

Taxonomic Notes on the Apristum Species Group Belonging to the Subgenus *Evylaeus* of the Genus *Lasioglossum* with Redescription of Two Species (Hymenoptera: Halictidae)

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**Taxonomic Notes on the *Apristum* Species Group Belonging to
the Subgenus *Evylaeus* of the Genus *Lasioglossum*
with Redescription of Two Species
(Hymenoptera: Halictidae)¹⁾**

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Abstract. The *apristum* species group belonging to the subgenus *Evylaeus* of the genus *Lasioglossum* is treated. Two species of this species group, *Lasioglossum apristum* (Vachal) and *Lasioglossum serratum* (Blüthgen) are redescribed with illustrations of important characters. Remarks, geographical distribution, flight records and floral associations for each species are presented. We propose a definition of the *apristum* species group.

Key words: taxonomy, Hymenoptera, Halictidae, *Lasioglossum*, *Evylaeus*, *apristum* species group.

Introduction

The subgenus *Evylaeus* belongs to the series *Hemihalictus* of the genus *Lasioglossum* of the subfamily Halictinae, whose members are known to occur from the Holarctic Region (Michener, 2000). In the Palaearctic Region, this subgenus mainly divided into two groups (carinate-*Evylaeus* group and carinaless-*Evylaeus* group) based on the adult morphology. These two groups contain many species groups.

The *apristum* species group belongs to the carinate-*Evylaeus* group, and contains seven spe-

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cies in the Palearctic Region (Ebmer, 2002) as follows: *Lasioglossum apristum* (Vachal), *L. elaiochromon* (Ebmer), *L. laeve* (Kirby), *L. rubsectum* (Fan & Ebmer), *L. salebrosum* (Blüthgen), *L. serratum* (Blüthgen), and *L. subrubsectum* (Fan & Ebmer). *Lasioglossum laeve* and *L. salebrosum* tentatively belong to this species group by Ebmer. As Ebmer (2002) did not present the definition of this species group, we redescribe *L. apristum* and *L. serratum* which are available in the present study, and propose a definition of the *apristum* species group.

Material and Methods

The specimens examined in this study were borrowed from the following institutions and personal collection, which are referred to in the text by the following abbreviations. **ELKU**: Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka Pref., Japan; **SCMH**: Late Dr. S. F. Sakagami's Collection, Museum of Nature and Human Activities, Hyogo Pref., Japan; **ALKK**: Applied Entomological Laboratory, Kyushu Tokai University, Kumamoto Pref., Japan. Other specimens without abbreviation belong to private collection, which is temporarily kept at the Entomological Laboratory, Kyushu University, Fukuoka, Japan.

The morphological terminology in description followed Eickwort (1969), Sakagami and Tadauchi (1995), and Michener (2000). The terms and their abbreviations used are as follows: **BL** (body length): Measured from the base of antennal fossae to the apex of pygidial plate; **WL** (wing length): Measured in a straight line from the base of tegula to the tip of the forewing; **HL, HW** (head length and width): Length from the top of vertex to lower margin of clypeus excluding clypeal tooth; width from the compound eye at lower level of antennal fossae; **CAL** (clypealveolar distance): Distance between level of lower rims of antennal sockets and upper margin of clypeus; **CPL** (clypeal length): Measured from the apicomedian margin of the clypeus to the supraclypeal suture; **EW, GW** (eye and genal widths): Eye and genal widths seen laterally, keeping both antennal bases at the same plane; **OOD** (ocelloocular distance): Distance between the lateral ocellus and the inner margin of compound eye at the shortest line; **IOD** (interocellar distance): Distance between the lateral ocellus; **OCD** (ocellocipital distance): Distance between the lateral ocellus and the vertex; **UOD**: Upper interocular distance; **MOD**: Maximum interocular distance; **LOD**: Lower interocular distance; **SPL**: Scape length; **F_n**: Flageller segment number *n*; **F_nL**: Length of flageller segment number *n*; **MsW** (mesosomal width): Width between the outer rim of tegulae; **MtW**: Metasomal width (width in maximal metasomal tergum); **MCL**: Length of scutellum; **MTL**: Length of metanotum; **PDL**: Length of propodeum dorsum; **T_n, S_n**: Segment number *n* of metasomal tergum and sternum; **PP**: Punctures; **IS**: Interspace of punctures; **Flight records**: indicates collecting month of the adults; **Floral association**: indicates flowering plants on which bees were collected.

The *apristum* species group Ebmer

Lasioglossum apristum species group Ebmer, 2002, Linzer Biol. Beitr., 34: 839.

This species group is characterized by having the following morphological features: head and mesosoma weakly blue-green reflections in female; distal process of labrum spoon-shaped in female; inner hind tibial spur serrate in female; gonocoxites with inner margin hoe-shaped anteriorly.

Lasioglossum (Evylaeus) apristum (Vachal)

(Figs. 1 A-G; 2 A-G; 3 A-B; 4 A-D)

Halictus apristus Vachal, 1903, Bull. Mus. Hist. Nat.: 130 [female, Japan]; Hirashima, 1957, Sci. Bull. Fac. Agr., Kyushu Univ., 16 (1): 4.

