Synopsis of Andrena (Andrena) of Japan (Hymenoptera, Andrenidae) Part II

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Synopsis of Andrena (Andrena) of Japan (Hymenoptera, Andrenidae) Part II [1),2)]

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In this paper (Part II) seven Japanese species of *Andrena (Andrena)* are treated. A new species, *Andrena (A.) babai,* and a new subspecies, *Andrena (A.) lapponica sumizome* are described. *Andrena (A.) shirozui* Hirashima is reduced to the subspecies of *A. lapponica* Zeterstedt. The males of *A. (A.) lapponica shirozui* Hirashima and *A. (A.) maukenkis* Matsumura are described for the first time. The distribution map, floral records and flight records of each species are presented.

10. Andrena (Andrena) hondoica Hirashima

(Figs. 9, 24, 39, 72, 94, Table 4)

Andrena (Andrena) hondoica Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12 : *144,* female & male ; Hirashima, 1966, ibid., 14 : 103.

Distribution : Japan (Hokkaido and Honshu). (Fig. 72)

Floral records : Hirashima (1962) recorded *Veronica caninotesticulata* and *Salix* sp. We examined 19 females and 6 males collected on 7 plants as follows : Salicaceae : *Salix Pet-susu* Kimura (2 ♀); *S. gracilistyla* Miq. (8 ♀ 1 ♂) ; *S. sachalinensis* Fr. Schm. (1 ♀) ; *S. gigiana* Seemen (3 ♀) ; *S.* sp. (3 ♀ 2 ♂). Compositae: *Petasites japonicus* subsp. *giganteus* Kitam. (1 ♀ 3 ♂). Scrophulariaceae : *Veronica didyma* var. *lilacina* Yamaz. (1 ♀).

Flight records : Female : mid March to late May (Honshu) ; late April to late May (Hokkaido). Male: mid March to early May (Honshu) ; late April to mid May (Hokkaido).

Specimens examined : We have examined 95 females and 18 males. Some of them are cited as follows: HOKKAIDO: 1 ♀ 3 ♂, Kussharo-ko, Teshikaga, 6. v. 1984 (0. Tadauchi) ; 2 ♀ 1 ♂, Kyushu Univ. Forests, Ashoro, 28. iv. 1984 (0. Tadauchi) ; 1 ♀, Yamabe, Furano, 23. v. 1984 (0. Tadauchi) ; 1 ♂, Jozankei, Sapporo, 28. iv. 1957 (T. Nanbu) ; 1 ♀, Moheji, Kamiiso, Oshima, 19. v. 1984 (0. Tadauchi). HONSHU : 8 ♀, Aomori, Aomori Pref., 18. v. 1984 (0. Tadauchi) ; 3 ♀, Shiga-kogen, Nagano Pref., 7.

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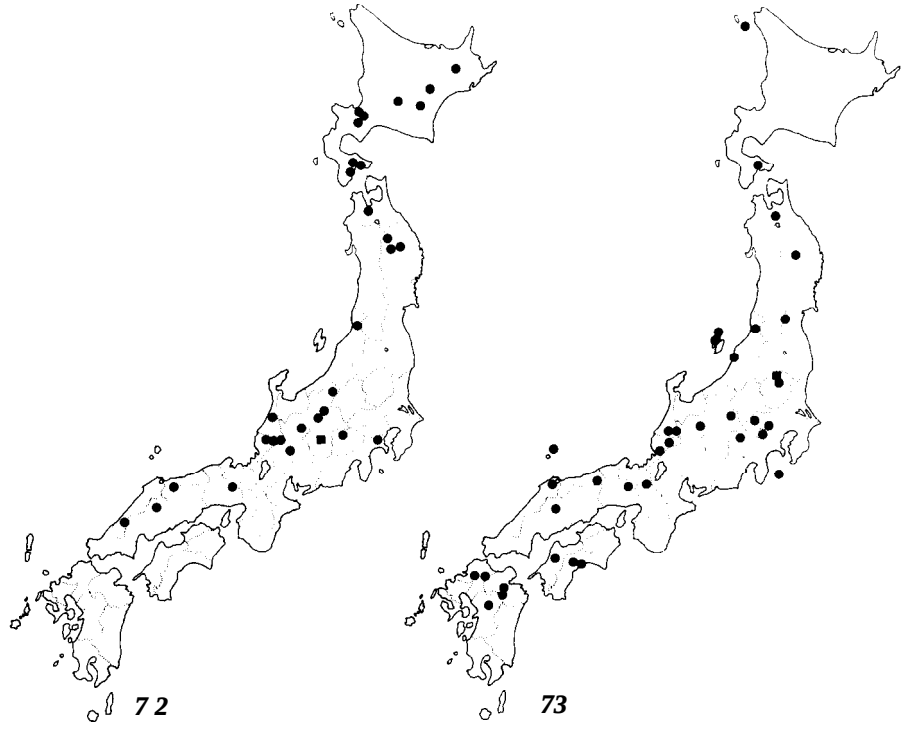
2) Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 3, No. 213).



