

Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea) Part 2. Systematics, 4

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Systematic and biological studies of the family Andrenidae
of Japan (Hymenoptera, Apoidea)
Part 2. Systematics, 4*

Yoshihiro HIRASHIMA

8. Subgenus *Habromelissa* Hirashima et LaBerge, nov.

ἁβρός, graceful or delicate and μέλισσα, bee.

Type-species : *Andrena omogenis* Hirashima, 1953.

Diagnosis : This new subgenus can easily be distinguished from others by the venation of the fore wings. Namely, the third submarginal cell receives the second recurrent vein at the end of cell or quite close to it. In other words, the vein second m-cu (second recurrent vein) joins with the vein second r-m and, if it does not exactly join with the latter, then it is not separated more than one vein width. It has been believed that in the great majority of the species of *Andrena* the third submarginal cell receives the second recurrent vein much basad of the end of cell. Furthermore, the third submarginal cell is comparatively small in this subgenus, usually being only slightly larger than the second in any one specimen, and the total length of the 2nd and 3rd submarginal cells, measuring along the posterior margin, is nearly as long as the first. This subgenus is further distinct in having the cheeks broader than eyes in lateral view, the clypeus short and hardly protruding beyond the bases of the eyes, and the propodeum outside the enclosure nearly smooth and shiny. *Habromelissa* is similar to *Gonandrena* in its general habitus, but it differs primarily by the large eyes in the female and by the weakly sculptured propodeum in both sexes. American *Gonandrena* also usually have black clypei in the males, but at least one species has a yellow clypeus.

So far as the present paper is concerned, the new subgenus is represented only by the type species.

Description : Rather small species ; integument black ; legs and occasionally metasoma piceous. Head transverse in front view ; facial quadrangle approximately as long as broad ; malar space linear ; clypeus slightly convex in female, less convex or nearly flat in male, short, scarcely exceeding line across bases of eyes ; inner margins of eyes subparallel. Dorsal face of propodeum smooth and shiny near enclosure ; mesopleuron tessellate with weak punctures, not roughened.

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Wings with three submarginal cells; 3rd submarginal cell receiving 2nd recurrent vein at end or approximately at end of cell; 2nd submarginal cell receiving 1st recurrent vein beyond middle or near end of cell; basal vein interstitial or distad of nervulus; total length of 2nd and 3rd submarginal cells, along posterior margin, as long as 1st or nearly so. First metasomal tergum smooth and shiny, with scattered microscopic punctures; 2nd and following terga finely punctate; posterior depressions of terga narrow, poorly indicated.

Female: Facial fovea rather short, only slightly exceeding below a line across lower margins of antennal sockets, not separated from eye margin by a punctate space, with upper end occupying more than one-half of distance between eye and post ocellus; antennae with 3rd segment shorter than 4th plus 5th; process of labrum small, transverse, merely convex. Propodeal corbicula with dorsal fringe of long, dense, well-arranged, branched hairs; interior of corbicula with long, sparse, coarse, simple hairs; anterior margin of corbicula free of hairs; trochanteral floccus perfect, scanty, composed of long, curled, branched hairs; femoral floccus long, loose; tibial scopa compact, composed of rather long, rather coarse, not specially well-arranged, simple hairs. Mid basitarsi slender, very slightly expanded medially, subequal to hind basitarsi in width; posterior spur of hind tibia neither widened nor curved near base. Posterior margins of 2nd to 4th metasomal terga with fringe-like, short, sparse hairs.

Male: Clypeus white; mandibles slender, not specially long, with sharp falciform apices; process of labrum slightly protuberant; antennae moderately elongate, with 3rd segment a little longer than wide, and about as long as 4th which is a little shorter than each following segment; cheeks narrower than large eyes seen in profile, angled on its postero-lower corners. Genitalia rather small, with parapenial lobe sharp, well produced; paramere elongate and expanded apically with sharp inner edges; sagitta small with sides excavated.

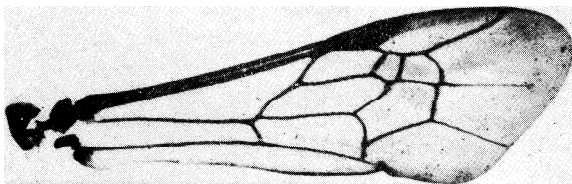


Fig. 175. Fore wing of *Andrena (Habromelissa) omogensis* Hirashima, male.

(3) *Andrena (Habromelissa) omogensis* Hirashima

Andrena omogensis Hirashima, 1953, Trans. Shikoku ent. Soc., 3 (5-6): 132, male.

This species was described from Omogo Valley, Prov. Iyo, Shikoku, based upon a short series of male specimens collected by me in the autumn of 1951. Since the description of it in 1953, I was able to examine a female and two male specimens from Honshu. As I expected, the female of this species is quite distinct and not at all related to any one of our species. The female of this species

can easily be recognizable by the combination of characters such as the thin and transverse head, the smooth and shiny clypeus, the obsolescent malar space, the smooth and shiny propodeum, etc., and the male by the transverse head, the ivory white clypeus, etc. This species is further distinct by the venation of the fore wing as indicated in the description of the subgenus.

So far as the present data are concerned, this species appears only in the autumn and has been collected in the mountaineous regions of Shikoku and Honshu.

Female (New to science): Rather slender, length about 8 mm.

Colour: Black ; mandibles reddened apically ; flagellum beneath reddish brown ; wings very slightly brownish subhyaline, veins and stigma pale brown to slightly yellowish ; tegulae pale reddish brown subhyaline, slightly darkened anteriorly ; legs piceous, with tarsi brownish; tibial suprs yellowish; metasoma not at all black, slightly piceous, posterior margins of terga pale yellowish transparent.

Pubescence: Hairs on head short, scanty, dull white to slightly yellowish; facial fovea indistinct, whitish, appears bright silvery in some light; hairs on thorax short, rather scanty, nearly uniformly pale brownish, yellow, without admixture of darker hairs; dorsal face of propodeum with sparse yellowish hairs, dorsal fringe of propodeal corbicula long, dense, nearly concolorous with hairs on mesoscutum; interior of corbicula with sparse yellowish hairs; trochanteral floccus perfect, composed of long, scanty, yellowish hairs ; femoral floccus dense, silvery or slightly yellowish ; tibial scopa with hairs on anterior and posterior margins nearly silver white and those on outer faces slightly brownish; tibial scopa well developed with rather coarse? simple hairs; metasoma scanty of hairs; cilia on basal four metasomal terga brownish; posterior margin of 2nd tergum with lateral, that of 3rd with more broad, that of 4th with much broader or nearly complete, sparse, whitish hair fringes ; caudal fimbria bright, nearly brown.

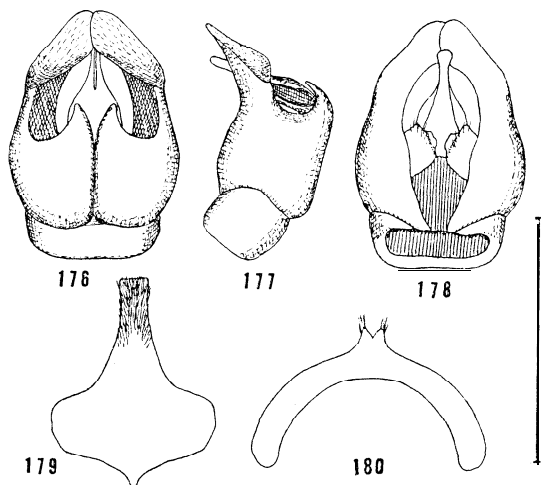
Structure: Head indistinctly broader than thorax seen from above, distinctly transverse seen in front, with facial quadrangle approximately as long as broad (about 5.6 : 5.3); mandibles rather short, stout; malar space linear ; process of labrum very short, transverse, roundly convex, neither bifid nor notched apically ; clypeus slightly convex, nearly entirely smooth, shiny, sparsely punctate with punctures irregular in size and distribution ; clypeus hardly exceeding line running bases of eyes, its index about 1.8 : 0.3; antennae with 3rd segment slightly shorter than 4th plus 5th; 4th segment broader than long, 5th nearly as long as broad, 6th and following segments indistinctly longer than broad ; facial fovea wide, not separated from eye margin by a punctate space, lower end only slightly exceeding below beyond line running lower margins of antennal sockets, upper end occupying more than one-half of distance between eye and post ocellus; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance about 1.4 : 1:2.4:3.7; cheeks much narrower than large eyes seen in profile, rounded above, receding below, tessellate, nearly dull. Mesoscutum tessellate and very weakly punctate anteriorly, nearly smooth and weakly punctate posteriorly, with punctures irregular in size and distribution, about as large as or slightly weaker than those on clypeus as a whole; scutellum rather well convex, broadly smooth, shiny, very sparsely and weakly punctate; dorsal face of propodeum shiny, nearly smooth near enclosure, weakly tessellate-punctate near lateral margins; propodeal enclosure poorly indicated, rugulose to rugose basally and weakly tessellate apically, therefore enclosure more coarsely sculptured than

dorsal face of propodeum; mesopleuron tessellate, sparsely and weakly punctate, not at all roughened. For characters of wings and legs see description of subgenus. First metasomal tergum smooth, shiny, but not specially so, with microscopic fine punctures; 2nd and following terga nearly smooth or indistinctly tessellate, therefore a little less shiny than 1st, more or less densely and very finely punctate; posterior depressions of terga not well indicated.

Male: Length less than 7 mm.

colour: Black; clypeus entirely or nearly entirely ivory white with a pair of blackish spots laterally; mandibles reddened apically; flagellum beneath brownish; wings, including veins and stigma, slightly darker than in female; tegulae as in female or slightly paler; legs piceous or fading to brown; metasoma nearly piceous, posterior margins of terga pale yellowish brown transparent.

Pubescence: Hairs on head rather short, sparse, predominantly dull white, except for those on frons slightly brownish; hairs on thorax rather short, pale above and white below, without admixture of blackish ones; hairs on legs pale to white; hairs on metasomal terga not conspicuous, very short, brownish; posterior margins of terga without distinct hair fringe; hairs on 6th tergum slightly brownish.



Figs. 176-180. Genitalia and associated structures of male *Andrena*(*Habromelissa*)*omogensis* Hirashima.

Fig. 176: dorsal view of genitalia, 177: lateral view of the same, 178: ventral view of the same, 179: 8th sternum, 180: 7th sternum.