Sphecodes pallidulus Matsumura, 1912, Thous. Ins. Jap., Suppl. IV: 209-210 [female]; Matsumura, 1930, Illustr. Thous. Ins. Jap. II: 178; Matsumura, 1931, 6000 Illustr. Ins. Jap.-Emp.: 9; Matsumura, 1932, Illustr. Comm. Ins. Jap. IV: 7, 11.

Lasioglossum (Evylaeus) pallidulum: Sakagami & Munakata, 1966, J. Kansas Entomol. Soc. 39: 370-379 [biology].

Lasioglossum (Evylaeus) apristum: Ebmer, 1978, Annls. Hist. Nat. Mus. Natn. Hung., 70: 313-314; Ebmer, 1995, Linzer biol. Beitr., 27 (2): 542-544 [male]; Miyanaga et al., 1999, Insectes Soc., 46: 224-232 [biology]; Ikudome, 1999, Ident. Guide Aculeata Nansei Is., Jap.: 582; Ebmer, 2002, Linzer. biol. Beitr., 34 (2): 840-841.

Redescription

Female. BL 7.10-8.90 mm, WL 6.20-7.40 mm (n= 5).

Color: Body black except as follows: mandible with apical half reddish brown; flagellum beneath blackish brown; tegula posteriorly and marginally brownish transparent; wings nearly transparent; veins and pterostigma brown; tibial spur yellow; posterior margins of metasomal terga broadly brownish yellow transparent.

Pilosity: Generally dull whitish to pale yellowish brown. **Head:** Hairs on vertex 100-150 μm , erect and poorly plumose, sparse; hairs on paraocular area, frons and supraclypeal area 80-180 μm , poorly plumose, sparse; hairs on clypeus 80-250 μm , simple, moderately dense; hairs on genal area 100-300 μm , poorly plumose, moderately dense, below admixture with simple. **Mesosoma:** Lateral lobe of pronotum with tomental hairs; hairs on pronotal dorsum, plumose, moderately dense; hairs on mesoscutum 60-140 μm , marginally semierect and poorly plumose, moderately dense, medially simple short, and sparse; hairs on mesoscutellum

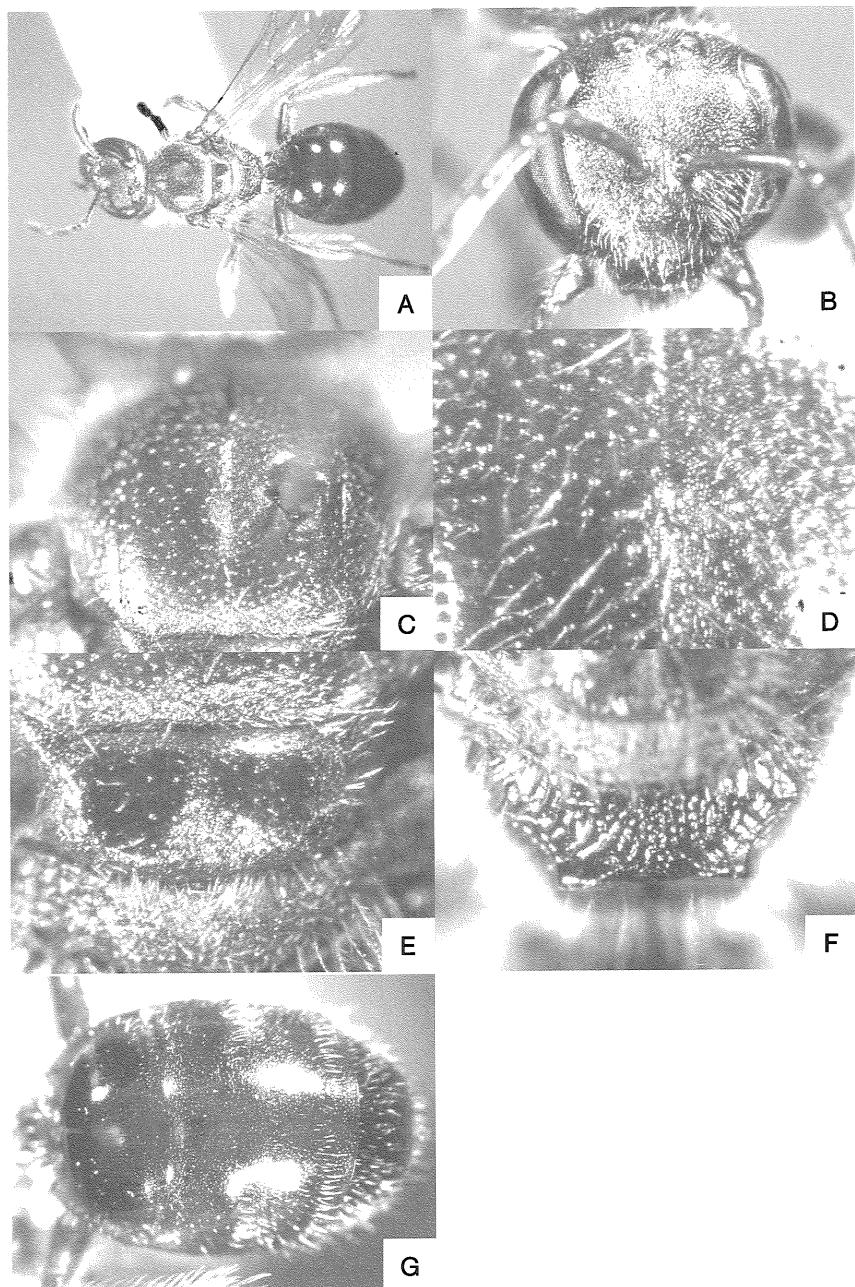


Fig. 1. *Lasioglossum (Evylaeus) apristum* (Vachal), female. A: dorsal view; B: face; C: mesoscutum; D: sculpture of mesoscutum; E: mesoscutellum; F: propodeal dorsum; G: metasomal terga.