Figs. 72-73. Maps showing the distributions of *Andrena*(*Andrena*) ***hondoica*** Hirashima (72) and ***A. (A.) longitibialis*** Hirashima (73). A square indicates the type locality.

v. 1971 (S. Hashimoto) ; 1 ♀, Rokuroshi, Ohno, Fukui Pref., 5. iv. 1972 (Y. Haneda) ; 1 ♀, Suwara, Ohno, Fukui Pref., 31. v. 1981 (Y. Haneda) ; 1 ♂, Hikimi, Shimane Pref., 12. iv. 1986 (0. Tadauchi).

Other localities (*new records) : Obihiro, Sapporo, Narukawa, Hakodate, Kikonai (Hokkaido) ; *Takizawa-mura, *Kuriyagawa, *Ashiro (Iwate Pref.) ; Kadota-mura (Fukushima Pref.) ; *Kawasaki-Mukogaoka (Kanagawa Pref.) ; Kurokawa (Niigata Pref.) ; Ina (*type* locality), Ueda, *Utsukushigahara (Nagano Pref.) ; *Masutomi (Yamanashi Pref.) ; Asahi-mura, Minami-mura (Gifu Pref.) ; Tsurugi (Ishikawa Pref.) ; Katsuyama, Izumi (Fukui Pref.); Sasayama (Hyogo Pref.) ; *Mt. Daisen (Tottori Pref.) ; *Hiwa (Hiroshima Pref.).

11. **Andrena (Andrena) longitibialis** Hirashima
(Figs. 10, 25, 40, 73, 94, Table 4)

Andrena(*Andrena*) ***longitibialis*** Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12 : 139, female & male ; Hirashima, 1966, ibid., 14 : 102 and 116.

Distribution : Japan (Hokkaido, Rishiri Is., Honshu, Sado Is., Izu-Oshima Is., Oki Is., Shikoku, and Kyushu). This is the first records of this species from the Izu-Oshima

and Oki Is. (Fig. 73)

Floral records : Ikudome (1980) recorded 3 plants. We examined 25 females and 36 males collected on 14 plants as follows : Ericaceae : *Rhododendron reticulatum* D. Don (8 ♂) ; *R. metternichii* Sieb. et Zucc. (17 ♂); *R. kiusianum* Makino (12 ♀) ; *R. macrosepalum* Maxim. (1 ♀); *R.* sp. *(3* ♀); *Enkianthus perulatus* Schneid. (1 ♀ 7 ♂). Salicaceae : *Salix yoshinoi* Koidz. (1 ♀). Rosaceae: *Prunus persica* Batsch. (1 ♂). Cruciferae: *Brassica Napus* L. *(2* ♀ 1 ♂); *Capsella Bursa-pastoris* Medic. (1 ♂). Labiatae : *Lamium album* var. *barbatum* Franch. et Savat. (2 ♀); *Ajuga decumbens* Thunb. (1 ♀). Compositae : *Chrysanthemum leucanthemum* Linn. (2 ♀). Saxifragaceae: *Philadelphus satsumi* Sieb. (1 ♀).

Flight records : Female : early May to mid July (Kyushu) ; early May to early June (Shikoku) ; mid March to early July (Honshu) ; mid June (Hokkaido). Male : mid May (Kyushu) ; mid April to late May (Honshu).

