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Tadauchi, Osamu
Entomological Laboratory, Faculty of Agriculture, Kyushu University

Hirashima, Yoshihiro
Entomological Laboratory, Faculty of Agriculture, Kyushu University

https://doi.org/10.5109/23918

出版情報：九州大学大学院農学研究院紀要. 33 (1/2), pp.67-76, 1988-10. Kyushu University
バージョン：
権利関係：

J. Fac. Agr., Kyushu Univ., 33 (1•2), 67-76 (1988)

Synopsis of Andrena (Stenomelissa) with a New Species from Japan (Hymenoptera, Andrenidae)[1)]

Osamu Tadauchi and Yoshihiro Hirashima

Entomological Laboratory, Faculty of Agriculture
Kyushu University, Fukuoka 812, Japan.

(Received June 11, 1988)

The subgenus ***Stenomelissa*** Hirashima et LaBerge of the genus *Andrena* Fabricius is revised. Three species are recognized, two from Japan, and one from China. A new species, *Andrena* ***(Stenomelissa) lonicerae*** is described from Japan. Allopatric distribution shown in the two Japanese species is reported. A key for the species of ***Stenomelissa*** is presented. The distribution map, floral records and flight records of the two Japanese species are provided.

The subgenus ***Stenomelissa*** of the genus *Andrena* Fabricius was erected by a single species, *Andrena halictoides* Smith, by Hirashima and LaBerge (1965). It is distinguished by the protuberant clypeus, the large process of labrum in both sexes, the highly plumose hairs of tibia1 scopa in the female, the yellow clypeus and the uncinate apical segments of the antennae in the male, and a declivous propodeum without well-marked dorsal surface in both sexes. Cephalic polymorphism is observed in the males of this subgenus.

Hirashima (1965) redescribed *Andrena* ***(Stenomelissa)*** *halictoides* with a note of a possible existence of the sibling species. In the present study we examined the type specimen of ***A.*** *halictoides* and 340 specimens (129 females and 211 males) of the *halictoides* complex collected throughout Japan and found two species, one of which is new to science. The two Japanese species show allopatric distribution each other. *Andrena halictoides* occurs in Hokkaido, and the mountainous regions and the Japan Sea side of Honshu. On the other hand, a new species, ***A.*** *lonicerae,* is found in Shikoku, Kyushu, and the Pacific Ocean side of Honshu.

Yasumatsu (1938) recorded *Andrena* ***uitiosa*** from Mt. Hikosan, Kyushu. It was described on the holotype male only from north China by Smith (1879). We examined the type specimen of ***A. uitiosa*** and found that it belongs to this subgenus and that Yasumatsu's specimen does no belong to ***uitiosa*** but a new species. So we recognized three species in this subgenus, two from Japan and one from China.

Kim and Kim (1983) recorded ***A. halictoides*** from Korea. However we could not examine the specimen of Korea in the present study.

Subgenus **Stenomelissa** Hirashima et LaBerge, 1965

Stenomelissa Hirashima et LaBerge, 1965, J. Fac. Agr., Kyushu Univ., 13 : 500.

1) Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 3, No. 279).

KEY TO SPECIES OF *Andrena* (*Stenomelissa*)

Males

1. Malar space very short, about 1/5 times as long as basal width of mandible ; mesoscutum nearly smooth and shiny with distinct punctures ; lower paraocular area without yellow markings ; north China ..... ***vitiosa*** Smith
– Malar space long, at least more than 1/2 times as long as basal width of mandible ; mesoscutum weakly tessellate with weak punctures anteriorly and laterally, nearly smooth and shiny medially 2
2. Malar space shorter, slightly more than 1/2 times as long as basal width of mandible ; lower paraocular area usually with yellow markings ; 8th sternum with apex of neck region slightly widened ; Hokkaido, mountainous regions and the Japan Sea side of Honshu ..... *halictoides* Smith
– Malar space longer, more than 4/5 times as long as basal width of mandible ; lower paraocular area usually without yellow markings ; 8th sternum with apex of neck region strongly widened ; the Pacific Ocean side of Honshu, Shikoku and Kyushu ..... ***lonicerae,*** n. sp.

Females

1. Malar space less elongate, about 3/5 times as long as basal width of mandible ; clypeus less convex and less protuberant, the ratio of the distance between lower bases of eyes to the length of clypeus about 0.45 ..... *halictoides* Smith
– Malar space quite elongate, more than 4/5 times as long as or about equal to basal width of mandible ; clypeus strongly convex and strongly protuberant, the ratio about 0.5 ..... ***lonicerae,*** n. sp.