Structure: Head rather large, broader than thorax seen from above; head distinctly transverse in front view, with facial quadrangle about as long as broad (about 5.4 : 5); head more or less thick, with cheeks narrower than large eyes seen in profile, angulate posteriorly; mandibles slender, well decussate but not specially long, with sharp apices; malar space linear; process of labrum rather small, roundly convex, subprotuberant; clypeus very weakly convex or occasion-

ally nearly flat, smooth, shiny, sparsely punctate ; clypeus hardly exceeding line running bases of eyes, its index about 1.7 : 0.3; antennae long, 3rd segment a little longer than broad and nearly as long as 4th; 5th and following segments longer than broad; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance about 1.3 : 1.2 : 2.5 : 3.8. Mesoscutum narrowly tessellate anteriorly, broadly nearly smooth, shiny, very weakly and sparsely punctate ; scutellum well convex, smooth, shiny, more sparsely and weakly punctate than in mesoscutum ; dorsal face of propodeum smooth and shiny near enclosure or occasionally very weakly tessellate, with an indication of very weak punctures ; enclosure poorly defined, tessellate apically and rugulose basally ; mesopleuron tessellate and dull over upper one-half, nearly smooth and shiny below, weakly punctate with punctures coarser than those on mesoscutum. Wings as in female. Legs slender, as usual. First metasomal tergum smooth, shiny, nearly impunctate or sparsely acupunctate ; 2nd and following terga nearly smooth or indistinctly tessellate, very finely punctate; posterior depressions of terga not well indicated. Genitalia and subgenital sterna as illustrated.

Distribution : Japan (Honshu and Shikoku).

Specimens examined : 1 female (allotype) and 2 males, Mt. Mitake, Okutama, Tokyo, 16. ix. 1951 (T. Shida and R. Ishikawa).

Flower record : Males have been collected on *Polygonum reynoutria* Makino at Omogo Valley.

9. Subgenus *Holandrena* Pérez

Holandrena Perez, 1890, Act. Soc. Linn. Bordeaux, 44 : 176; Hedicke, 1933, Mitt. 2001. Mus. Berlin, 19 : 214; Hirashima, 1952, Mushi, 24 : 62.

Type-species : *Melitta labialis* Kirby, 1802. (By designation of Hedicke, 1933.)

Diagnosis : *Holandrena* is composed of large species. It is characterized in having the process of labrum transverse, with the apical margin deeply emarginate or nearly bidentate; the present of the distinct punctures on the dorsal face of the propodeum, or the punctures sometimes quite close, then propodeum coarsely sculptured ; enclosure of propodeum subtriangular, usually well indicated and roughened ; propodeum rather short, rather strongly to strongly slanting; metasomal terga, especially the 1st, usually strongly and densely punctate; hind tibial spurs of the female widened and curved near the base: male clypeus as well as the paraocular areas yellow. As a whole, the recognition of *Holandrena* is easy.

Two species from Amami-Oshima Islands slightly deviate from the typical *Holandrena*. The metasoma is specially shiny, scanty of hairs and sparsely and weakly punctate, and the posterior spur of the hind tibia of the female only slightly widened and curved near the base.

The subgenus is found only in the Old World. In Japan, three species of the subgenus are known.

Description : Medium-sized to large species, integument black, sometimes metasoma black and red. Head rather large; process of labrum large, transverse, deeply emarginate or nearly bidentate apically ; malar space almost obsolescent; inner margins of eyes subparallel; thorax with or without black pubescence; propodeum rather strongly to strongly slanting, usually with distinct punctures which are occasionally quite close, and then propodeum coarsely sculptured ;

enclosure subtriangular, usually well indicated, usually distinctly wrinkled ; mesopleuron coarsely sculptured ; fore wings with three submarginal cells; metasoma, especially 1st tergum, usually strongly and densely punctate, or occasionally punctures very weak; posterior depressions of metasomal terga poorly indicated.

Female: Facial fovea very broad above, separated from eye margin by a narrow punctate space ; 3rd antennal segment equal to or slightly shorter than next three segments together; dorsal fringe of propodeal corbicula not well developed, interior of corbicula with sparse, coarse, simple hairs nearly throughout, no fringe of hairs anteriorly; trochanteral floccus nearly perfect to perfect, dense; tibial scopa composed of more or less coarse, simple hairs; posterior spur of hind tibia strongly widened and curved near base; mid basitarsi slender or indistinctly expanded medially, subequal to hind basitarsi in width; posterior margins of 2nd to 4th metasomal terga with or without appressed hair bands.

Male: Clypeus and frequently lower paraocular areas yellow; mandibles moderate; 3rd antennal segment longer than 4th or as long as next two segments taken together; cheeks receding or moderately well developed; genitalia with parapenial lobe rounded or angulate ; paramere usually expanded apically, with sharp inner edges; aedeagus swollen basally, with sides deeply excavated.

34. *Andrena (Holandrena) valeriana* Hirashima

Andrena (Holandrena) valeriana Hirashima, 1957, Mushi, 30 (9): 56, female and male.

This species is an only representative of the subgenus *Holandrena* in Japan proper so that the recognition of it is ease. It resembles closely *Andrena labialis* (Kirby), the type species of the subgenus, but is distinguished from the latter in having the clypeus much more coarsely and strongly punctate, the dorsal face of the propodeum much more coarsely sculptured and the propodeum more strongly declivous, the metasoma more densely punctate, and the hairs on the body shorter and paler.

This species occurs abundantly in Hokkaido, and rarely in Honshu and Tsushima. In Hokkaido, it is one of the commonest *Andrena* which associates with the flowers of red and white clovers. There it has been collected from late July to mid August. Since the description of this species based upon the material from Hokkaido and Honshu (Karuizawa), I was able to collect a single male specimen in Tsushima, which was taken on the flower of *Justicia procumbens* L.

Female: Length about or slightly over 12 mm.

Colour: Black ; mandibles reddened apically ; basal tubercles of mandibles piceous or more reddened; flagellum except basal one or two segments reddish brown or yellowish brown beneath; wings smoky with distal margins slightly darkened ; veins and stigma yellowish brown; tegulae pale yellowish brown transparent; legs piceous with small segments of tarsi reddish brown or more paler ; tibial spurs yellowish ; posterior margins of metasomal terga narrowly brownish subhyaline.

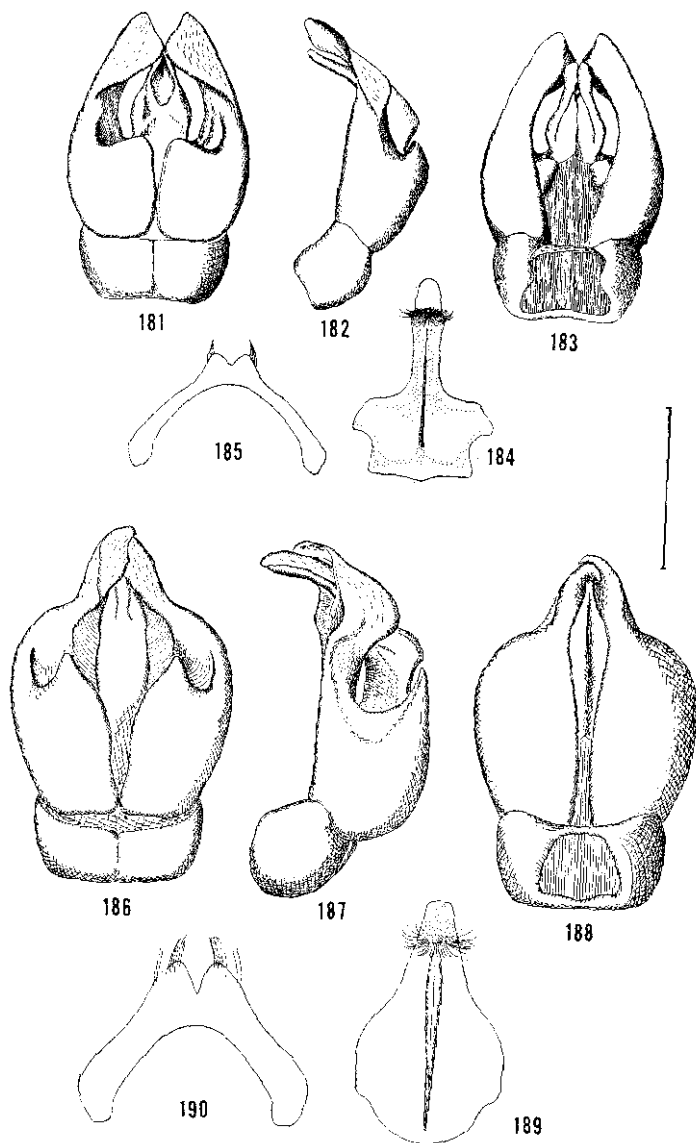
Pubescence: Hairs on body much paler than in *labialis*; hairs on head rather short to short, white or whitish, without admixture of darker ones; facial fovea silvery; hairs on thorax rather short, nearly uniformly white or whitish, sparse

and fine on mesoscutum and scutellum, and somewhat dense on mesopleuron; thorax without brownish hairs; dorsal fringe of propodeal corbicula short and scanty; interior of corbicula with coarse, silvery, simple hairs; hairs on legs primarily white or silver white except for yellowish ones on tarsi of all pairs; trochanteral floccus imperfect or nearly perfect, long, dense, silver white; femoral floccus long, dense, silver white; tibial scopa compact, composed of moderately long to more or less short, coarse, simple, silver white hairs; 1st to 4th metasomal terga densely covered with short, fine, white or indistinctly yellowish hairs which are not conspicuous; caudal fimbria brownish; posterior margin of 1st metasomal tergum with lateral, those of 2nd and 3rd terga nearly complete or occasionally interrupted; that of 4th with complete fringes of white appressed hairs, which are more conspicuous than in *labialis*.