Specimens examined : We have examined 70 females and 50 males. Some of them are cited as follows : HONSHU : 3 ♀, Nasu-Yumoto, Tochigi Pref., 22. v. 1975 (0. Tadauchi); 1 ♂, Hodosan, Saitama Pref., 14. iv. 1972 (T. Nanbu); 2 ♀, Kurokawa, Niigata Pref., 17. v. 1985 (K. Baba) ; 1 ♂, Mt. Haku, Ishikawa Pref., 26. v. 1962 (I. Togashi) ; 1 ♂, Mitsudani, Shiramine-mura, Ishikawa Pref., 29. v. 1974 (I. Togashi); 1 ♀, Mt. Fujikura, Imajo, Fukui Pref., 23. v. 1981 (H. Kurokawa) ; 3 ♂, Hatahoko, Mt. Norikura, Gifu Pref., 8. v. 1976 (0. Tadauchi) ; 1 ♂, Taishaku-kyo, Hiroshima Pref., 30. iv. 1978 (H. Makihara). SADO IS. : 2 ♀, Washizaki, Ryotsu, 28. v. 1985 (K. Baba) ; 2 ♀, Urakawa, Ryotsu, 28. v. 1985 (K. Baba). IZU-OSHIMA IS.: 1 ♂, 30. iii. 1949 (K. Maruyama). OK1 IS. : 1 ♀, Omosu, 10. v. 1982 (Y. Maeta). KYUSHU : 3 ♂, Chojabaru, Kuju, Oita Pref., 17-18. v. 1970 (K. Kanmiya) ; 17 ♂, Mt. Kuju, Oita Pref., 11. v. 1972 (Y. Hirashima) ; 14 ♂, Danbaru, Mt, Kuju, Oita Pref., 12. v. 1972 (Y. Hirashima) ; 5 ♂, Mt. Daisen, Mts. Kuju, 12. v. 1978 (Y. Hirashima) ; 5 ♀, Hokkein, Kuju, Oita Pref., 5. vi. 1985 (0. Tadauchi).

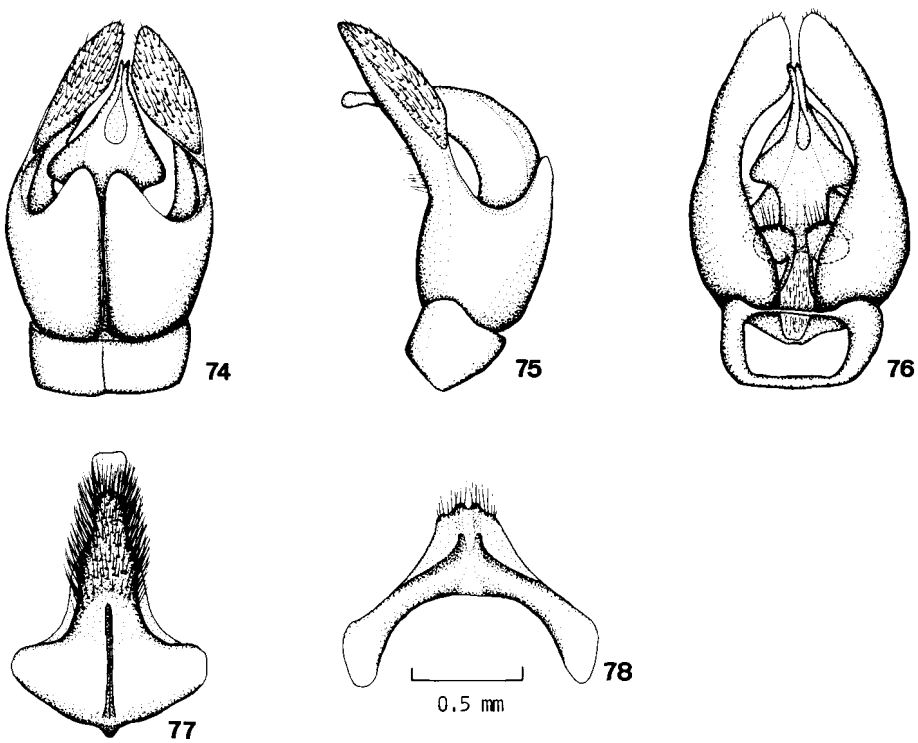
*Other localities (*new records)* : Rishiri Is., Hakodate (Hokkaido) ; Mt. Hakkoda (Aomori Pref.) ; *Morioka (Iwate Pref.); Mt. Zao (Miyagi Pref.); *Kuroiso (Tochigi Pref.) ; *Hanno (Saitama Pref.) ; *Mt. Mitake (Tokyo) ; Karuizawa (Nagano Pref.) ; *Masutomi (Yamanashi Pref.) ; Senami, Mt. Yahiko ; Mt. Kinpoku-Sado Is. (Niigata Pref.) ; Fukui, Kamishihi, Ohno, Izumi, Ikeda, Takefu, Tsuruga, Mikata (Fukui Pref.) ; Kibi (Wakayama Pref.) ; *Kyoto (Kyoto Pref.) ; *Sasayama (Hyogo Pref.); *Nagi (Tottori Pref.) ; *Matsue (Shimane Pref.) ; Mt. Saragamine (Ehime Pref.) ; Tosayama, Godaisan (Kochi Pref.); Mt. Hikosan, *Mt. Homan (Fukuoka Pref.) ; *Mt. Aso (Kumamoto Pref.).

