist, 4: 205 [female, Japan]; Cockerell, 1913, Ann. Mag. nat. Hist., 11(8): 190; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 276 [in list].

*Andrena (Stenomelissa) halictoides*: Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 502 [in part]; Tadauchi and Hirashima, 1986, Trans. Essa. Ent. Soc., (63): 27; Tadauchi and Hirashima, 1988, J. Fac. Agr., Kyushu Univ., 33: 68, 69, 70–72 [in key, figs., biology]; Tadauchi and Lee, 1992, Esakia, (32): 55 [Korea]; Osytsnjuk, 1995, Key Insects Russian Far East, Vol. IV, Part 1, 491, 615 [female & male, in key]; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 332.

*Halictus halictoides*: Sandhouse, 1943, Proc. U. S. nat. Mus., 92: 576.

*Specimens examined*. [CHINA] Heilongjiang Province: 2 females and 5 males, Jingpo Lake, Mudanjiang, 24–25. v. 1993 (O. Tadauchi).

*Remarks*. This species can be separated from *A. lonicerae* Tadauchi et Hirashima by the malar space shorter and the metasomal terga 2–4 with dense minute punctures.

*Distribution*. China (new record, Heilongjiang Prov.), Japan (Hokkaido, Honshu, Sado Is.), Korea (southern and central Korea), Russia (Far East area).

*Floral associations*. China: 2 females were collected on *Taraxacum* sp.; Japan: 26 plants were recorded (Tadauchi & Hirashima, 1988).

### (2) *Andrena (Stenomelissa) vitiosa* Smith

*Andrena vitiosa* Smith, 1879, Descr. new Spec. Hym. B. M., 51 [male, north China]; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 281 [in list].

*Andrena (Stenomelissa) vitiosa*: Tadauchi and Hirashima, 1988, J. Fac. Agr., Kyushu Univ., 33: 68 [in key, figs.]; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 824.

*Specimen examined*. [CHINA] Fujian Province: 1 male, Huangken, 290–350 m, Jianyang, 6. iv. 1960 (S–q, Jiang).

*Remarks*. The male of this species can be recognized by the antenna with second flagellar segment uncinata, the process of labrum rather large, the malar space short, the vertex and genal area smooth and shiny, the pronotal humeral angle ear-like seen in profile, the mesoscutum smooth and shiny with minute punctures and metasomal terga smooth and shiny with dense minute punctures basally.

*Distribution*. China (north China, Fujian Prov. of southeast China).

*Floral association*. Not available.

### (3) *Andrena (Stenomelissa) lonicerae* Tadauchi et Hirashima

*Andrena (Stenomelissa) lonicerae* Tadauchi et Hirashima, 1988, J. Fac. Agr., Kyushu Univ., 33: 72–75 [female & male, Japan]; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 443.

*Andrena vitiosa*: Yasumatsu (*nec* Smith), 1938, Zool. Mag., 50: 358; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 281, in part.

*Andrena (Stenomelissa) halictoides*: Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 502, in part.

*Specimen examined*. Holotype female (no. 2664, Kyushu Univ.), Hokuzan Dam, Saga Pref., 22. iv. 1976 (O. Tadauchi).

*Remarks*. This species is a close relative to *Andrena halictoides* Smith, but the female can be separated from that of *halictoides* by the malar space slightly longer and the metasomal terga 2–4 with sparser minute PP. The male can be separated from that of *halictoides* by the sternum 8 with apex of neck region broader and the lower paraocular area without maculae.

*Distribution*. Japan (Honshu, Shikoku, Kyushu).

*Floral association*. Tadauchi & Hirashima (1988) recorded 6 plants, mainly on *Lonicera gracilipes*.

### 4. Subgenus *Zonandrena* Hedicke

*Zonandrena* Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 220; Warncke, 1968, Mem. Est. Mus. Zool. Univ. Coimbra, (307): 77–79; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 49. Type species: *Andrena flavipes* Panzer, 1799, by original designation.

*Diagnosis*: Medium-sized bees; facial quadrangle broader than long; vertex tall; facial fovea separated from inner margin of eye by broad space; clypeus black, punctate; process of labrum entire; subgenal coronet present; malar space short; genal area broad, rounded; pronotum without humeral angle and ridge; propodeal corbicula well developed with long anterior fringes, with internal simple hairs; posterior spur of hind tibia slightly broadened and bent near base; three submarginal cells present; metasomal terga densely punctate; intermediate segments with compact, complete hair bands. Male clypeus black; metasomal terga with complete hair bands as in female.

#### *Andrena (Zonandrena) flavipes* Panzer

*Andrena flavipes* Panzer, 1799, Faun. Insect. German., 64: 20 [Austria].

*Andrena levilabris* Cameron, 1908, J. Bombay nat. Hist. Soc., 18: 308 [N. India].

*Andrena punjaubensis* Cameron, 1909, J. Bombay nat. Hist. Soc., 19: 130 [N. India].

*Andrena kengracensis* Cockerell, 1930, Ann. Mag.

Nat. Hist., (10) 5: 113 [Uzbekistan].

*Andrena (Trachandrena) betoni (sic)* Cockerell: Wu, 1982, Insects Xizang, Vol. 2, Apoidea, 392 [female & male, China].

*Andrena (Zonandrena) flavipes*: Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 274.

Other synonymies: See Gusenleitner & Schwarz (2002).

*Specimens examined.* [CHINA] Xizang Autn. Region: 1 female and 1 male, Jilong, 2,800 m, 20. vii. 1975 (F.-s. Huang). Xinjiang Uygur Autn. Region: 2 females, north slope of Tianshan, 1,600 m, 11. vi. 1960 (S.-y. Wang); 1 female, Tuoli, 4. vii. 1955 (Y.-l. Chen).

*Remarks.* The female of this species is easily recognizable by the metasomal terga densely punctate, the terga 2–4 with complete white hair bands, the tibial scopal hairs golden yellow, and the posterior spurs of hind tibiae slightly broadened and bent.

*Distribution.* China (new record, Xizang Autn. Region, Xinjiang Uygur Autn. Region), Nepal, India, Kazakhstan, Uzbekistan, Middle and Near East, Asia Minor, European Russia, Europe, North Africa.

*Floral association.* Not available.

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