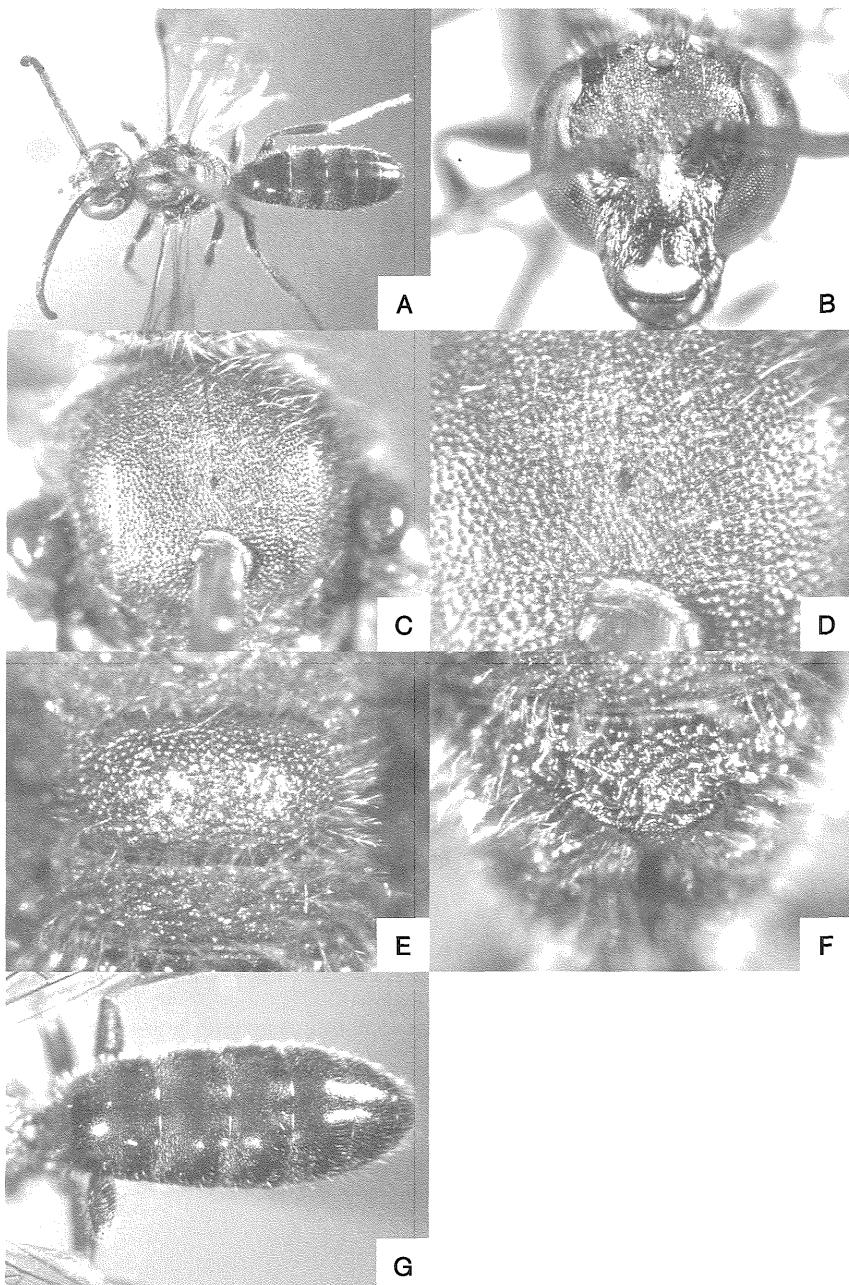


Fig. 2. *Lasioglossum (Evylaeus) apristum* (Vachal), male. A: dorsal view; B: face; C: mesoscutum; D: sculpture of mesoscutum; E: mesoscutellum; F: propodeal dorsum; G: metasomal terga.

100-300 μm , marginally plumose, sparse; hairs on metanotum medially tomentum, dense, marginally plumose, sparse; tegula with poorly plumose hairs anteriorly; hairs on mesepisternum and metepisternum 100-400 μm , plumose, moderately dense; hairs on propodeal side plumose, moderately dense, and admixture with simple; hairs on propodeal shield plumose, sparse. *Metasoma*: Hairs pale yellowish brown; anterior and lateral hairs of T1 80-160 μm , erect and poorly plumose, sparse; hairs on T2 simple and short, sparse, laterally poorly plumose; hairs on T3-4 simple and short all over, laterally admixture with a few of poorly plumose; basal hair bands of T2-4 present (sometimes obscure) with whitish tomentum; hairs on metasomal sterna 300-600 μm , simple, moderately dense and admixture with a few of poorly plumose.