12. **Andrena (Andrena) maukensis Matsumura**
(Figs. 11, **26,** 41, 74-79, 94, Table 4)

Andrena maukensis Matsumura, 1911, J. Coll. Agr., Tohoku Imp. Univ., 4 : 107, female ; Yasumatsu 1941, Peking Nat. Hist. Bull., 15 : 277.

Andrena ***(Andrena)*** *maukensis* Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12 : 142, female; Hirashima, 1966, ibid., 14 : 103.

The description of male, which is new to science is given below.



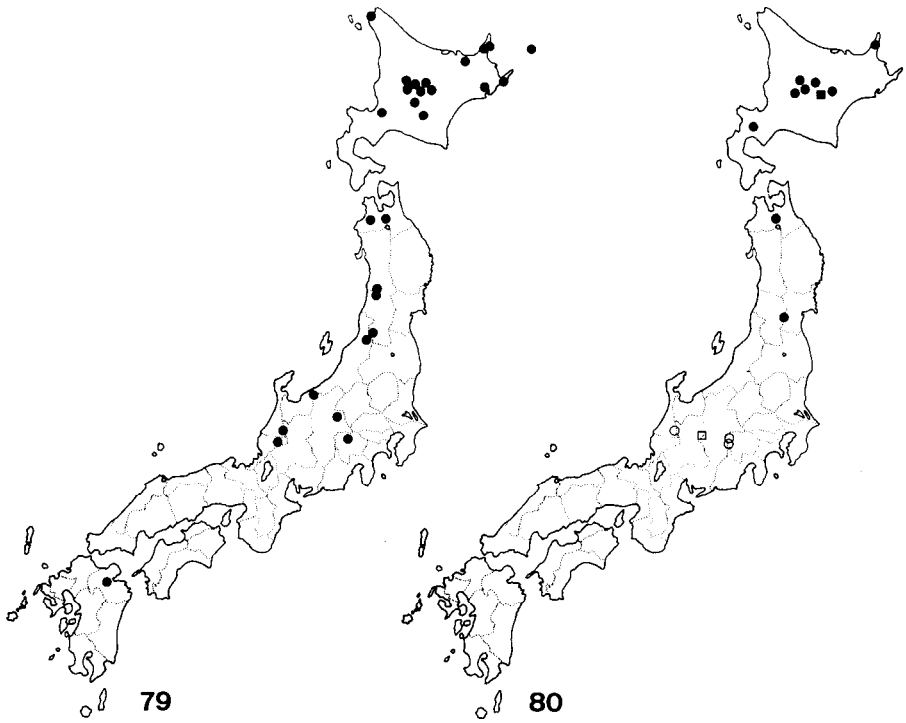
Figs. 74-78. Genital capsule and associated structures of *Andrena* (*Andrena*) *mauken-sis* Matsumura, 74 : dorsal view of genital capsule, 75 : lateral view of the same, 76 : ventral view of the same, 77 : 7th sternum, 78 : 8th sternum.

Male : Length 7.5-8.0 mm.

Integumental color : Mandibles reddened apically ; flagellum brownish beneath ; posterior margins of metasomal terga brownish subhyaline.

Pubescence : Hairs on head not long, not dense, mainly dull whitish to pale yellowish, mixed with sparse, fuscous hairs on paraocular area, frons and genal area near eye and vertex ; those on thorax long, dull whitish to pale yellowish, sometimes mixed with fuscous hairs ; those on legs pale yellowish ; those on metasomal terga 1-2 long, whitish to pale yellowish, on terga 3-5 short, whitish, on tergum 6 whitish; metasomal sterna 2-5 each with a sparse, curled fringe apically.