Structure: Head about as broad as thorax seen from above, more or less round in front view; mandibles moderately long, stout; malar space very narrow, slightly widened posteriorly; process of labrum transverse, deeply emarginate and nearly bispinose apically; clypeus slightly convex, broadly nearly flat, weakly tessellate, strongly and somewhat coarsely punctate with punctures confluent in irregular longitudinal rows; clypeus much more strongly punctate than in *labialis*; clypeus slightly exceeding line running bases of eyes, its index about 2.7 : 1.6; facial quadrangle longer than broad (about 11 : 8.7); lower paraocular areas punctate nearly as in clypeus; facial fovea rather short, well indicated, broad above, separated from eye margin by a narrow punctate space; vertex rugoso-punctate; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance about 2 : 2.8 : 4.2 : 6; antennae with 3rd segment longer than 4th plus 5th; cheeks narrower than eyes seen in profile, rounded posteriorly, much receding below, shagreened with an indication of roughened punctures. Mesoscutum weakly tessellate, rather strongly and more or less coarsely punctate with punctures irregular in distribution; scutellum punctate about as in mesoscutum; metanotum strongly roughened, much coarsely sculptured than in *labialis*; propodeum short, much more strongly slanting than in *labialis*, coarsely sculptured; enclosure well indicated, larger than in *labialis*, densely and irregularly wrinkled; mesopleuron coarsely sculptured with very close punctures. Wings with 2nd submarginal cell receiving 1st recurrent vein about middle or slightly before middle of cell; basal vein almost interstitial. Legs with mid basitarsi slender, subequal to hind basitarsi in width; posterior spur of hind tibia widened basally. Metasoma slightly shiny, nearly smooth, very densely and more or less strongly punctate; punctures on 1st tergum slightly sparser and stronger than those on following terga; posterior depressions of 2nd to 4th terga narrow, weakly indicated, densely punctate.

Male. Length 9–11 mm.

Colour: Black; mandibles reddened apically; basal tubercles of mandibles piceous or more reddened; clypeus except for a pair of blackish spots and lower halves of paraocular areas yellow; flagellum except for basal segment ferruginous beneath; wings subhyaline with distal margins slightly darkened; veins and stigma yellowish brown; tegulae yellowish transparent; darkened anteriorly; legs nearly black or obscure piceous, with small segments of tarsi and apices of basitarsi yellowish brown; metasoma black or occasionally apex of 1st tergum and full spaces of 2nd and 3rd terga red; posterior margins of metasomal terga yellowish transparent.



Figs. M-185. Genitalia and associated structures of male *Andrena (Holandrena)*.

Figs. M-185. *Aleriana* Hirashima, 181: dorsal view of genitalia, 182: lateral view of the same, 183: ventral view of the same, 184: 8th sternum, 185: 7th sternum; **figs. 186-190** *Ishikawai* Hirashima, 186: dorsal view of genitalia, 187: lateral view of the same, 188: ventral view of the same, 189: 8th sternum, 190: 7th sternum.

Pubescence: Hairs on head rather short to short, not specially dense, white or partly slightly yellowish; hairs on thorax rather short to more or less long, somewhat dense but not obscure integument, dull grey or slightly yellowish above, whitish below, without admixture of darker hairs; hairs on legs white to yellowish; hairs on metasoma rather short to short, erect, fine, rather dense but not conspicuous, whitish; hairs on 6th tergum rarely brownish; posterior margins of 1st to 4th terga with white hair fringes not conspicuous as in female.

Structure: Head indistinctly broader than thorax seen from above; mandibles moderately long, more or less slender; malar space very narrow; process of labrum transverse, emarginate or nearly bispinose apically; clypeus slightly longitudinally convex, shiny, sparsely and more or less weakly punctate; coloured portion of paraocular areas shiny, sparsely punctate with punctures a little weaker than those on clypeus; clypeus moderately exceeding line running bases of eyes, its index about 2.5 : 1.4; facial quadrangle longer than broad (about 9 : 7); antennae moderately long with 3rd segment approximately twice as long as broad, about as long as or slightly shorter than 4th plus 5th; vertex rugoso-punctate; ratio of postocellar width to ocellocipital distance to postocellar distance to ocellocular distance about 1.5 : 2 : 3.7 : 5; frons longitudinally striate-punctate; cheeks narrower than eyes seen in profile, much receding, nearly shagreened with an indication of weak punctures. Mesoscutum shiny, nearly smooth, distinctly and more or less densely to rather sparsely punctate with punctures sparser and weaker than in *labialis*; punctures on scutellum stronger than those on mesoscutum; metanotum coarsely sculptured; propodeum coarsely sculptured with an indication of dense punctures; enclosure more or less well indicated, coarsely wrinkled; mesopleuron coarsely sculptured with quite close punctures. Wings nearly as in female. Legs slender, as usual. Metasomal terga smooth, shiny, distinctly and rather densely punctate with punctures slightly weaker than those on mesoscutum; punctures on 1st tergum sparser and slightly stronger than those on following terga; posterior depressions of metasomal terga weakly indicated. Genitalia and subgenital sterna as illustrated.

Distribution: Japan (Hokkaido, Honshu and Tsushima).

Specimens examined: From Hokkaido—15 males and 2 females, Nishiashoro, Tokachi, 9. viii. 1953 (Y. Hirashima); From Tsushima—1 male, on the flower of *Justicia procumbens*, Tsutsu, 7. x. 1959 (Y. Hirashima).

Flower records: As stated above, this species has been collected on the flowers of *Trifolium repens* L., *Trifolium pratense* L. and *Justicia procumbens* L.

35. *Andrena* (*Holandrena*) **ishikawai** Hirashima

Andrena (*Holandrena*) *ishikawai* Hirashima, 1958, Mushi, 32 (6) : 70, female; Hirashima, 1960, Mushi, 33 (8) : 53, male.

Two species of the Andrenid bees belonging to the subgenus *Holandrena* are known from the Amami-Islands. One is the present species and the other is the following one, *taniguchiae* Hirashima. They differ from the typical form of the subgenus in having the metasoma being conspicuously shiny and with sparse microscopical punctures and the posterior spurs of the hind tibiae not widened basally, so that they are provisionally included in *Holandrena*.

This species is undoubtedly a close relative of *Andrena formosana* Cockerell, which is a sole species known from Formosa at the present time, but is readily separated from that species in having the metasoma more shiny and more weakly and sparsely punctate.

This species was originally described from Tokunoshima, and the male of it has been recorded from Amami-Oshima, where, according to the collecting data, it appears from the late March to April.

Female: Length about 13 mm.

Colour: Black ; mandibles reddened apically ; basal tubercles of mandibles piceous or more reddened; flagellum beneath reddish brown ; wings yellowish subhyaline, with distal margins darkened ; veins pale brownish or yellowish brown, stigma slightly more darker; tegulae reddish brown subhyaline, darkened anteriorly ; legs piceous with tarsi reddish brown; tibial spurs yellowish; metasoma shiny black, with posterior margins of metasomal terga narrowly yellowish subhyaline.

Pubescence: Hairs on body rather uniformly bright yellowish brown in any one specimen ; hairs on clypeus short, fine, sparse; hairs on antennal regions rather dense, more or less long, branched; facial fovea bright golden in some light; hairs on thorax above slightly brighter than those on underside of thorax, rather short and not specially dense ; propodeum with sparse soft hairs dorsally ; dorsal fringe of propodeal corbicula scanty, composed of rather short, not well arranged, branched hairs ; interior of corbicula with coarse, sparse, simple hairs; hairs on legs similar to those on thorax above except for brownish ones on apices of fore tibiae, posterior faces of mid tibiae and bases of hind tibiae, and for ferruginous hairs on inner sides of tarsi; trochanteral floccus perfect, dense, long and well curled ; femoral floccus long, dense; tibial scopa well developed, composed, of long, coarse, simple, bright golden hairs; metasomal terga scanty of hairs; cilia on 2nd to 4th metasomal terga short, erect, fine, yellowish, those on 1st longer; caudal fimbria rather scanty, fuscous; posterior margins of 2nd appressed, yellowish hairs ; similar hair band presents on 1st tergum which is much sparser and narrower, and slightly obscured medially.

Structure: Head about as broad as thorax seen from above, somewhat thick, more or less transverse in front view; mandibles moderately long, rather slender apically ; malar space very narrow medially, distinctly widened posteriorly ; process of labrum large, deeply emarginate apically ; clypeus well convex, shiny, weakly tessellate, weakly and more or less sparsely punctate with an indication of median, impunctate line ; clypeus slightly exceeding line running bases of eyes, its index about 2.8 : 1.4; facial quadrangle only slightly longer than broad (about 10.3 : 9.3); lower paraocular area coarsely nearly rugoso-punctate with punctures stronger than those on clypeus; facial fovea wide, well indicated, separated from eye margin by a punctate, narrow, raised space; antennae with 3rd segment longer than 4th plus 5th; vertex densely rugoso-punctate; ratio of postocellar width to ocellocipital distance to postocellar distance to ocellocular distance about 2 : 3 : 3.5 : 6.5; cheeks about as broad as large eyes seen in profile, rounded, nearly shagreened posteriorly, shiny and rather finely punctate near eyes. Mesoscutum tessellate with more or less roughened punctures anteriorly, weakly tessellate and weakly to more or less distinctly punctate posteriorly, with punctures irregular in distribution and about as strong as or slightly stronger than those on clypeus; scutellum shiny, nearly as in mesoscutum; propodeum

with dorsal faces tessellate and closely punctate with punctures occasionally slightly roughened, much weaker than those on mesoscutum; posterior face of propodeum roughened; enclosure small, poorly defined, rugose nearly all over; mesopleuron densely punctate with punctures roughened. Wings with 2nd submarginal cell narrowed above, receiving 1st recurrent vein about middle of cell; basal vein interstitial. Legs with mid basitarsi slightly expanded medially, subequal to hind basitarsi in width; posterior spurs of hind tibiae slightly curved basally, not expanded as in *valeriana*. Metasoma oblong, almost polished and highly shiny, with sparse microscopical punctures; posterior depressions of metasomal terga narrow, hardly indicated medially.

Male: Rather slender, length about 10 mm.

Colour: Black; mandibles reddened apically; basal tubercles of mandibles obscure piceous; clypeus except for a pair of blackish spots and lower paraocular areas yellow; flagellum beneath reddish brown; wings yellowish or brownish subhyaline with distal margins slightly darkened; veins and stigma brownish; tegulae reddish brown transparent; legs black or occasionally obscure piceous, with small segments of tarsi brownish, or occasionally hind tibiae and basitarsi obscure reddish brown; metasoma shiny black or partly obscure piceous, with posterior margins of metasomal terga yellowish brown subhyaline.

Pubescence: Hairs on body rather uniformly light fulvous in any one specimen; hairs on face rather short, more or less dense but not obscure integument; hairs on thorax above bright fulvous in fresh specimens, more or less long and dense; hairs on metasomal terga short, fine, erect, occasionally slightly brownish on apical terga; metasomal terga lacking apical hair fringes.