Structure: Head: HW: HL= 2.09: 1.94. Vertex gently outcurved in frontal view, behind ocelli with rugulose; IOD: OOD: OCD= 0.31: 0.30: 0.07. Ocellocular and paraocular areas weakly shiny, with reticulo-punctures (20-30 μo); frons nearly flat, dull, with homogenous PP, similar to ocellocular and paraocular areas. CAL: CPL= 0.54: 0.45. Supraclypeal area slightly convex in lateral view, with granular PP (20-30 μo), sparse, IS= 1-4, weakly reticulate. Clypeus nearly flat, weakly shiny, with larger shallow PP (20-40 μo), sparse, weakly reticulate above, smooth below. UOD: MOD: LOD = 1.20: 1.52: 1.19. Labrum with basal area and distal process; basal area about 2.5 times as wide as long, apically with slightly depressed in dorsal view; basal lateral depression absent; basal elevation well developed, apically narrow; distal process as wide as basal elevation in dorsal view; distal lateral projection present, with spoon-shaped in dorsal view; distal keel narrow, apically pointed in dorsal view; labral fimbria all acutely pointed at apex. Mandible bidentate. Hypostomal carina moderately developed; anterior angle of hypostomal carina obtuse. Occiput not carinate. EW: GW= 0.54: 0.41; genal area shorter than eye, surface with oblique striae; SPL= 0.94 -1.00, F1L: F2L= 0.12: 0.12. *Mesosoma*: HW: MsW: MtW= 2.09: 2.40: 2.50. Pronotum with dorsolateral angle obtuse. Mesoscutum shiny, medially with granular PP (20-30 μo), sparse, IS= 1-5, weakly reticulate, marginally with granular PP, moderately dense, IS= 0.2-1, distinctly reticulate; mesoscutellum, nearly flat, shiny, marginally and longitudinally with homogenous PP and IS, similar to mesoscutum; metanotum rugulose. Mesepisternum distinctly transverse to oblique striae all over; metepisternum above half with homogenous striae with mesepisternum; MCL: MTL: PDL= 0.51: 0.35: 0.42. Propodeal dorsum gently inclined and weakly convex apically in lateral view; dorsal propodeal surface with distinct ridges all over, medially with irregularly winding ridges, laterally with longitudinal ridges attain to lateral slope; transverse carina weak; lateral carina developed, parallel-sided; oblique carina developed, but not connected each other at upper ends; propodeal side rugulose; shield distinctly reticulate, median with longitudinal concave. Tegula reticulate anteriorly, smooth and weakly shiny posteriorly. Hind legs with basitibial plate ovate, pointed apically; inner hind tibial spur serrate. *Metasoma*: metasomal terga weakly shiny. T1 medially to posteriorly with fine PP (<10 μo),

sparse, IS smooth; T2 basally to medially with homogenous PP with T1, dense, posteriorly with sparse, IS weakly transverse striae all over; T3-4 similar to T2. Metasomal sterna distinctly reticulate.

Male. BL 6.60-8.30 mm, WL 5.80-6.90 mm (n= 5).

Color: Body black except as follows: flagellum blackish brown, beneath brown; lower half of clypeus yellow; mandible with apical half reddish brown; tegula posteriorly and marginally brownish transparent; wings nearly transparent; veins and pterostigma blackish brown; mesosoma dull blue-green; all tarsi yellowish brown; tibial spur yellow; posterior margins of metasomal terga narrowly brownish yellow transparent.

Pilosity: Similar to female except as follows: *Head*: hairs on paraocular area 100-300 μm , medially plumose, dense, below admixture with appressed plumose; hairs on supraclypeal area and clypeus 60-140 μm , plumose, and admixture with appressed plumose, moderately dense. *Mesosoma*: hairs on metanotum 150-300 μm , plumose, sparse. *Metasoma*: hairs on T1 60-140 μm , medially simple and short, sparse; hairs on T2-4, basally to posteriorly with simple and short, moderately dense, laterally with simple and long; hairs on metasomal sterna 100-160 μm .