1. Andrena (Stenomelissa) vitiosa Smith

(Figs. 1, 6, 13)

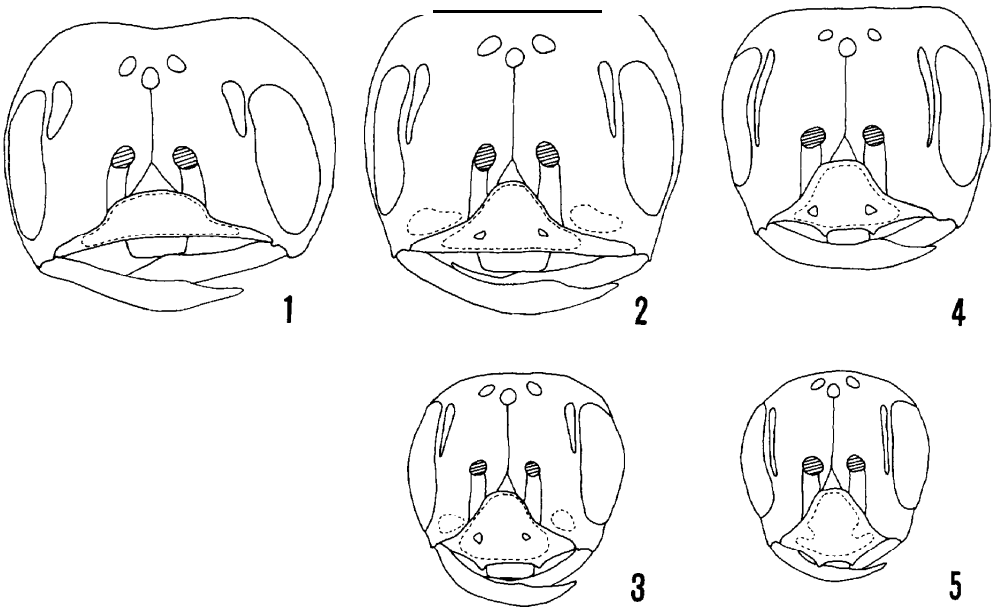
Andrena ***vitiosa*** Smith, 1879, Descr. new spec. Hym. Brit. Mus., 51 ; Dalla Torre, 1896, Cat. Hym., 10 : 161 ; Yasumatsu, 1940-41, Pecking Nat. Hist. Bull., 15 : 281.

We examined the type specimen of this species. It is a supra-macrocephalous form (Figs. 1 and 6) rarely observed for the male of this subgenus, although the macrocephalous males are common in ***Stenomelissa.*** It is characterized by the malar space very short, about 1/5 times as long as the basal width of the mandible (Fig. 13), the lower paraocular area without yellow markings, and the mesoscutum nearly smooth and shiny with distinct punctures.

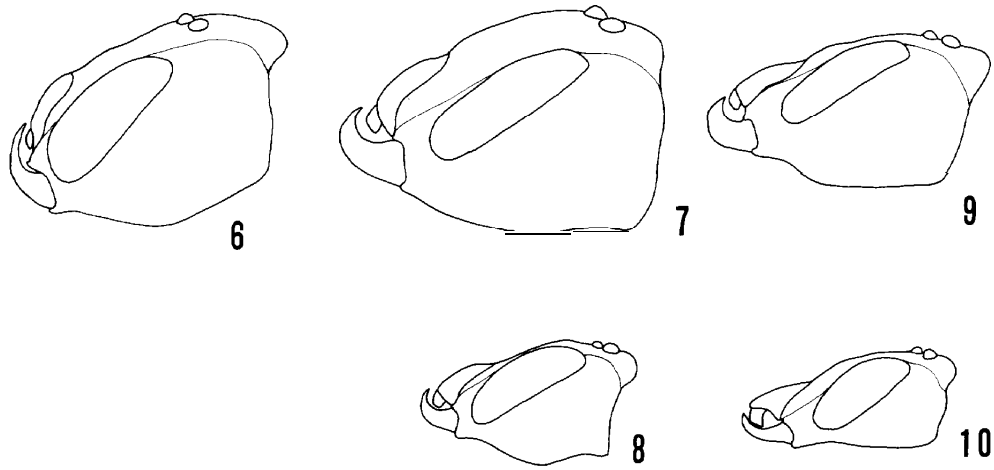
DISTRIBUTION : north China.

FLORAL RECORD : Not available.

FLIGHT RECORD : Not available.