Structure: Head indistinctly broader than thorax seen from above, more or less transverse in front view; mandibles moderately long, rather slender; malar space obsolescent; process of labrum transverse, rather small, shiny, emarginate apically; clypeus longitudinally well convex, shiny, weakly and sparsely punctate; clypeus slightly exceeding line running bases of eyes, its index about 2.3:1; facial quadrangle slightly longer than broad (about 7.7:6.5); coloured portion of paraocular areas slightly more strongly and densely punctate than in clypeus; antennae more or less elongate with 3rd segment about one and one-half times as long as broad, longer than 4th which is about as long as or indistinctly longer than broad; 5th segment a little shorter than 3rd and subequal to following segments in length; ratio of postocellar width to ocellocipital distance to postocellar distance to ocellocular distance about 1.4:1.5:2.8:5; vertex almost shagreened; ocellocular space deeply concave; cheeks slightly narrower than large eyes, receding, shagreened. Mesoscutum very weakly tessellate, strongly shiny, more or less densely punctate with punctures stronger than those on clypeus; scutellum nearly as in mesoscutum; propodeum nearly shagreened with an indication of round, separated punctures which are much weaker than those on mesoscutum; enclosure poorly defined, rugose nearly all over; mesopleuron strongly punctured, roughened. Wings as in female. Legs as usual. Metasoma elongate, polished and highly shiny, with an indication of sparse microscopical punctures; posterior depressions of metasomal terga narrow, poorly indicated. Genitalia and subgenital sterna as illustrated.

Distribution: Japan (Tokunoshima and Amami-Oshima).

Specimens examined: 8 males, Amami-Oshima, 1. iv. 1958 (M. Takahashi).

Flower record: Not available.

(36) *Andrena (Holandrena) taniguchiae* Hirashima

Andrena (Holandrena) taniguchiae Hirashima, 1958, Mushi, 32 (6): 71, female.

Unfortunately this species is known only from the female. The female of this species is easily separated from that of *ishikawai* by the presence of fuscous hairs on the head, thorax and legs. It is also readily recognized in lacking the apical hair bands on the metasomal terga.

According to the collecting data, this species appears from April to May, and has been collected on *Torilis*.

Female: Length 12–13 mm.

Colour: Black; mandibles broadly reddened apically; basal tubercles of mandibles also reddened; flagellum reddish brown beneath; wings subhyaline with distal margins darkened; veins and stigma brown; tegulae deep reddish brown, blackish anteriorly; legs obscure piceous with tarsi or sometimes further hind tibiae reddish brown; tibial spurs yellowish or yellowish brown; metasoma deep shiny black, with posterior margins of terga brownish or narrowly yellowish brown subhyaline.

Pubescence: Hairs on head rather short, not dense; hairs on clypeus, supra-clypeal and antennal regions and cheeks whitish, those on sides of face, frons, vertex and cheeks above fuscous; facial fovea bright brown in some light, only slightly paler beneath; hairs on mesoscutum, scutellum and metanotum rather short, not specially dense, primarily fuscous, and those on the rest of thorax whitish; propodeum with sparse soft hairs dorsally; dorsal fringe of propodeal corbícula scanty, composed of rather short, branched hairs; interior of corbícula with coarse, simple hairs; trochanteral floccus nearly perfect, long, dense, white; femoral floccus long, dense, silver white; tibial scopa well developed, composed of rather long, more or less coarse, simple, well arranged hairs; tibial scopa fuscous, slightly paler or occasionally yellowish in front; hairs on tibiae of fore and mid legs also brownish to fuscous; metasoma scanty of hairs; hairs or cilia on 1st tergum white, those on following terga brown; caudal fimbria fuscous; posterior margins of metasomal terga without any trace of hair fringes.

Structure: Head slightly broader than thorax seen from above, more or less thick, subquadrate in front view; mandibles long, more or less slender apically, malar space very narrow, widened posteriorly; process of labrum large, deeply emarginate apically; clypeus well convex, finely tessellate, more or less strongly punctate with an indication of median, longitudinal, impunctate line; clypeus rather short, only slightly exceeding line running bases of eyes, its index about 2.8 : 1.3; facial quadrangle about as long as broad (about 10 : 9.5); lower paraocular areas strongly punctate with punctures subcontiguous and slightly stronger than those on clypeus; facial fovea conspicuous, very wide above, separated from eye margin by a narrow, punctate, raised space; antennae with 3rd segment longer than 4th plus 5th; vertex densely rugoso-punctate or nearly roughened; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance about 2 : 3 : 3.5 : 7; cheeks about as broad as large eyes in lateral view, rounded, densely tessellate-punctate.

Mesoscutum tessellate, weakly shiny, more or less strongly punctate with punctures irregular in distribution, about as strong as or slightly stronger than those on clypeus; punctures on mesoscutum approximately as strong as in *ishikawai*; scutellum shiny anteriorly, punctate nearly as in mesoscutum; propodeum

shagreened with an indication of roughened or occasionally round and separated punctures, nearly dull; enclosure poorly indicated, rugose to rugulose, almost as coarsely sculptured as dorsal face of propodeum; mesopleuron densely and strongly punctate, nearly roughened. Wings with 2nd submarginal cell narrowed above, receiving 1st recurrent vein about middle of cell; basal vein about interstitial. Legs with mid basitarsi only slightly expanded medially, subequal to hind basitarsi in width; posterior spurs of hind tibia slightly curved near base, not widened as in *valeriana*. Metasoma oblong, polished and highly shiny, scattered with microscopical fine punctures which are indistinctly stronger than in *ishikawai*; posterior depressions of terga narrow, very weakly indicated.

Distribution: Japan (Amami-Oshima).

Specimens examined: Since the description of this species in 1958, I was able to examine the following specimens from Amami-Oshima: 1 female, Naze, 3. v. 1931 (S. Asahina); 1 female, 2. iv. 1958 (M. Takahashi).

Flower record: *Torilis an thriscus* Gmel.

10. Subgenus *Hoplandrena* Pérez

Hoplandrena Pérez, 1890, Act. Soc. Linn. Bordeaux, 44: 170; Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 214; Hirashima, 1952, Mushi, 24: 65.

Type-species: *Melitta trimmerana* Kirby, 1802. (By designation of Hedicke, 1933.)

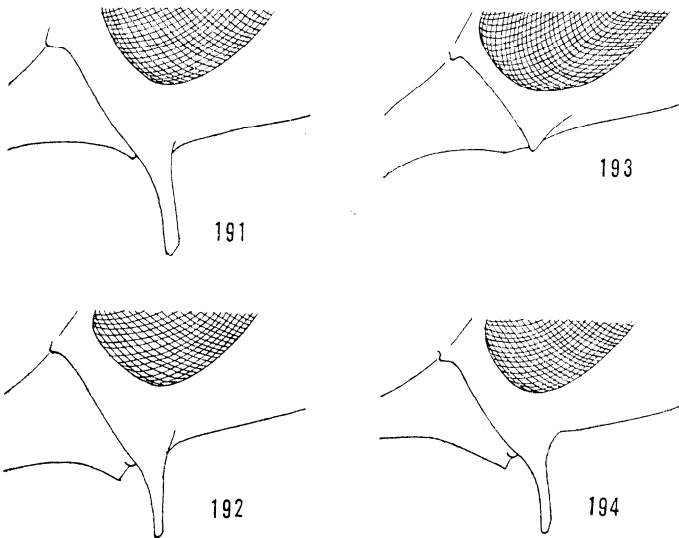
Diagnosis: The subgenus is especially characterized by the elongate antennae and the well indicated malar space of the male. The 3rd segment of the male antenna is slightly broader than long, one-half as long as the next segment which is slightly longer than 5th. The 5th segment is slightly less than twice as long as broad, about as long as the following segments which are distinctly convex in front. The male malar space is well indicated, angulate or dentate beneath. The mandibles of the males are moderate in size or elongate with the falciform apices. The females of the subgenus are characterized in having the propodeal corbicula not specially well developed, with the dorsal fringe of long, dense, not specially well arranged hairs, no fringe of hairs anteriorly, the interior of the corbicula with sparse, simple hairs throughout. The trochanteral floccus is imperfect, short and scanty; the tibial scopa well developed with long, dense, simple hairs; the metasoma densely tessellate, usually impunctate. In the type species of the subgenus, the metasoma is distinctly hairy, without any fringe of hairs on the posterior margins of the terga, but the metasoma is scanty of hairs and appressed hair bands present in our species.

The subgenus is found in the Old World. So far as known, it is represented by four species in Japan.

Description: Medium-sized to large species, integument black on black and ferruginous. Inner margins of eyes subparallel or slightly convergent above; process of labrum entire, flat in female and slightly convex in male; malar space evident; thorax with or without black pubescence; enclosure of propodeum usually finely sculptured, occasionally wrinkled basally; propodeum outside enclosure tessellate-punctate or nearly shagreened, not distinctly roughened; fore wings with three submarginal cells; metasoma densely tessellate, with or without an indication of very weak punctures in female, less tessellate in male; posterior

depressions of metasomal terga weakly indicated.

Female: Facial fovea wide, with upper end occupying nearly full space between eye and post ocellus, not sharply indicated, separated from eye by a very narrow space; antennae with intermediate segments of flagellum longer than broad, with 3rd segment about as long as or shorter than 4th plus 5th; propodeal corbicula with dorsal fringe of long, dense, not specially well arranged hairs, no fringe of hairs anteriorly, interior with sparse, coarse, simple hairs throughout; trochanteral floccus imperfect, short and scanty; tibial scopa well developed, composed of long, dense, simple hairs; mid basitarsi indistinctly widened medially, about as broad as hind basitarsi; posterior spur of hind tibia normal; posterior margins of metasomal terga with narrow appressed hair fringes in Japanese species.



Figs. 191-194. Malar space and its modification in male *Andrena* (*Hoplandrena*).

Fig. 191 : *dentata* Smith, 192 : *miyamotoi* sp. nov., 193 : *sachalinensis* Yasumatsu, 194 : *macrocephs* Matsumura.

Male: Clypeus black; head large, usually much broader than thorax; mandibles moderate or elongate with falciform apices; malar space angulate beneath or frequently with sharp spine; antennae elongate, 3rd antennal segment at most as broad as long, one-half as long as 4th segment, 5th and following segments a little less than twice as long as broad, distinctly convex in front; cheeks usually broader than eyes, rounded or angulate behind; genitalia small; with parapenial lobe rounded or only slightly produced, paramere slender, aedeagus slender, expanded apically, with sides not excavated.