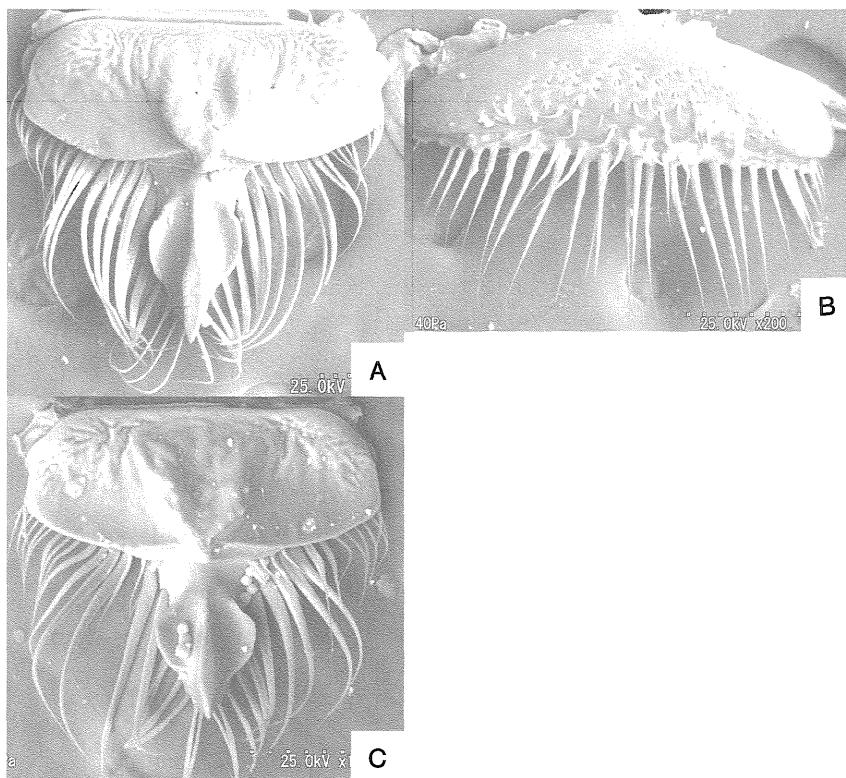


Fig. 3. Labrum. *Lasioglossum (Evylaeus) apristum* (Vachal), A: female; B: male. *Lasioglossum (Evylaeus) serratum* (Blüthgen), C: female.

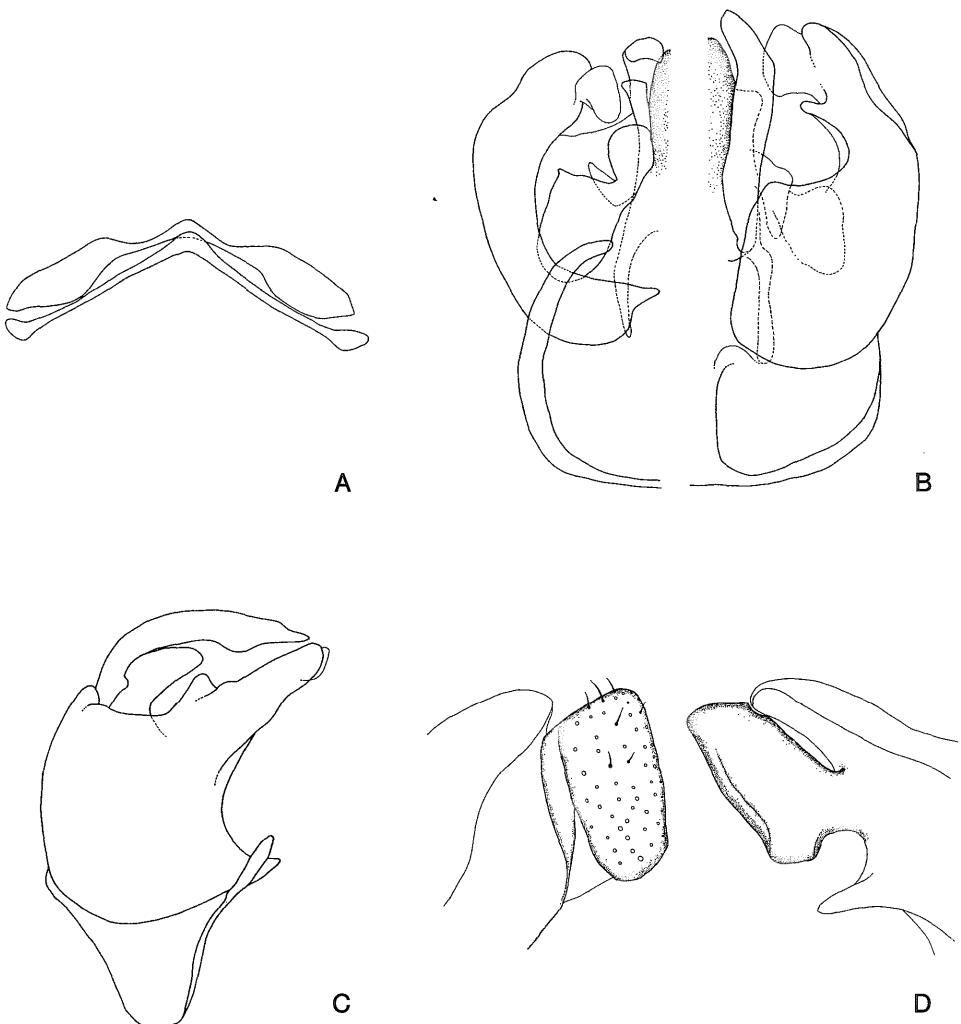


Fig. 4. *Lasioglossum (Evylaeus) apristum* (Vachal), male. A: S7-8; B: genitalia (left, ventral view; right, dorsal view); C: genitalia in lateral view; D: gonostylus (left, ventral view; right, dorsal view).

μm , simple and short, sparse; basal hair bands absent.