Figs. l-5. Cephalic polymorphism in the males of *Andrena* ***(Stenomelissa),*** two extreme individuals, frontal views : 1 : ***vitiosa, 2*** and 3 : ***halictoides, 4*** and 5 : *lonicerae,* n. sp.



Figs. 6-10. Cephalic polymorphism in the males of *Andrena* ***(Stenomelissa),*** two extreme individuals, lateral views : 6 : ***vitiosa,*** 7 and 8 : ***halictoides,*** 9 and 10 : *lonicerae,* n. sp.

2. Andrena (Stenomelissa) halictoides Smith

(Figs. 2-3, 7-8, 11, 14-15, 18-24)

Andrena halictoides Smith, 1869, Entomologist, 4 : 205; Dalla Torre, 1896, Cat. Hym., 10 : 129; Cockerell, 1913, Ann. Mag. Nat. Hist., (8) 11 : 190 ; Yasumatsu, 1941, Pecking Nat, Hist. Bull., 15 : 276 ; Warncke, 1967, Eos, 43 : 276.

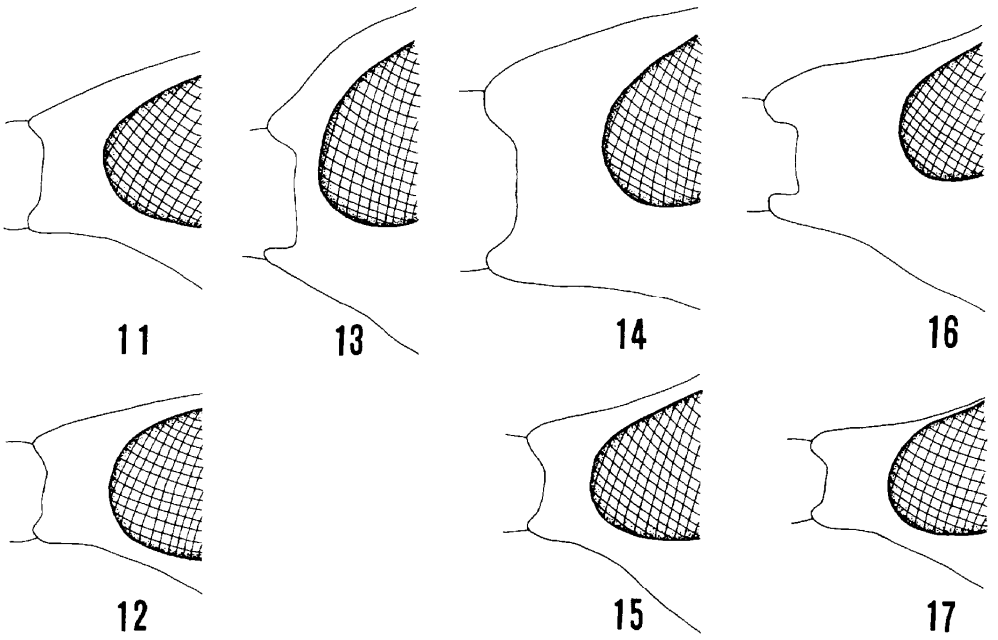
Andrena (Stenomelissa) halictoides : Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13 : 502, in part ; Tadauchi and Hirashima, 1986, Trans. Essa Ent. Soc., (63) : 27.

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

This species is characterized by having the malar space relatively shorter, about 3/5 times in the female and slightly more than 1/2 times in the male as long as the basal width of the mandible (Figs, 11, 14, 15), the clypeus less convex and less protuberant, the ratio of the distance between the lower bases of the eyes to the length of the clypeus about 0.45, the maxillary palpi shorter, and the lower paraocular area of the male with yellow markings (Figs. 2 and 3). The genitalia and the associated structures are as illustrated (Figs. 18-23). The apex of the neck region of the male 8th sternum slightly widened. It occurs in Hokkaido, the mountainous regions and the Japan Sea side of Honshu (Fig. 24). It visits relatively many flowers, recording 26 plants.

DISTRIBUTION : Japan (Hokkaido, Honshu (mountainous regions and the Japan Sea side), Sado Is.). (Fig. 24)

FLORAL RECORDS : 50 females and 68 males have been collected on 26 plants as follows : Caprifoliaceae : *Weigela hortensis* K. Koch (34 ♀21♂) ; *Abelia spathulata* Sieb.