(37) *Andrena* (*Hoplandrena*) *dentata* Smith

Andrena dentata Smith, 1879, Descr. New Spec. Hym., 51, male; Dalla Torre, 1896,

Cat. Hym., 10 : 117; Cockerell, 1913, Ann. Mag. nat. Hist., (8) 11: 189, male ; Tosawa, 1932, List Ins. Minoo Park, Osaka, 101; Yasumatsu, 1938, Ins. Jap. Illustr. Icon. Color. ad Nat. Depicta, 378, pl. 168, fig. 658, 1; Yasumatsu, 1941, Peking Nat. Hist. Bull., 15: 275; Yasumatsu, 1950, Icon. Ins. Jap., 2nd ed.: 1482, fig. 4279, female and male ; Uéda, 1954, Trans. Shikoku ent. Soc. 4: 50.

Andrena biscutata Perez, 1905, Bull. Mus. d'Hist. Nat. Paris, 1905: 33, female and male ; Cockerell, 1913, Ann. Mag. nat. Hist., (8) 11: 190. *New synonym.*

This species is one of the commonest *Andrena* which flies in spring and primarily associates with the flowers of *Brassica*. The range of this species is restricted to western Japan and it has not been collected in the mountainous regions.

The male of this species is easily recognized by the large head, the strongly convex and shiny clypeus and the long spines on the posterior portions of the malar spaces. The female is so closely related to that of the following species, *Andrena miyamotoi* sp. nov., that it is difficult to separate it from the latter if the characters such as the more strongly punctate and less tessellate clypeus and the absence of black hairs on the mesoscutum are ignored.

Synonymy: It was revealed that *Andrena biscutata* Perez, 1905 is identical with *Andrena dentata* Smith, 1879, as the result of Dr. Berland's comparison of the type specimen of *biscutata* with the specimens of *dentata* sent from Japan for examination.

Female. Length 12-13 mm., occasionally smaller.

Colour: Black ; mandibles reddened apically ; malar space piceous or nearly so ; flagellum coffee brown to reddish brown beneath; wings slightly brownish subhyaline with distal margins slightly more darkened; veins and stigma nearly brown ; tegulae nearly reddish brown posteriorly, blackened anteriorly ; legs piceous, tarsi reddish brown or more brownish; tibial spurs pale yellowish brown ; posterior margins of metasomal terga reddish brown to nearly pale transparent apically.

Pubescence. Hairs on head and thorax rather short to more or less long, not dense, those on metasoma scanty; hairs on clypeus short, sparse, whitish, those on lower paraocular areas and antennal regions dull gray; hairs on frons, vertex and cheeks above near eyes fuscous; hairs on the rest of cheeks whitish, not specially long and dense ; facial fovea blackish brown, indistinctly paler beneath; hairs on mesoscutum brownish to dark yellowish brown, paler anteriorly; hairs on mesoscutellum longer and slightly more yellowish; hairs on dorsal face of propodeum more or less dense, moderately long, whitish or white; dorsal fringe of propodeal corbícula with long, rather dense, white hairs; interior of corbícula with coarse, simple white hairs ; hairs on mesopleuron moderately long, not specially dense, white trochanteral floccus imperfect, short and scanty; femoral floccus long, dense, silver white ; tibial scopa large, composed of long (hairs on outer faces and posterior margin of hind tibia about equal to or slightly shorter than tibial width), more or less well arranged, somewhat coarse, simple hairs; tibial scopa brown, silver white in front; hairs on 1st tergum and median base of 2nd long, nearly erect, soft, white; cilia on 2nd and following terga brown; caudal fimbria deep brown or nearly fuscous; 3rd and 4th terga each with a complete, narrow band of short, appressed, white hairs; 2nd tergum with lateral fringes of similar hairs.

Structure: Head of moderate size, about as broad as thorax seen from above, rather transverse in front view; mandibles moderately long, robust; malar space evident, about one-third time as long as base of mandible, nearly smooth or

indistinctly acupunctate, shiny ; malar space angled posteriorly close to posterior bases of mandibles; process of labrum short, condensed trapezoid, with apical margin entire; clypeus well convex, tessellate basally and laterally, broadly nearly smooth medially, coarsely and rather strongly punctate with an indication of median, longitudinal, raised line ; clypeus more or less well exceeding line running bases of eyes, its index about 2.6 : 2; supraclypeal area shagreened, dull ; lower paraocular areas tessellate, weakly shiny, somewhat weakly punctate with punctures much weaker than those on median portion of clypeus; facial quadrangle longer than broad (about 11 : 9.7); facial fovea broad but not well indicated, separated from eye by a narrow raised line; antennae with 3rd segment a little shorter than 4th plus 5th, which are longer than wide respectively; ratio of postocellar width to ocellocipital distance to postocellar distance to ocellocular distance is about 2 : 3 : 3.5 : 7; vertex just behind ocellar region shagreened or more roughened ; cheeks slightly broader than eyes seen in profile, convex, receding below, broadly nearly shagreened, narrowly smooth with weak punctures near eyes. Mesoscutum tessellate, especially strongly so anteriorly, sparsely and weakly punctate with punctures much weaker than those on clypeus; scutellum slightly convex, nearly smooth and shiny anteriorly, roughened posteriorly, more sparsely and weakly punctate than in mesoscutum; propodeum shagreened with shallow, somewhat roughened punctures ; enclosure ill defined, densely tessellate, narrowly nearly rugulose basally; mesopleuron shagreened, a little less coarsely sculptured than in propodeum with an indication of very weak punctures, nearly dull. Wings with 2nd submarginal cell narrowed above, receiving 1st recurrent vein beyond middle of cell; basal vein slightly to distinctly basad of nervulus. Legs with mid basitarsi very slightly expanded medially, about as broad as hind basitarsi ; posterior spurs of hind tibiae slightly curved. Metasomal terga densely tessellate, with an indication of very weak, sparse punctures, nearly dull or feebly shiny; posterior depressions of terga not well indicated, tessellate except apices.

Male: Length 9—11 mm.

Colour: Black ; mandibles reddened apically; occasionally malar space piceous; flagellum except basal segment brown beneath; wings subhyaline, with distal margins slightly darkened; veins and stigma brown or the latter reddish brown; legs piceous with tarsi brownish; metasoma piceous, sometimes basal sterna and bases of 2nd and 3rd terga yellowish; posterior margins of metasomal terga broadly pale yellowish transparent.

Pubescence: Hairs on head and thorax long and rather dense, those on metasoma short and scanty; hairs on head white or dull white except for nearly black hairs on sides of face, frons and cheeks above; hairs on clypeus dense laterally but not obscure integument; hairs on thorax slightly yellowish to pale fulvous above, pale to white below; thorax nowhere mixed with brown to blackish hairs; hairs on legs white to golden, occasionally slightly brownish on fore and mid tibiae ; hairs on 1st and 2nd metasomal terga sparse, white; cilia on 2nd and following terga slightly brownish ; hairs on 6th terga yellowish brown; posterior margins of 2nd to 4th metasomal terga with short sparse white hairs not forming distinct fringes.

Structure: Head large, much broader than thorax seen from above, mandibles long, slender, with sharp apices; malar space long, about one-half as long as base of mandibles, sparsely acupunctate, shiny ; malar space with long slender spine

posteriorly which is about three-fourths times as long as base of mandible, rarely shorter; process of labrum transverse, convex, smooth and shiny; clypeus with subapical portion strongly convex, smooth, shiny, with strong, (sparse punctures; basal and lateral portions of clypeus densely tessellate-punctate with punctures weaker than those on median portion of clypeus; clypeus not much exceeding line running bases of eyes, its index about 5.8 : 1.7; facial quadrangle slightly longer than broad (about 9.2 : 8.3); antennae elongate with 3rd segment as long as broad, 4th a little more than twice as long as broad, 5th and following segments approximately twice as long as broad and slightly convex beneath; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance is 1.6 : 3 : 3.8 : 6.4; vertex just behind ocellar region convex in front view; cheeks elongate and angled posteriorly, its outline distinctly convergent behind seen from above, nearly smooth and weakly punctate near eyes, tessellate with weak punctures posteriorly. Pronotum thick with a sharp posterior edge; mesoscutum tessellate, densely so anteriorly, weakly so ro nearly smooth medially, with sparse, weak punctures which are weaker than those on clypeus, weakly shiny; scutellum well convex, smooth and weakly punctate anteriorly, roughened posteriorly; propodeum shagreened or more roughened with an indication of roughened punctures; enclosure ill defined, less coarsely sculptured than dorsal face of propodeum; mesopleuron slightly less coarsely sculptured than in propodeum, nearly shagreened with an indication of sparse, weak punctures. Wings nearly as in female. Legs slender, without special modification. Metasoma elongate; metasomal terga tessellate, with or without an indication of very weak punctures; posterior depressions of metasomal terga well indicated, nearly smooth. Genitalia and subgenital sterna as illustrated.

Distribution : Japan (Honshu, Shikoku and Kyushu).

Specimens examined : A long series of specimens from Honshu, Shikoku and Kyushu were examined, the majority of which is taken in April. The collectors are: T. Kobayashi, H. Masuda, S. Miyamoto, K. Sato, K. Yasumatsu, and Y. Hirashima.

Flower record : This species usually associates with flowers of *Brassica* spp. and several other species (also see Miyamoto, 1960).

(38) *Andrena (Hoplاندrena) miyamotoi* sp. nov.

This species is a close relative of *Andrena dentata* Smith, from which it is distinguishable at a glance by the presence of black hairs on the head and thorax. The female is further distinguished from that of *dentata* by the clypeus more tessellate and slightly less punctate, and the mesoscutum less tessellate and more sparsely punctate. The male is rather easily separated from that of *dentata* by the head smaller, the vertex just behind the ocellar region not convex in front view, the clypeus less convex and the spine on the malar space shorter.

This species has been collected from the mountainous regions of Kyushu and northern Honshu. It has two generations in a year. Adults of the first generation fly in May and those of the second in August.

Female : Slightly smaller than in *Andrena dentata*, 11-12 mm. in length.

Colour : Black; mandibles reddened apically, flagellum beneath brownish in

1st generation, reddish brown in 2nd; wings subhyaline with distal margins slightly more darkened; veins and stigma yellowish brown; legs obscurely piceous with tarsi deep reddish brown; posterior margins of metasomal terga reddish brown to nearly pale transparent apically.