Structure: Female except as follows: **Head:** HW: HL= 1.93: 1.89. Vertex medially weakly depressed in frontal view; IOD: OOD: OCD= 0.37: 0.26: 0.05. CAL: CPL= 0.54: 0.51. Supraclypeal area weakly shiny, with granular PP (20-30 μo), somewhat coarse, dense, IS > 0.2, reticulate. Clypeus nearly flat with granular PP (20-40 μo), moderately dense, weakly reticulate above, IS smooth below. UOD: MOD: LOD = 1.16: 1.37: 0.77. Labrum with basal area, distal process absent; basal area about 3.6 times as wide as long, medially flat and not

depressed in dorsal view; basal lateral depression and elevation absent. Mandible edentate. EW: GW= 0.65: 0.33; SPL= 0.40-0.48, F1L: F2L= 0.18: 0.36. *Mesosoma*: HW: MsW: MtW= 1.93: 2.15: 1.65. Mesoscutum with coarse reticulo-PP (20-40 μm), all over, IS>0.2, or 0.2-1, weakly reticulate and dull; mesoscutellum dull, distinctly convex, longitudinally depressed in the middle, with homogeneous PP with mesoscutum; MCL: MTL: PDL= 0.49: 0.27: 0.39. Lateral slope of propodeal dorsum and propodeal side with transverse to oblique ridges; shield with irregular ridges. Basitibial plate absent. *Metasoma*: T1 medially to posteriorly with granular PP (10-20 μm), moderately dense, smooth; T2 basally to medially with homogenous PP with T1, dense, posteriorly with sparse, basally and anteriorly weakly transverse striate, medially smooth; T3-4 similar to T2. S7-8 (Fig. 4 A) with short and round median process.

Male genitalia: Genitalia (Fig. 4 B-D). Gonobasal ventral arm ring-shaped, but not connected each other at upper ends in ventral view; median sulcus distinct in dorsal view. Gonocoxites in dorsal view, with outer margin gently outcurved, with inner margin hoe-shaped anteriorly, and distinctly angulate medially in ventral view, with inner and outer margins relatively outcurved to paralleled. Gonostylus (Fig. 4D) ovate in ventral view, surface with sparse spots, and sparse short hairs outer marginally. Ventral retrose lobe absent. Penis valve slender, inner surface with short hairs, sparse, bluntly pointed at apex. Volsella round basally; lateral flange slightly convex and acute; lateral lobe not prominent.

Variation: Metasomal color in female presents three types (black, pale red, and intermediate types). Miyanaga *et al.* (1999) reported these color patterns of the metasomal terga in pre-hibernating females were clearly linked to their sizes; entirely black in the larger individuals, and pale-red color in the smaller ones.

Remarks: This species is characterized by having the following morphological features in the Japanese carinate-*Evvlaeus* group: the head and mesosoma weakly blue-green reflections in female, the mesosoma dull blue-green in male; the mesoscutum medially with irregular sparse PP in female, rather dense PP in male; all tarsi pale yellowish in male; the inner hind tibial spur serrate in female.

Distribution: Japan (Hokkaido, Honshu, Shikoku, Kyushu, Yakushima Is.), China (Fukien), Korean Peninsula (north).

Flight records: Female: late March to early November. Male: late June to November.

Floral association: Polylectic: *Erigeron annuus* (Compositae); *Kerria japonica* var. *albescens* (Rosaceae); *Achanthes japonica* (Amaranthaceae); *Brassica* sp. (Cruciferae); *Isodon infexus* (Labiateae); *Rhododendron* sp. (Ericaceae); *Hydrangea paniculata* (Saxifragaceae); *Lespedeza bicolor* var. *japonica* (Leguminosae); *Polygonum cuspidatum* (Polygonaceae); *Angelica polyclada* (Umbelliferae), etc.

Biology: See Sakagami & Munakata (1966) and Miyanaga *et al.* (1999).

Specimens examined: We have examined 138 females and 68 males from the following localities in Japan; Hokkaido, Aomori, Miyagi, Fukushima, Niigata, Ibaraki, Tochigi, Tokyo,

Kanagawa, Yamanashi, Fukui, Toyama, Ishikawa, Nagano, Gifu, Kyoto, Wakayama, Hyogo, Tottori, Tokushima, Ehime, Fukuoka, Nagasaki, Oita, Kumamoto, Miyazaki Prefs. Some of them are cited as follows: HOKKAIDO: 2 females, Ashoro, Tokachi, 1-2, 3-4. vii. 1960 (S. Nakano, ELKU). HONSHU: Kanagawa Pref.: 1 female, Miyagase, Kiyokawa-mura, 19. x. 2003 (R. Murao). Fukui Pref.: 7 females and 1 male, Kamikoike, Ono-shi, 14. v., 16. viii. 2002 (K. Mitai). SHIKOKU: Ehime Pref.: 3 males, Omogo, 7. ix. 1951 (Y. Hirashima, ELKU); 5 females, Wakayama, Omogo vill., 10. vi. 2004 (T. Sugimoto). KYUSHU: Fukuoka Pref.: 1 female, Ino-dam, Ino, Hisayama-town, Kasuya, 31. iii. 2003 (F. Kodoi). Oita Pref.: 2 females, Handa-kogen, Kokonoe-cho, Kusu, 12. v. 2003 (R. Murao). Kumamoto Pref.: 1 male, Choyo, Aso, 22. vi. 1996 (M. Yamada, ALKK); 1 female and 4 males, Asomachi, Aso, 8. xi., 20. xi. 2001 (A. Yamada & M. Nomura, ALKK).