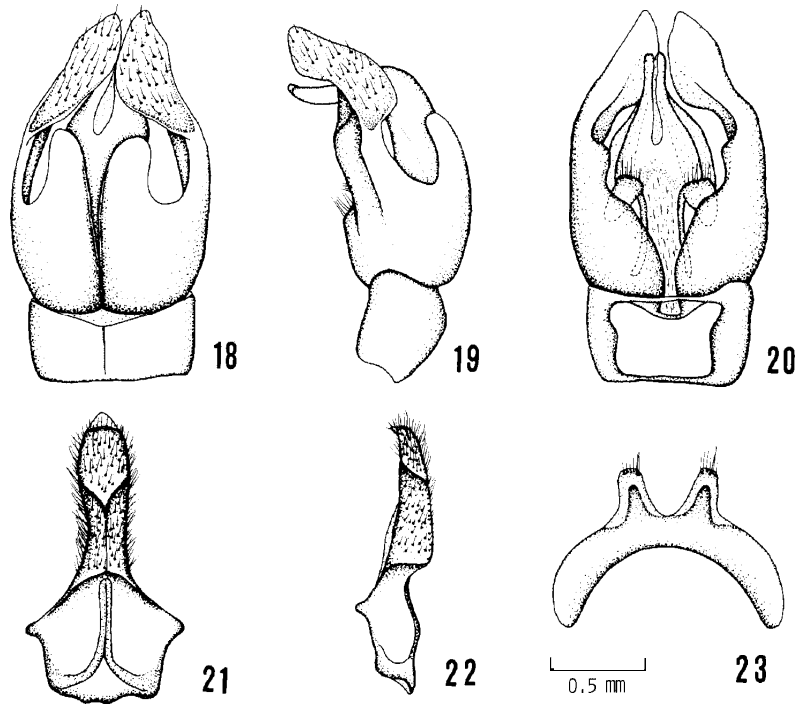


Figs. 11-17. Malar spaces of *Andrena (Stenomelissa),* female : 11 : *halictoides,* 12 : *lonicerae,* n. sp. ; male : 13 : *vitiosa, 14* and 15 : *halictoides,* 16 and 17 : *lonicerae,* n. sp.

et Zucc. (5♀4♂); ***Lonicera*** *chrysantha* Turcz. (1♂); ***L.*** *morrowii* A. Gray (1♂). Saxifragaceae : *Philadelphus* ***satsumi*** Sieb. (1♂); *Deutzia crenata* Sieb. et Zucc. (1♂). Rosaceae : *Rosa multiflora* Thunb. (1♀); *Rubus crataegifolius* Bunge (36) ; *Potentilla freyniana* Borum. (1♂); *P. fragarioides* var. ***major*** Maxim. (1♂); ***P.*** *kleiniana* subsp. *anemonefolia* Murata (1♂); *Chaenomeles speciosa* Nakai (4♂); *Prunus persica* Batsch. (66) ; ***P.*** *jamasakura* Sieb. (1♂). Elaeagnaceae : *Elaeagnus multiflora* Thunb. (3♂); *E.* ***m.*** var. *hortensis* Serv. (8♂). Legminosae : ***Wisteria*** *floribunda* DC. (4♀36). Eriaceae : ***Rhododendron*** sp. (1♀16) ; *Enkianthus perulatus* Schneid. (2♂). Celastraceae : *Euonymus fortunei* var. *radicans* Rehd. (1♀). Oleaceae : *Ligustrum obtusifolium* Sieb. et Zucc. (1♀). Symplocaceae : *Styrax japonica* Sieb. et Zucc. (1♀). Rutaceae : *Zanthoxylum schinifolium* Sieb. et Zucc. (1♀). Cruciferae : *Brassica campestris* L. (3♂). Compositae : ***Chrysanthemum leucanthemum*** L. (1♂). Stachyuraceae : *Stachyurus paraecox* Sieb. et Zucc. (1♂).

FLIGHT RECORDS : Female : late April to late June (Honshu) ; late May to mid June (Hokkaido). Male : late April to early June (Honshu) ; late May (Hokkaido).

SPECIMENS EXAMINED : We have examined 70 females and 138 males. Some of them are cited as follows : HOKKAIDO : Botanical Garden, Sapporo :1♂, 21. v. 1959 ***(S.*** F. Sakagami) ; 1♀, 25. v. 1959 (S. F. Sakagami) ; 1♀, Samukawa, Hakodate, 27. v. 1959



Figs. 18-23. Genital capsule and associated structures of *Andrena* ***(Stenomelissa)*** *halictoides* Smith, 18 : dorsal view of genital capsule, 19 : lateral view of the same, 20 : ventral view of the same, 21 : dorsal view of 8th sternum, 22 : lateral view of the same, 23 : 7th sternum.