Pubescence: Hairs on head and thorax not specially long and dense, those on metasoma scanty; hairs on head whitish to pale except for brown or fuscous hairs on scapes, frons, vertex and cheeks above; hairs on clypeus sparse, downy, rather fine; facial fovea fuscous above, a little paler below (distinctly paler and nearly whitish in specimen from Honshu); hairs on mesoscutum predominantly fuscous or nearly black, -pale ochreous anteriorly; hairs on scutellum fuscous, paler laterally; hairs on metanotum pale ochreous mixed with sparse fuscous ones; hairs on propodeum pale, those on dorsal face slightly shorter than dorsal fringe of corbicula; dorsal fringe of propodeal corbicula long, dense, rather well arranged; interior of corbicula with sparse, coarse, silvery hairs; hairs on mesopleuron moderately long, pale; trochanteral floccus imperfect, very scanty, silvery white; femoral fioccus dense, long, silver white; tibial scopa compact, composed of moderately long, well arranged, more or less coarse hairs; tibial scopa silver white in front, brownish to fuscous above; hairs on 1st metasomal terga long, sparse, pale; cilia on 2nd and following terga brown to fuscous; caudal fimbria fuscous; posterior margins of 3rd and 4th terga each with a complete band of short, dense, appressed white hairs; posterior margins of 2nd terga with lateral fringes of similar hairs

Structure: Head of moderate size, about as broad as thorax seen from above, somewhat transverse in front view; mandibles moderately long, robust; malar space about one-fourth time as broad as base of mandible; process of labrum transverse with apical margin entire; clypeus well convex, tessellate, rather densely and more or less coarsely punctate with an indication of median, longitudinal, raised, impunctate line; clypeus slightly exceeding line running bases of eyes, its index 2.4 : 1.6; supraclypeal area shagreened; facial quadrangle longer than broad (about 9.3 : 8.3); antennae with 3rd segment shorter than next two segments together; 4th segment slightly longer than broad, 5th and following segments slightly more elongate; facial fovea very broad but not sharply defined, separated from eye margin by a narrow space; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance is 1.7 : 2.3 : 3.5 : 6.0; cheeks slightly broader than eyes seen in profile, slightly convex above, receding below, very weakly punctate near eyes, tessellate posteriorly. Mesoscutum less tessellate than in *dentata*, irregularly punctate with punctures sparser than in *dentata*, with enamel-like lustre; scutellum shiny, very weakly punctate, roughened posteriorly; propodeum with dorsal face nearly roughened with an indication of dense, roughened punctures; enclosure ill defined, less coarsely sculptured than dorsal face of propodeum; mesopleuron densely tessellate or nearly shagreened with an indication of weak punctures. Wings with 2nd submarginal cell receiving 1st recurrent vein beyond middle of cell; basal vein about interstitial with or distad of nervulus. Legs with middle basitarsi scarcely expanded medially, subequal to hind basitarsi in width; posterior spurs of hind tibiae normal. Metasomal terga densely tessellate, without distinct punctures, weakly shiny; posterior depressions of terga weakly indicated, tessellate.

Male: Length 9–10 mm., rarely smaller.

Colour: Black; mandibles reddened apically; flagellum brownish beneath;

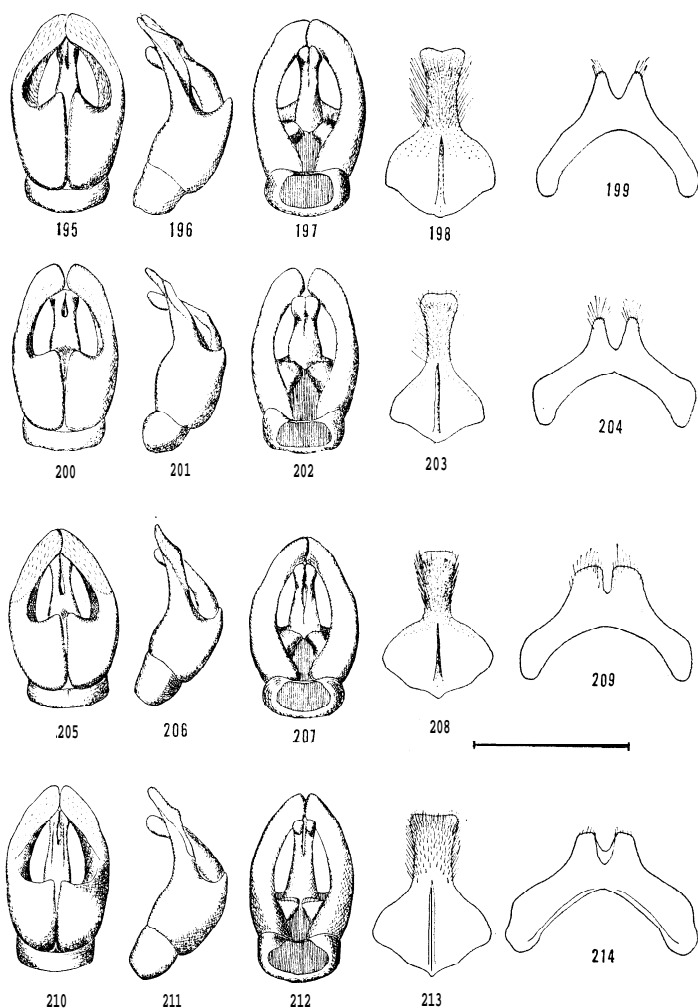
wings smoky, with distal margins a little darkened; veins and stigma reddish brown or nearly brown; tegulae deep reddish brown, blackened anteriorly ; *legs* piceous with tibiae and tarsi more reddened or the latter deep reddish brown; metasoma not at all black, partly piceous; posterior margins of metasomal terga broadly pale yellowish transparent.

Pubescence: Hairs on head and thorax rather long and dense, those on metasoma, except for hairs on 1st and base of 2nd metasomal terga, much shorter and not so conspicuous; hairs on head fuscous or nearly black except for sparse whitish ones on antennal regions, occiput and cheeks beneath; hairs on face including clypeus much longer and denser than in *dentata* but not distinctly obscure integument; hairs on thorax dull white mixed with fuscous or blackish hairs on mesoscutum, scutellum, metanotum and mesopleuron ; rarely sparse fuscous hairs present on propodeum, and occasionally hairs on mesopleuron nearly all fuscous ; hairs on legs white to fuscous; hairs on 1st and median base of 2nd terga long, sparse, whitish ; cilia on 3rd and following terga brownish to nearly black ; hairs on 5th and 6th terga nearly all black; posterior margins of 2nd to 4th terga with narrow fringes of short, sparse, white hairs; fringes of 3rd and 4th nearly complete; hairs on metasomal sterna brownish to brown.

Structure: Head large, broader than thorax seen from above, somewhat transverse in front view; head comparatively smaller than in *dentata*; mandibles moderately to rather distinctly elongate, rather slender, with sharp apices; malar space evident, shiny, about one-fourth time as long as base of mandible; malar space with a long, sharp spine posteriorly which is at most about one-half as long as base of mandible, occasionally rudimental; process of labrum short, transverse, convex ; clypeus not strongly convex medially (less convex than in *dentata*), densely tessellate-punctate basally and laterally, nearly smooth and more strongly and sparsely punctate medially; clypeus slightly exceeding line running bases of eyes, its index about 1.8 : 1.4; facial quadrangle slightly longer than broad (about 7.8 : 7.2); antennae elongate with 3rd segment a little broader than long, 4th a little more than twice as long as broad, 5th and following segments about twice as long as broad and slightly arched in front ; vertex behind ocellar region hardly or very slightly convex seen in front; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance about 1.4 : 2.0 : 3.3 : 5.5; cheeks much broader than eyes, angulate posteriorly, its outline convergent seen from above, very weakly punctate near eyes, densely tessellate posteriorly. Mesoscutum tessellate, especially densely so anteriorly, sparsely punctate with punctures much weaker than those on median portion of clypeus and irregular in distribution ; scutellum well convex, weakly tessellate or sometimes nearly smooth anteriorly, shagreened or nearly roughened posteriorly, with weak, sparse punctures; propodeum nearly roughened with an indication of rather dense, more or less roughened punctures; enclosure more or less well indicated, much less coarsely sculptured than dorsal face of propodeum; mesopleuron slightly less coarsely sculptured than propodeum. Wings nearly as in female. Legs slender, as usual. Metasoma elongate, shiny ; metasomal terga tessellate or occasionally weakly so, almost impunctate ; posterior depressions not wide, more or less well indicated, nearly smooth. Genitalia and subgenital sterna as illustrated.

Distribution: Japan (Honshu and Kyushu).

Type material: Hototype male and 5 paratopotype males, Mt. Hikosan, Yrov.



Figs 195-21-L Genitalia and associated structures of male *Andrena* (*Hoplandrena*).
 Figs. 195-199: *dentata* Smith, 195: dorsal view of genitalia, 196: lateral view of the same, 197: ventral view of the same, 198: 8th sternum, 199: 7th sternum; **figs.** 200-204: *miyamotoi* sp. nov., 200: dorsal view of genitalia, 201: lateral view of the same, 202: ventral view of the same, 203: 8th sternum, 204: 7th sternum; **figs.** 205-209: *sachalinensis* Yasumatsu, 205: dorsal view of genitalia, 206: lateral view of the same, 207: ventral view of the same, 208: 8th sternum, 209: 7th sternum; **figs.** 210-214: *pruniphora* sp. nov., 210: dorsal view of genitalia, 211: lateral view of the same, 212: ventral view of the same, 213: 8th sternum, 214: 7th sternum.

Buzen, Kyushu, 6. v. 1951 (Y. Hirashima); allotopotype female and paratopotype female, 13. v. 1955 (Esaki, Yasumatsu and Hirashima); 2 paratopotype males, 1,000 m., 4. v. 1937 (K. Yasumatsu); paratopotype male, 19. v. 1950 (Y. Hirashima); 2 paratopotype males, 9. v. 1951 (Y. Hirashima); paratopotype male, 11. v. 1952 (Y. Hirashima); paratopotype female, 5. vii. 1951 (K. Yasumatsu); paratype male, Towadayama, Aomori Pref., 27. v. 1958 (R. & F. Ishikawa); paratype female, Tsuta, Towada, Aomori, Pref., 28-30. v. 1938 (R. Ishikawa).

Flower record: No flower record is available for this species.

Type depository: All the specimen cited above are preserved in the collection of the Entomological Laboratory, Kyushu University.

(39) *Andrena (Hoplandrena) sachalinensis* Yasumatsu

Andrena florea sachalinensis Yasumatsu, 1930, Ins. Mats., 13 : 66, female; Yasumatsu, 1941, Peking Nat. Hist. Bull., 15: 275.

Although this species has been described as a subspecies of *Andrena florea* Fabricius of Europe, it is not at all related to the latter which does not belong to the subgenus *Hoplandrena*. The female of *sachalinensis* resembles closely that of *Andrena rosae* Panzer of Europe, but the male is easily distinguished from the male of that species by the absence of the long spine on the malar space. Amongst the species of our *Hoplandrena*, this species is easily known by the metasoma distinctly reddened basally in the female, and weakly so in the male.