***Lasioglossum (Evylaeus) serratum* (Blüthgen)**
(Figs. 3 C; 5 A-G)

Halictus serratus Blüthgen, 1926, Zool. Jb. Syst., 51: 623-625 [female, India?].

Lasioglossum (Evylaeus) serratum: Ebmer, 2002, Linzer biol. Beitr., 34 (2): 841.

Redescription

Female. BL 6.20-7.00 mm, WL 5.60-6.20 mm (n= 5).

Color: Body black except as follows: mandible with apical half reddish brown; flagellum beneath blackish brown to brown; tegula posteriorly and marginally brownish transparent; wings nearly transparent; veins and pterostigma blackish brown; tibial spur yellow; posterior margins of metasomal terga broadly brownish yellow transparent.

Pilosity: Generally dull whitish to pale yellowish brown. **Head:** Hairs on vertex 120-250 μm , erect and poorly plumose, sparse; hairs on paraocular area, frons and supraclypeal area 100-200 μm , poorly plumose, sparse; hairs on clypeus 100-300 μm , simple, sparse; hairs on genal area 120-400 μm , poorly plumose, moderately dense. **Mesosoma:** Lateral lobe of pronotum with tomental hairs; hairs on pronotal dorsum, poorly plumose, sparse; hairs on mesoscutum 100-120 μm , semierect and poorly plumose, sparse; hairs on mesoscutellum 100-300 μm , marginally plumose, sparse; hairs on metanotum medially tomentum, dense, marginally plumose, sparse; tegula with poorly plumose hairs anteriorly; hairs on mesepisternum and metepisternum 200-400 μm , plumose, moderately dense; hairs on propodeal side plumose, sparse; hairs on propodeal shield plumose, sparse. **Metasoma:** Hairs pale yellowish brown; anterior and lateral hairs on T1 100-150 μm , erect and poorly plumose, sparse; hairs on T2, laterally poorly plumose, sparse, disc simple and short, sparse; hairs on T3-4 simple and short all over, laterally poorly plumose, sparse; basal hair bands of T2-4 present with whitish tomentum; hairs on metasomal sterna 300-600 μm , poorly plumose, moderately dense.