(M. Munakata) ; 2 ♀, Daimachi, Hakodate, 6. vi. 1959 (M. Munakata) ; 1 ♀, Hakodateyama, *14.* vi. 1958 (M. Munakata). HONSHU : 16, Tsuta, Towada, Aomori Pref., 28-30. v. 1958 (R. Ishikawa) ; 1 ♀, Nishihiranai, Aomori Pref., 30. v. 1976 (0. Tadauchi) ; 2 ♂, Ashiro, Iwate Pref., 8. vi. 1981 (Y. Maeta); 1 ♀ 3 ♂, Kuromori-toge, Rokugo, Akita Pref., 7. vi. 1978 (K. Baba and N. Kato) ; 1 ♀, Funaki, Higashiyuri, Akita Pref., 7. vi. 1978 (K. Baba and N. Kato) ; 1 ♂, Aone, Mt. Zao, Miyagi Pref., 25. v. 1958 (R. Ishikawa) ; 1 ♀, Mt. Yudono, Yamagata Pref., 9. vi. 1977 (K. Baba) ; 1 ♀, Atsumi, Yamagata Pref., 13. v. 1977 (K. Baba) ; 1 ♀, Oguni, Yamagata Pref., 10. vi. 1977 (K. Baba) ; 1 ♂, Aizu-wakamatsu, Fukushima Pref., 25. v. (Y. Kurosawa) ; 2 ♂, Nakayama, Koriyama, 23. v. 1975 (0. Tadauchi) ; 1 ♂, Sawa, Fukushima Pref., 24. v. 1946 (Y. Kurosawa) ; 7 ♀, Budo-toge, Asahi, Niigata Pref., 23. v. 1985 (K. Baba) ; Senami, Murakami, Niigata Pref. : 9 ♂, 30. iv. 1985 (K. Baba); 3 ♀ 3 ♂, 9. v. 1985 (K. Baba); Kurokawa, Niigata Pref., 1 ♀ 2 ♂, 13. v. 1982 (K. Baba) ; 1 ♂, Yunotaira, Mts. Iide, Niigata Pref., 4. vi. 1966 (K. Baba) ; 66, Ojiya, Niigata Pref., 9. v. 1985 (K. Baba); 1 ♀, Osaki, Yamato, Niigata Pref., 24. v. 1975 (0. Tadauchi) ; 1 ♀ 2 ♂, Onozawa, Myoko, Niigata Pref., 17. v. 1985 (K. Baba) ; 16, Mt. Kinpoku, Sado Is., Niigata Pref., 23. v. 1931 (K. Baba) ; 1 ♂, Kijimadaira, Nagano Pref., 24. v. 1976 (0. Tadauchi) ; 2 ♂, Nagano, Nagano Pref., 10. v. 1932 (K. Sato) ; 1 ♀, Susaka, Nagano Pref., 18. v. 1932 (K. Sato) ; 1 ♂, Sanjiro, Utsukushigahara, 27. v. 1957 (R. Ishikawa) ; 1 ♀, Mt. Shiritaka, Tsurugi, Ishikawa Pref., 30. v. 1985 (I. Togashi); 26, Futakuchi, Okuchi, Ishikawa Pref., 12. v. 1973 (I. Togashi); 1 ♀ 2 ♂, Mizukidaira, Shiramine, Ishikawa Pref., 29. v. 1972 (I. Togashi); 2 ♂, Mt. Haku, Ishikawa Pref., 25.v. 1962 (I. Togashi); Mt. Oike, Fujiwara, Mie Pref : 3 ♀ 1 ♂, 25. v. 1987 (A. Kawazoe) ; 1 ♂, 7. vi. 1987 (A. Kawazoe); 1 ♀, Mt. Fujiwara, Mie Pref., 19. vi. 1977 (A. Kawazoe) ; Kibune, Kyoto, Kyoto Pref. : 2 ♂, 5. v. 1985 (M. Kato) ; 1 ♂, 22. v. 1984 (T. Inoue et al.) ; Sasayama, Hyogo Pref. : 1 ♂, 15. v. 1953 (S. Taniguchi) ; 1 ♂, 17. v. 1953 (S. Taniguchi) ; 1 ♀, Mt. Oginosen, Hyogo Pref., 1954 (T. Okutani) ; 1 ♀, Mt. Daisen, Tottori Pref., 24. vi. 1978 (Y. Yoneda).