Structure : Mandible long, curved, falciform, with sharp apex ; basal projection of mandible nearly triangular, not long; malar space short, about 1/6 times as long as base of mandible ; process of labrum slightly emarginate, well convex, smooth and shiny ; clypeus transversely convex, narrowly tessellate on basal portion, smooth and shiny with moderate-sized, sparse punctures on the rest of clypeus ; clypeus without an impunctate, median space ; genal area not distinctly angled behind ; flagellum 1 about as long as broad, shorter than 2 or 3 ; mesoscutum densely tessellate, indistinctly punctate, dull ; propodeum roughened ; enclosure ill defined, rugose basally, tessellate



Figs. 79-80. Maps showing the distributions of *Andrena (Andrena) maukensis* Matsumura (79) and A. (A.) ***lapponica shirozui*** Hirashima (black) and ***A. (A.) 1. sumizome,*** new subspecies (white) (80). A square indicates the type locality.

apically ; mesepisternum densely tessellate with a little roughened punctures ; metasoma tessellate, especially on basal terga, becoming smoother toward apical terga ; posterior depressions of terga broad, not well indicated ; genitalia and associated structures as illustrated (Figs. 74-78).

Distribution : Japan (Hokkaido, Honshu, and Kyushu) and Saghalien, the Kuril Is. (Etorofu and Shakotan Is.). This is the first record of this species from the Kuril Is. and Kyushu. (Fig. 79)

Floral records : Hirashima (1962) recorded *Vaccinium vitis-idea* L. from Honshu. We record 6 new plants as follows : Compositae : *Taraxacum officinale* Weber (5 ♀ 4 ♂) ; *Solidago virgaurea* subsp. *leiocarpa* Hulten (2 ♀). Salicaceae: *Salix taraikensis* Kimura (1 ♂). Leguminosae : *Lathyrus japonicus* Willd. (1 ♂). Rosaceae : *Rubus parvifolius* L. (1 ♂). Aquifoliaceae : *Ilex sugerokii* var. *brevipedunculata S. Y.* Hu (1 ♀).

Flight records : Female : mid July (Kyushu) ; early June to late August (Honshu) ; mid June to mid August (Hokkaido). Male : early June to early July (Honshu) ; late May to mid July (Hokkaido).

Specimens *examined* : We have examined 23 females and 11 males. Some of them are cited as follows : THE KURIL IS. : Etorofu Is. : 1 ♀ (S. Kuwayama & Y. Sugihara) ; 1 ♂ (Y. Sugihara) ; Shakotan Is. : 1 ♂ (S. Kuwayama & Y. Sugihara). HOK-

KAIDO : 2 ♀, Rausu-Seseki, Shiretoko, 16. vi. 1984 (0. Tadauchi) ; 2 ♂, Mt. Rausu, 1300 m, Shiretoko, 23. vi. 1963 (T. Saigusa) ; 1 ♂, Ochiishi, Nemuro, 28. vi. 1957 (R. Ishikawa) ; 1 ♂, Akkeshi, 24. vi. 1965 ; 1 ♂, Tokachimitsumata, Kamishihoro, 29. v. 1984 (0. Tadauchi) ; 2 ♀, same locality and collector as above, 12. vi. 1984 ; 1 ♀, Kogen Spa, Mt. Taisetsu, 15. viii. 1984 (0. Tadauchi) ; 1 ♀, Ginsendai, Mt. Taisetsu, 14. viii. 1984 (0. Tadauchi) ; Tennin-kyo, Mt. Taisetsu, 27. vi. 1967 (T. Saigusa) ; 1 ♂, Yudoo Lake, Tokachi, 3. vii. 1975 (H. Fukuda) ; 1 ♀, Yamabe, Furano, 23. v. 1984 (0. Tadauchi). HONSHU : 1 ♀, Mt. Iwaki, Aomori Pref., 17. vii. 1960 (S. Masaki) ; 1 ♂, Mt. Chokai, Akita Pref., 20. vi. 1978 (K. Baba & N. Kato) ; 3 ♂, Kanayama, Masutomi, Yamanashi Pref., 8. vi. 1975 (J. Emoto) ; 1 ♀, Karuizawa, Nagano Pref., 7. vi. 1952 (R. Ishikawa) ; Mt. Haku, Ishikawa Pref., 1 ♀, 22. vii. 1962 (I. Togashi); same locality and collector as above: 3 ♀, vii. 1973 ; 1 ♀, 2. vii. 1973 ; 1 ♀, 1. viii. 1973; 1 ♂, 19. vii. 1977; 1 ♀, 20. vii. 1977; 1 ♀, 21. vii. 1979; 1 ♂, 15. vii. 1981. KYUSHU: Mt. Tsurugi, Oita Pref., 12. vii. 1978 (Y. Hirashima).