This species has hitherto been known from Saghalien, but I was able to examine a short series of male and female specimens taken in Hokkaido where it flies, according to the collecting data, from June to August. It seems probable that this species is rather common in Saghalien and Hokkaido and has two generations a year.

Female: Length 11---12.5 mm.

Colour: Black; mandibles reddened apically; flagellum beneath piceous or more reddened; wings slightly brownish subhyaline, with distal margins scarcely darkened; veins and stigma nearly brown; tegulae deep reddish brown, blackened inwardly; legs black or nearly piceous, tarsi more reddened, small segments of tarsi reddish brown; sometimes hind tibiae obscurely reddened; tibial spurs pale yellowish brown; metasoma with apical half of 1st tergum and 2nd and 3rd terga entirely or broadly red in 1st generation, more broadly blackened in 2nd; posterior margins of basal terga broadly pale yellowish transparent.

Pubescence: Hairs on head rather short, not specially dense, those on thorax rather short to more or less long, somewhat sparse above, those on metasoma short and very scanty; hairs on clypeus pale, mixed with sparse pale brownish ones; hairs on antennal regions and cheeks whitish; hairs on frons, vertex and cheeks near eyes nearly fuscous; facial fovea nearly fuscous, obscurely paler below; hairs on mesoscutum predominantly nearly fuscous, narrowly pale anteriorly; hairs on scutellum fuscous, paler laterally; propodeum with rather dense whitish hairs forming dense, not well arranged fringe of corbicula laterally; interior of corbicula with coarse, silver white hairs; mesopleuron with rather dense, not specially long, whitish hairs; hairs on tibiae and tarsi of fore and mid legs fuscous; trochanteral floccus imperfect, very scanty, white; femoral floccus rather dense, long, silver white; tibial scopa rather well developed, com-

posed of moderately long, well arranged, somewhat coarse simple hairs which are narrowly silver white in front, broadly nearly fuscous posteriorly; hairs on 1st tergum sparse, long, white; cilia on 2nd tergum very sparse, pale those on following terga pale to brown, caudal fimbria scanty, fuscous; posterior margins of 3rd and 4th terga each with a complete band of short, appressed, pure white hairs; 2nd tergum without any fringe of such hairs.

Structure: Head of moderate size, about as broad as thorax seen from above, somewhat distinctly transverse in front view; mandibles moderately long, stout; malar space evident, about one-third time as long as base of mandible; process of labrum rather large, transverse, with apical margin nearly entire; clypeus well convex, densely rugoso-punctate tessellate above and laterally, with a median, longitudinal, raised, impunctate, space; clypeus slightly exceeding line running bases of eyes, its index about 2.3 : 1.4; facial quadrangle slightly longer than broad (about 9.6 : 8.8); facial fovea broad but not sharply impressed; antennae with 3rd segment approximately as long as next two segment together; 4th segment about as long as broad, 5th and following segments longer than broad; ratio of postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance is 1.6 : 2.7 : 3.2 : 6.2; vertex shagreened; cheeks rounded, not much exceeding, about as broad as eyes seen in profile, tessellate or nearly shagreened near eyes. Mesoscutum tessellate, especially so anteriorly, weakly shiny, with rather weak, somewhat roughened, sparse punctures which are irregular in distribution; scutellum slightly convex, sculptured nearly as in mesoscutum with punctures slightly denser; propodeum nearly roughened with indication of roughened punctures, dull; enclosed not sharply indicated, less strongly sculptured than dorsal face of propodeum, rugulose basally, weakly tessellate apically; mesopleuron nearly roughened with an indication of weak punctures. Wings with 2nd submarginal cell receiving 1st recurrent vein near middle of cell; basal vein distad of nervulus. Legs with middle basitarsi slightly expanded medially, subequal to hind basitarsi in width; hind tibia slightly widened apically; hind tibial spurs normal. Metasomal terga densely tessellate, with an indication of very weak, sparse punctures; posterior depressions of terga rather narrow, slightly indicated, weakly tessellate and impunctate.

Male (New to science): Length about 10 mm.

Colour: Black; mandibles reddened apically; flagellum beneath nearly piceous; wings hyaline, with distal margins slightly darkened; veins and stigma brownish; tegulae bright brown; legs piceous, becoming brownish to yellowish brown toward distitarsi; metasoma not at all black, obscurely to distinctly piceous, or occasionally partly reddened; posterior margins of metasomal terga broadly yellowish transparent.

Pubescence: Hairs on head rather abundant but not specially long; hairs on clypeus, sides of face, frons, vertex, cheeks near eyes nearly fuscous, those on the rest of head dull grayish white; hairs on thorax above not specially dense, dull white, mixed with brownish or fuscous ones on mesoscutum and scutellum; hairs on mesoscutum longer than in *pruniphora* sp. nov., hairs on propodeum and sides of thorax much longer than those on mesoscutum, dull white; hairs on metasoma short, sparse, those on 1st and base of 2nd terga whitish, those on the rest of 2nd and following terga brownish fuscous; posterior margins of 3rd and 4th metasomal terga each with a sparse fringe of short white hairs not well arranged in compact fringes.

Structure: Head transverse in front view, slightly broader than thorax seen from above; mandibles rather short, slender; malar space not dentate or sometimes angulate beneath, about one-fourth time as long as base of mandible; process of labrum rather short, transversely convex; clypeus well convex, densely and more or less strongly rugoso-punctate, weakly shiny medially; clypeus only slightly exceeding line running bases of eyes, its index about 2 : 0.8; facial quadrangle approximately as long as broad (about 7 : 6.6); antennae elongate, with 3rd segment about as long as broad, 4th and following segments a little less than twice as long as broad; 5th segment slightly, and following segments rather distinctly convex beneath; frons with an indication of roughened punctures; ratio of post-ocellar width to ocellocipital distance to postocellar distance to ocellocular distance is 1.5 : 2.7 : 3.3 : 5.0; cheeks about as broad as eyes, rather receding, very weakly punctate. Mesoscutum almost smooth subposteriorly, tessellate elsewhere, sparsely punctate with punctures round, shallow, irregular in distribution, subcontiguous to several puncture widths apart; scutellum well convex, sparsely punctate and shiny anteriorly, roughened or nearly so and dull posteriorly; propodeum shagreened or nearly roughened with an indication of roughened punctures, dull; enclosure ill defined, much more finely sculptured than dorsal face of propodeum, rugulose basally; mesopleuron densely tessellate, with weak, somewhat roughened punctures, dull. Wings nearly as in female. Legs slender, as usual. Metasoma elongate, shiny; metasomal terga nearly smooth, with very weak, not dense punctures; posterior depressions of terga not sharply indicated. Genitalia and subgenital sterna as illustrated.

Distribution: Saghalien and Hokkaido.

Specimens examined: From Hokkaido: 1 male and 2 females, Nishiashoro, Tokachi, 1-2. viii. 1949 (R. Matsuda); 3 males (one is allotype), Piuka, Teshio, 21. vii. 1952 (T. Shirozu); 1 female, Osappe, Lake Kuccharo, 5. vi. 1957 (M. Takahashi); 1 female, Notsukezaki, Prov. Nemuro, 30. vi. 1957 (R. Ishikawa).

Flower record: Not available.

(40) *Andrena (Hoplandrena) pruniphora* sp. nov.

The male of this species is very close to that of *Andrena sachalinensis* Yasumatsu but is distinguished from it by the head comparatively larger, the clypeus more strongly punctate with the punctures larger and the interspaces slightly more wide, the 6th antennal segment longer, the hairs on the head and thorax much shorter, and the metasomal terga with more distinct punctures. The female of this species is easily separated from that of *sachalinensis* by the metasoma black and further by the absence of fuscous hairs on the thorax. The latter character also separates this species from *Andrena dentata* Smith and *miyamotoi* Hirashima.

So far as the present data are concerned, this species occurs in Hokkaido, Honshu and mountainous region of Kyushu. It has two generations a year. The bees of the first generation fly in April and May, and the second in August.

Female: Length 11-12 mm.

Colour: Black; mandibles reddened apically; flagellum beneath reddish brown; wings smoky with distal margins slightly more darkened; veins and stigma brown; tegulae deep reddish brown; legs nearly black in 1st generation, reddened

and nearly piceous in 2nd ; tibial spurs yellowish ; metasoma deep black ; posterior margins of metasomal terga brownish or yellowish brown subhyaline.

Pubescence.: Hairs on clypeus and lower paraocular areas rather sparse, short, rather fine, pale or occasionally slightly brownish; hairs on antennal regions, occiput and cheeks pale to dirty fulvous; hairs on frons and vertex brown to fuscous in 1st generation, paler and nearly fulvous in 2nd; facial fovea nearly fuscous; hairs on thorax bright fulvous (in fresh specimens) above, becoming whitish toward underside of thorax, without admixture of darker ones on any portion; hairs on thorax not obscure integument, more or less short on mesoscutum and longer on scutellum, metanotum, dorsal face of propodeum and mesopleuron ; propodeum with dorsal fringe of long, dense, not specially well arranged, pale fulvous hairs; interior of corbicula with coarse white hairs; hairs on tibiae and tarsi of fore and mid legs predominantly fuscous; trochanteral floccus imperfect, scanty white ; femoral floccus dense, silver white; tibial scopa compact, composed of moderately long, coarse, simple hairs; tibial scopa silver white in front, fuscous behind; hairs on disc of 1st tergum and median portion (sometimes restricted to base) of 2nd long, erect, pale or fulvous in fresh specimens ; hairs on 3rd and 4th metasomal terga not conspicuous, brownish to brown ; caudal fimbria fuscous; posterior margin of 2nd metasomal tergum with an interrupted, those of 3rd and 4th terga each with an entire, more or less narrow band of short, dense, nearly appressed, white hairs.