3. ***Andrena (Stenomelissa) lonicerae,*** new species
(Figs. 4-5, 9-10, 12, 16-17, 24-30)

Andrena vitiosa: Yasumatsu (nec Smith), 1938, Zool. Mag., 50 : 358 ; Yasumatsu, 1940-41, Pecking Nat. Hist. Bull., 15 : 281, in part.

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

This species can be separable from *halictoides* by the malar space quite elongate, about more than 4/5 times as long as the basal width of the mandible, the clypeus strongly convex and protuberant, the ratio of the distance between the lower bases of the eyes to the length of the clypeus about 0.5, the lower paraocular area of the male usually without yellow markings and the apex of the neck region of the male 8th sternum strongly widened. It occurs in the Pacific Ocean side of Honshu, and Shikoku and Kyushu. It shows allopatric distribution with *halictoides* each other. So far as we know, Kibune, northern Kyoto is the only place where both *halictoides* (3 ♂) and *lonicerae* (16) were collected (Fig. 24). It predominantly visits the flowers of *Lonicera gracilipes* Miq. (94.3% in the female).

Female : Length 10-12 mm.

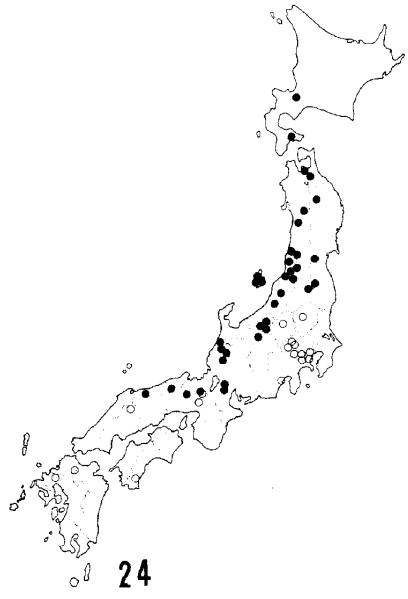


Fig. 24. A map showing the distributions of *Andrena (Stenomelissa) halictoides* Smith (black circle) and *A. (Stenomelissa) lonicerae,* n. sp. (white circle) showing allopatric distribution each other.

Integumental color : Flagellar segments beneath reddish brown ; malar space obscurely reddened ; posterior margins of metasomal terga yellowish brown subhyaline.

Pubescence : Hairs on head and thorax pale yellowish to pale brownish above, whitish below, not long, not specially dense ; those on clypeus scanty ; those on vertex mixed with pale brownish ; facial fovea brown, with upper end narrow, occupying 1/2 of space between eye and post ocellus ; propodeal corbicula not well developed with dorsal fringe of long, more or less curled hairs ; interior of propodeal corbicula with plumose hairs above, broadly free of hairs below ; trochanteral floccus perfectly developed, white, long, well branched ; femoral floccus white, plumose ; tibial scopa quite well developed, whitish in front and sooty brownish behind, composed of long, dense, well branched hairs ; metasomal terga scanty of hairs ; posterior margins of metasomal terga 2-4 with obscure, lateral fringes of subappressed, white hairs ; caudal fimbria yellowish brown.

Structure : Head considerably elongate, longer than broad seen in front ; mandibles long ; malar space quite elongate, more than 4/5 times as long as or about equal to basal width of mandible, nearly smooth and shiny (about 3/5 times in *halictoides*); process of labrum very large, semicircular ; clypeus strongly convex (less convex in *halictoides*) and strongly protuberant, much exceeding line running bases of eyes, its ratio of the distance between lower bases of eyes to the length of clypeus is about 0.50 (0.45 in *halictoides*); clypeus smooth and shiny nearly all over and sparsely and weakly punctate with a broad, median, longitudinal, impunctate space ; maxillary palpi elon-

gate (shorter in *halictoides*); flagellar segment 1 nearly as long as 2 plus 3 ; pronotum with lateral suture indicated below, short, without humeral ridge ; mesoscutum weakly tessellate with weak, sparse punctures medially; dorsal face of propodeum densely tessellate, not roughened ; enclosure ill defined, very narrowly rugose basally, finely tessellate apically ; mesepisternum weakly shagreened anteriorly, densely tessellate posteriorly ; metasomal tergum 1 smooth and shiny with microscopical, fine punctures, terga 2-5 nearly smooth or feebly tessellate with weak punctures ; posterior depressions of terga occupied apical 1/3 of terga, well indicated.

Male : Length 8-10 mm.

Integument& color : Mandibles reddened apically ; flagellar segments beneath reddish brown; clypeus yellow ; lower paraocular areas usually without yellow markings (with yellow markings in *halictoides)* ; posterior margins of metasomal terga yellowish brown subhyaline.