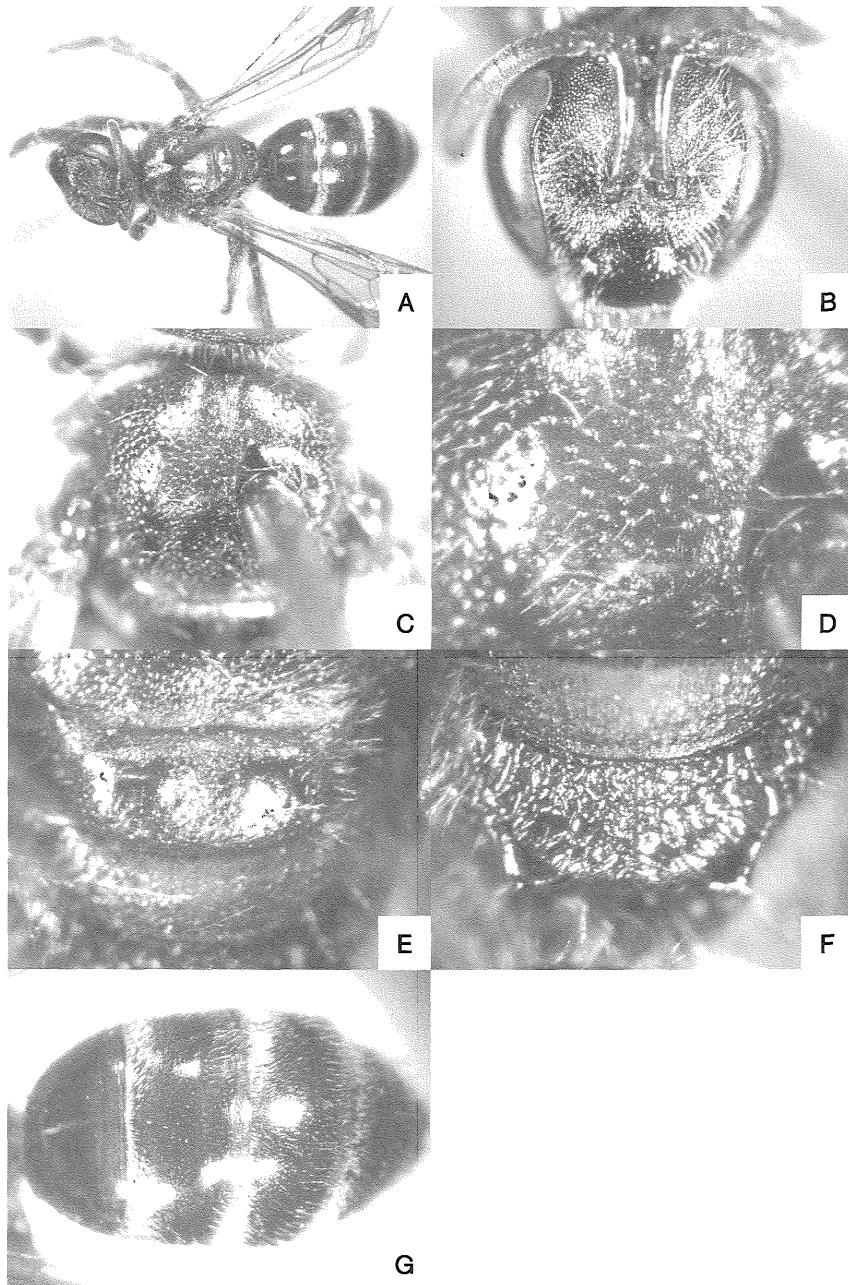


Fig. 5. *Lasioglossum (Evylaeus) serratum* (Blüthgen), female. A: dorsal view; B: face; C: mesoscutum; D: sculpture of mesoscutum; E: mesoscutellum; F: propodeal dorsum; G: metasomal terga.

Structure: Head: HW: HL= 1.82: 1.66. Vertex gently outcurved in frontal view, behind ocelli distinctly striae; IOD: OOD: OCD= 0.32: 0.30: 0.05. Ocellocular and paraocellar area weakly shiny, with reticulo-punctures ($20\text{-}30\ \mu\text{o}$); frons nearly flat, dull, with homogeneous PP, similar to ocellocular and paraocular areas. CAL: CPL= 0.31: 0.38. Supraclypeal area shiny, slightly convex in lateral view, with granular PP ($20\ \mu\text{o}$), sparse, IS= 1-4, weakly reticulate. Clypeus nearly flat, with larger shallow PP ($20\text{-}40\ \mu\text{o}$), sparse, weakly reticulate above, smooth and shiny below. UOD: MOD: LOD = 1.07: 1.33: 1.04. Labrum with basal area and distal process; basal area about 2.5 times as wide as long, apically with slightly depressed in dorsal view; basal lateral depression absent; basal elevation well developed, narrow apically; distal process as wide as basal elevation in dorsal view; distal lateral projection present, with spoon-shaped in dorsal view; distal keel narrow, apically pointed in dorsal view; labral fimbria all acutely pointed at apex. Mandible bidentate. Hypostomal carina moderately developed; anterior angle of hypostomal carina obtuse. Occiput not carinate. EW: GW= 0.44: 0.36; genal area shorter than eye, surface with oblique striae; SPL= 0.80 -0.88, F1L: F2L= 0.11: 0.10. **Mesosoma:** HW: MsW: MtW= 1.82: 1.96: 1.87. Pronotum with dorsolateral angle obtuse. Mesoscutum shiny, with granular PP ($20\text{-}30\ \mu\text{o}$), sparse all over, IS= 1-5, anteriorly weakly reticulate, medially to posteriorly smooth; mesoscutellum medially weakly depressed, marginally and longitudinally with granular PP ($20\text{-}30\ \mu\text{o}$), dense, IS smooth and shiny; metanotum rugulose. Mesepisternum coarsely striate all over; metepisternum above half with homogenous striae with mesepisternum; MCL: MTL: PDL= 0.42: 0.29: 0.41. Propodeal dorsum gently inclined; dorsal propodeal surface with distinct ridges all over, medially with irregularly winding ridges, laterally with longitudinal ridges attain to lateral slope; transverse carina weak (somewhat indistinct); lateral carina developed, parallel-sided; oblique carina developed, but not connected each other at upper ends; propodeal side weakly rugulose; shield distinctly reticulate, median with longitudinal concave. Tegula smooth and weakly shiny. Hind legs with basitibial plate ovate, pointed apically; inner hind tibial spur serrate. **Metasoma:** metasomal terga weakly shiny. T1 medially with ill-defined PP ($<10\ \mu\text{o}$), sparse, surface with smooth; T2 basally to medially with fine PP ($<10\ \mu\text{o}$), moderately dense, sparse posteriorly, IS basally weakly transverse striae, medially to posteriorly smooth; T3 with ill-defined PP ($<10\ \mu\text{o}$), sparse, IS basally and posteriorly weakly striae, medially smooth; T4 with homogenous PP with T3, IS weakly striae all over. Metasomal sterna distinctly reticulate.

Male. Unknown.

Remarks: This species resembles *Lasioglossum apristum* (Vachal) in having the head and mesosoma with weak blue-green reflections, the shape of head, labrum and inner hind tibial spur, the surface of mesoscutum and propodeum, but can be distinguished from it by the distal process of labrum more developed, the basal area of labrum gently outcurved at anterior margin (more strongly outcurved in *apristum*), the surface of T1 with ill-defined PP, and the

surface of T2 smooth posteriorly.

Distribution: Nepal, West-Bhutan.

Flight records: Female: May to July.

Floral association: Not available.

Biology: Unknown.

Specimens examined: [NEPAL]: 4 females, Namche, Bazar, 8. vii. 1968 (T. Matsumura, SCMH); 1 female, Karte, Salwng (1500-2900m), 12. vii. 1968 (T. Matsumura, SCMH).

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