Structure.: Head of moderate size, approximately as broad as thorax seen from above ; mandibles moderately long and robust; malar space shiny, about one-fourth time as broad as base of mandible; process of labrum flat, transverse, with apical margin entire; clypeus strongly convex, nearly smooth medially, rather coarsely punctate with an indication of median, longitudinal, wide, impunctate space ; punctures on clypeus variable, more or less well separated to subcontiguous, moderate to occasionally strong ; antennae with 3rd segment a little shorter than next two segments together; 4th segment approximately as long as broad, 5th a little longer than broad; facial fovea wide but not well indicated above ; vertex slightly convex in front view, shagreened; ratio of postocellar width to ocellocipital distance to postocellar distance to ocellocular distance is 1.8 : 2.8 : 3.8 : 6.0; cheeks slightly broader than eyes seen in profile, slightly receding, densely tessellate or nearly shagreened beneath. Mesoscutum tessellate, especially densely so anteriorly and laterally, with rather sparse, not strong, rounded punctures; punctures on anterior half of mesoscutum somewhat roughened ; scutellum slightly convex, tessellate, weakly punctate, nearly dull in 1st generation, much smoother anteriorly and therefore much more shiny in 2nd generation; propodeum roughened with an indication of roughened punctures; enclosure ill defined, more finely sculptured than dorsal face of propodeum, narrowly wrinkled basally, densely tessellate elsewhere ; mesopleuron sculptured nearly as in dorsal face of propodeum. Wings with 2nd submarginal cell receiving 1st recurrent vein near middle of cell; basal vein distad of nervulus. Legs with mid basitarsi scarcely expanded medially, subequal to hind basitarsi in width; posterior spur of hind tibia normal. Metasomal terga quite densely tessellate, with an indication of weak punctures; punctures on 1st tergum slightly stronger than those on 2nd and somewhat roughened; posterior depressions of terga narrow, very weak.

Male.: Length 9.5—10.5 mm.

Colour: Black ; mandibles reddened apically malar space piceous ; flagellum beneath brownish ; wings subhyaline, with distal margins slightly darkened ; veins and stigma yellowish brown to brownish ; legs piceous basally, becoming brownish toward tarsi ; tibial spurs yellowish ; metasoma piceous or occasionally partly more reddened ; posterior margins of terga broadly yellowish transparent.

Pubescence: Hairs on clypeus variable in colour, uniformly nearly dull white or a little yellowish to rarely nearly all fuscous ; in the former case, hairs on face, vertex, occiput and cheeks almost concolorous with those on clypeus, in the latter case, hairs on sides of face, frons, and cheeks near eyes fuscous ; hairs on mesoscutum short, rather sparse, slightly yellowish (a little brighter than those on clypeus) in holotype ; hairs on scutellum and metanotum a little more yellowish than those on mesoscutum ; frequently brown or fuscous hairs are intermixed on mesoscutum and scutellum ; hairs on propodeum and mesopleuron whitish ; hairs on head and thorax, especially those on face, mesoscutum and mesopleuron distinctly shorter than in *sachalinensis* ; hairs on metasoma short and not conspicuous, those on 1st and base of 2nd terga slightly longer, white ; hairs on 3rd and following terga brownish to fuscous ; posterior margin of 3rd and 4th metasomal terga each with a nearly complete band of short white hairs ; similar hairs present on posterior margin of 2nd tergum laterally and occasionally further on posterior margin of 4th tergum.

Structure: Head slightly broader than thorax seen from above, transverse in front view, but not massive ; mandibles moderately long, not much elongate and not falciform as in *dentata* or *miyamotoi* ; malar space a little less than one-fourth time as long as base of mandible, not dentate but occasionally angulate beneath ; process of labrum convex, shiny, transverse, with apical margin emarginate ; clypeus well convex, tessellate or very weakly so, strongly punctate with punctures subcontiguous to about one puncture width apart ; punctures on clypeus much stronger than in *sachalinensis* ; clypeus only slightly exceeding line running bases of eyes, its index about 2.2 : 1 ; facial quadrangle only slightly longer than broad (about 8 : 7.3) ; antennae elongate, with 3rd segment as long as broad, 4th a little more than twice as long as broad, 5th and following segments convex beneath, about twice as long as broad ; postocellar width to ocelloccipital distance to postocellar distance to ocellocular distance is 1.7 : 3 : 3.5 : 5.7 ; frons and vertex just behind ocellar region roughened ; cheeks about as broad as eyes seen in profile, rather receding, broadly nearly smooth (therefore shiny) and weakly punctate near eyes, tessellate posteriorly. Mesoscutum tessellate, densely so anteriorly, occasionally nearly smooth subposteriorly, sparsely to sometimes more or less densely punctate with punctures slightly stronger than in *sachalinensis* ; scutellum well convex, shiny and weakly punctate anteriorly, nearly roughened posteriorly ; propodeum almost roughened with an indication of roughened punctures ; enclosure ill defined, rugulose basally, weakly tessellate or nearly smooth apically ; mesopleuron tessellate and densely to sometimes more or less sparsely punctate. Wings with 2nd submarginal cell receiving 1st recurrent vein slightly beyond middle of cell or sometimes near end of it ; basal vein interstitial with or distad of nervulus. Legs slender, as usual. Metasoma shiny but not highly smooth, weakly and sparsely, occasionally somewhat densely punctate with punctures more distinct than in *sachalinensis* ; posterior depressions of terga narrow and not sharply indicated. Genitalia and subgenital sterna as illustrated.

Distribution: Japan (Hokkaido, Honshu and Kyushu).

Type material: Holotype male, Karuizawa, Honshu, 24. viii. 1952 (R. Ishikawa); allotopotype female, 30. viii. 1952 (R. Ishikawa); paratype female, Rokurigahara, Agatsuma, Gumma Pref., 1. viii. 1950 (R. Ishikawa); paratopotype male, same data as holotype; paratopotype female, 28. viii. 1952 (R. Tshikawa); paratype male, Nukabira, Prov. Tokachi, Hokkaido, 1-4. viii. 1953 (Y. Hirashima); 3 paratype males and 1 paratype female, Nishiashoro, Prov. Tokachi, Hokkaido, 6-9. viii. 1953 (Y. Hirashima); paratype male, same locality as above, 9. viii. 1955 (Y. Hirashima); paratype female, Urabandai, Fukushima, 16-17. v. 1957 (R. Ishikawa); paratype female, Towadayama, Aomori, 27. v. 1958 (R. & F. Ishikawa); 2 paratype females, on flower of *Pieris japonica*, Hokkein, Mt. Kujuh, Kyushu, 10. iv. 1959 (Y. Miyatake); 3 paratype females, on flower of *Prunus armeniaca* L. var. *ansu* Maxim., Mori, near Ina City, Nagano Pref., 19-20. iv. 1960 (Y. Maeta); 2 paratype female, on flower of *Brassica campestris*, Iriyamabe, near Matsumoto City, Nagano Pref., 7. v. 1961 (Y. Hirashima); paratype female, on flower of *Malus punila* Mill. var. *dulcissima* Koidz., same data as above.

Flower records: As stated above, the female of this species has been collected on the flowers of *Pieris japonica* D. Don., *Prunus armeniaca* L. var. *ansu* Maxim., *Brassica campestris* L., and *Malus punila* Mill. var. *dulcissima* Koidz.

(41) *Andrena (Hoplodrena) macroceps* (Matsumura)

Melitta macroceps Matsumura, 1912, Thous. Ins. Japan, Suppl. 4 : 207, 208, male.

Yasumatsu and Hirashima (1956) pointed out that this species was originally described under the genus *Melitta* Kirby. Unfortunately *macroceps* is known only from the type (a single male specimen). As indicated by the specific name, the male of this species has a large head, the appearance of which resembles that of *Andrena dentata* Smith. In addition, the malar space is, as in *dentata*, armed with a long spine beneath. However, *macroceps* is readily distinguished from *dentata* by the presence of the abundant fulvous hairs on the head and thorax.

This species was originally described from Sapporo, Hokkaido, and the label attached to the type indicates that it was collected on 5/8. No one can determine from it whether this species appears in May or August.

Male: Length about 9 mm.

Colour: Black ; mandibles reddened apically ; malar space piceous; apical half of spine on malar space reddened on right hand one and yellowish brown on the other ; antennae piceous, obscurely darkened above ; wings yellowish subhyaline, with distal margins slightly darkened; veins and stigma yellowish brown; tegulae yellowish brown, darkened anteriorly ; legs piceous basally, becoming brownish apically and small segments of tarsi nearly yellowish brown; tibial spurs yellowish ; metasoma not at all black, obscurely piceous; posterior margins of metasomal terga broadly yellowish transparent.

Pubescence: Hairs on head (including clypeus) and thorax long, rather abundant, almost uniformly fulvous except for shorter brownish to fuscous hairs on sides of face, frons and cheeks above near eyes; hairs on legs pale to distinctly yellowish, without admixture of darker hairs; hairs on 1st tergum and median base of 2nd rather long, pale, those on the rest of 2nd and following terga short to more or less long, bright brownish in some light; hairs on 6th metasomal

terga long, not dense, bright yellowish; hairs on metasomal sterna rather fine, pale; posterior margins of 3rd to 5th metasomal sterna each with an indistinct fringe of sparse, suberect, whitish hairs which does not extend to sides of each sternum.

Structure: Head large but not so massive, much broader than thorax seen from above; mandibles long, slender, falciform; malar space with a spine beneath which is about three-fourths time as long as base of mandible; malar space evident, slightly less than one-half as long as base of mandible; process of labrum convex, transverse; clypeus well convex, especially so subapically with aspect of *dentata*, more or less strongly punctate with punctures becoming stronger and sparser medially; clypeus rather well exceeding line running bases of eyes, its index 1.5 : 1.5; facial quadrangle only slightly longer than broad (7.7 : 7); antennae with 3rd segment as long as broad, 4th approximately twice as long as broad, 5th and following segments about equal in length, indistinctly shorter than 4th, slightly to distinctly convex beneath; vertex just behind ocellar region convex in front view, much exceeding line running summits of eyes; vertex densely tessellate or nearly shagreened, with an indication of rather small, somewhat roughened punctures; ratio of post ocellar width to ocelloccipital distance to postocellar distance to ocellocular distance is 1.3 : 2.6 : 3 : 5.7; cheeks broader than eyes, angulate behind, its outline elongate and convergent posteriorly, tessellate, narrowly nearly smooth and very weakly punctate near eyes. Mesoscutum tessellate nearly all over, especially densely so or almost shagreened anteriorly, with weak and sparse punctures; propodeum shagreened or nearly roughened with an indication of roughened punctures; enclosure rather small, ill defined, slightly less coarsely sculptured than in dorsal face of propodeum; mesopleuron tessellate with weak, sparse punctures. Wings with 2nd submarginal cell receiving 1st recurrent vein a little beyond middle of cell; basal vein much distad of nervulus. Legs slender, as usual. Metasoma distinctly tessellate, more evidently so than in *dentata*, nearly impunctate or with an indication of sparse, microscopical punctures; posterior depressions of 2nd to 5th metasomal terga nearly smooth, more or less well indicated.

Distribution: Japan (Hokkaido).