Pubescence : Hairs on head and thorax long, rather sparse, dull whitish to pale yellowish ; those on vertex without brownish hairs ; those on legs whitish to pale yellowish except for tarsi, which are yellowish brown ; those on metasomal terga scanty, whitish, tergum 1 long, erect, terga 2-6 short, erect to suberect ; posterior margins of metasomal terga without lateral fringes.

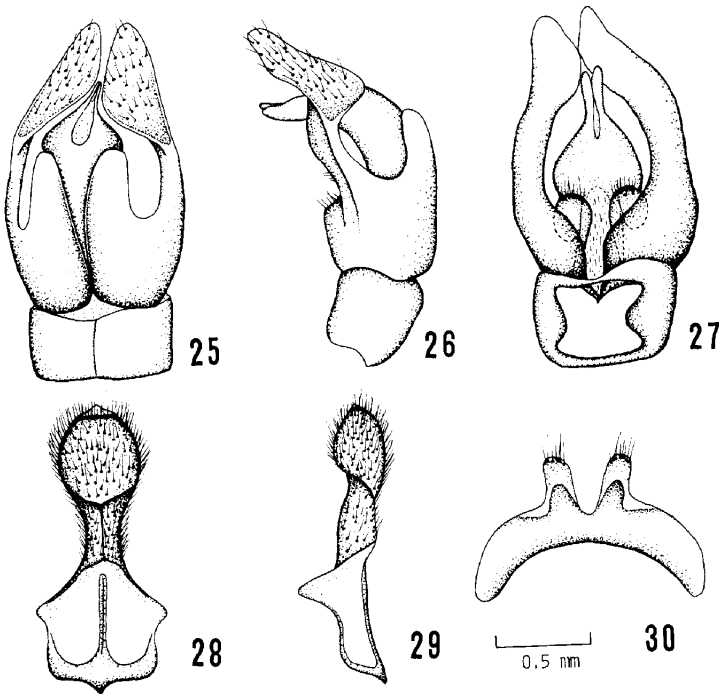
Structure : Head variable in size ; mandibles long ; malar space more than 4/5 times as long as basal width of mandible (slightly more than 1/2 times in *halictoides),* smooth and shiny ; process of labrum large, transverse with apical margin entire ; clypeus strongly convex (less convex in *halictoides)* and strongly protuberant, nearly smooth to very weakly tessellate with sparse, weak punctures ; flagellar segment 1 about 1.7 times as long as 2, which is shorter than 3 ; ultimate segment uncinate ; cheeks variable ; mesoscutum nearly smooth and shiny medially and weakly tessellate laterally with weak, sparse punctures ; propodeal enclosure ill defined, slightly rugose only basally, finely tessellate apically ; metasomal terga shiny and smooth, with very fine punctures ; posterior depressions of terga well indicated, occupied 1/3 of terga ; genitalia and associated structures as illustrated (Figs. 25-30).

DISTRIBUTION : Japan (Honshu (the Pacific Ocean side), Shikoku, Kyushu). (Fig. 24)

FLORAL RECORDS : 35 females and 8 males have been collected on 6 plants as follows : Caprifoliaceae : *Loniceya gracilipes* Miq. (33 ♀ 5 ♂); *Weigela hoytensis Koch* (1♂). Ericaceae : *Rhododendron metternichii* Sieb. et Zucc. (1♀). Elaeagnaceae : *Elaeagnus* sp. (1 ♀). Aceraceae : *Acer* sp. (1♂). Rosaceae : *Malus sieboldii* Rehder (1♂).

FLIGHT RECORDS : Female : mid April to mid May (Kyushu) ; early April to late May (Honshu). Male : mid April to mid May (Kyushu) ; late April (Shikoku) ; late March to early June (Honshu).

TYPE MATERIAL : Holotype female (Type No. 2664, Kyushu Univ.), Hokuzan Dam, Saga Pref., 22. iv. 1976 (0. Tadauchi). Paratypes : Mt. Hikosan, Fukuoka Pref. : 16, 19. iv. 1938 (K. Yasumatsu) ; 1♂, 6. v. 1951 (Y. Hirashima) ; 1♀, 10. v. 1951 (Y. Hirashima) ; 6♀ 2♂, 11. v. 1952 (Y. Hirashima) ; 6♀ 1♂, 12. v. 1952 (Y. Hirashima) ; 1 ♀, 13. v. 1952 (Y. Hirashima) ; 1♀, spring, 1956 (Y. Hirashima) ; 1♂, 17. v. 1971 (M. T. Chûjô) ; 1♀, 24. iv. 1972 (K. Takeno) ; 1♂, 6. v. 1974 (H. Makihara) ; same locality as holotype : 3♀ 1♂, 13. iv. 1973 (Y. Hirashima) ; 5♀, 28. iv. 1973 (Y. Hirashima) ; 8♀, 22. iv. 1976 (Y. Hirashima) ; 1 ♀ 2♂, 22. iv. 1976 (0. Tadauchi) ; 1♀, 6. v. 1976 (0. Tadau-



Figs. 25-30. Genital capsule and associated structures of *Andrena (Stenomelissa) lonicerae*, n. sp., 25 : dorsal view of genital capsule, 26 : lateral view of the same, 27 : ventral view of the same, 28 : dorsal view of 8th sternum, 29 : lateral view of the same, 30 : 7th sternum.

chi).

SPECIMENS EXAMINEDOTHER THAN THE TYPES: Wehaveexamined *58* females and72 males including the types. Some of them are cited as follows : HONSHU :1♀, Senjogahara, Nikko, Tochigi Pref., 22. v. 1968 (F. and R. Ishikawa) ; Numata, Gunma Pref. :2♀, 2. v. 1963 (T. Takei);1♀, 16. iv. 1964 (T. Takei);1♀, 16. iv. 1966 (T. Takei);1♀, *4. v. 1972* (T. Takei);1♂, Yorii, Saitama Pref., 30. iv. 1969 (T. Nanbu) ; 1♂, Kodama, Saitama Pref., 8. iv. 1969 (T. Nanbu) ;1♀, Mt. Buko, Saitama Pref., 15. v. 1969 (T. Nanbu) ;2♀, Toyotama, Tokyo, 8. iv. 1949 (R. Ishikawa) ;2♀, Machida, Tokyo, 17. iv. 1958 (K. Sugiyama) ; 1♀, Yoyogi, Tokyo, 5. iv. 1958 (R. Ishikawa) ; **1** ♀ 9♂, Nakamura, Nerima, Tokyo, 13. iv. 1951 (R. Ishikawa) ; 9♂, Egota, Nakano, Tokyo, 30. iii. 1951 (R. Ishikawa) ;3♂, Kobotoke, Tokyo, 31. iii. 1951 (R. Ishikawa) ;1 ♂, Mt. Mitake and Otake, Okutama, Tokyo, 15. v. 1952 (R. Ishikawa) ;1♂, Mukogaoka, Kawasaki, Kanagawa Pref., 7. iv. 1957 (R. and M. Ishikawa) ;3♀, Yui, Shizuoka Pref., 27. iv. 1952 (J. Minami) ;1♂, Kibune, Kyoto, Kyoto Pref., 21. iv. 1985 (M. Asoga) ; 1♂, Toyono-gun, Osaka Pref., 13. v. 1932 (K. Sato) ;1♂, Mt. Dogo, Hiroshima Pref., 25. iv. 1976 (0. Tadauchi). SHIKOKU : 16, Nakamura, Kochi Pref., 27. iv. 1957 (Y. Hirashima).

The specific name is refers to the visiting flower, *Lonicera gracilipes* Miq.

ACKNOWLEDGEMENTS

We are grateful to Dr. G. R. Else of the British Museum (Natural History) for lending us the holotypes of A. *vitiosa* and A. *halictoides*. We thank Mr. Takahashi of Tokyo for his useful information on *Stenomelissa*. We are grateful to Dr. K. Baba of Niigata Pref., Prof. R. Ishikawa of Tokyo Metropolitan Univ., and Prof. I. Togashi of Ishikawa Pref. Coll. of Agr. for their gift or loan of many specimens. We are also indebted to Prof. S. F. Sakagami of Hokkaido Univ., Prof. M. Munakata of Hakodate Coll., Hokkaido Univ. of Educ., Mr. T. Takei of Gunma Pref., Mr. T. Nanbu of Saitama Pref., Mr. H. Makihara of For. and Forest Prod. Res. Inst., Mr. Y. Haneda of Fukui Pref., Mr. A. Kawazoe of Mie Pref., Dr. T. Inoue of Kyoto Univ., Assoc. Prof. Y. Maeta of Shimane Univ., Assoc. Prof. M. T. Chûjô and Mr. K. Takeno of Kyushu Univ., Mr. Y. Yoneda of Kurume Univ. for their gift or loan of valuable specimens.

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