Other localities (*new records) : *Wakkanai, Hamakoshimizu, *Akkeshi, *Mt. Memuro, Nukabira, *Mikuni-toge, Aizankei, Yukomanbetsu, *Sapporo (Hokkaido) ; Mt. Hakkoda (Aomori Pref.) ; Mt. Chokai, Oguni (Yamagata Pref.) ; Mt. Takizawa, Renge Spa (Niigata Pref.) ; Ohno (Fukui Pref.).

13a. *Andrena (Andrena) lapponica shirozui* Hirashima, new status
(Figs. 12, 27, 42, 80-85, 94, Table 4)

Andrena (Andrena) shirozui Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12: 143, female; Hirashima, 1966, ibid., 14 : 103.

We treat here *Andrena* ***(A.)*** *shirozui* Hirashima as a subspecies of the European *Andrena lapponica* Zetterstedt. It is separable from the nominate subspecies by the clypeus less tessellate, broadly shiny and smooth with sparser and weaker punctures, the tibia1 scopa broadly whitish in front, pale brownish behind, the hairs on the thorax whitish, the caudal fimbria brownish, the male clypeus with much blackish hairs and the hairs on the thorax whitish.

This subspecies destributes in Hokkaido and northern Honshu (Tohoku Districts).

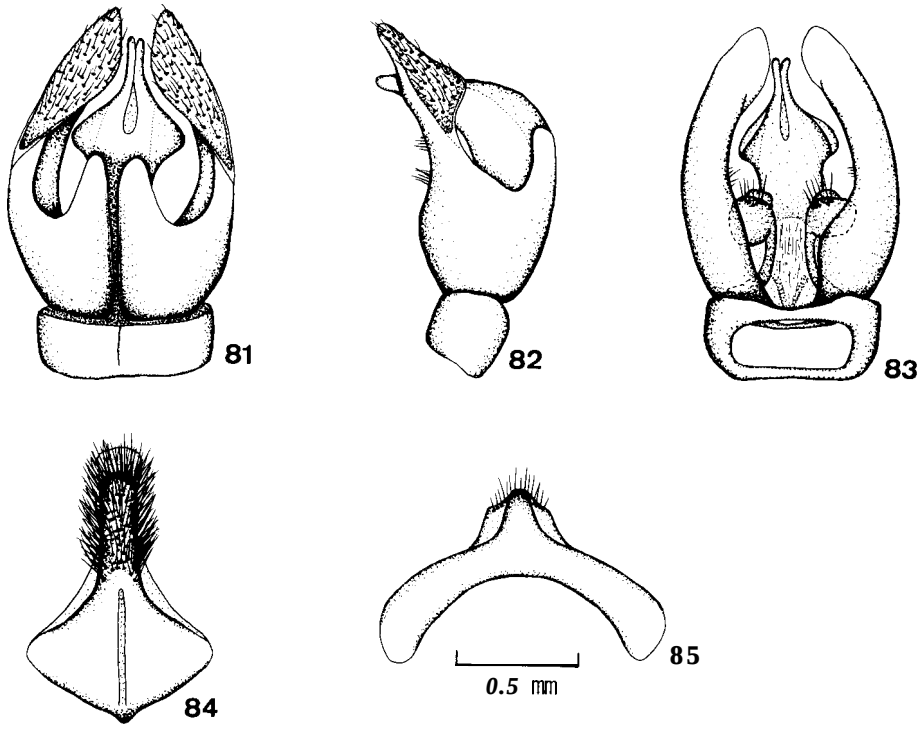
The description of male, which is new to science is given below.

Male : Length about 7.5 mm.

Integumental color : Mandibles reddened apically ; flagellum brownish beneath ; posterior margins of metasomal terga yellowish brown subhyaline.

Pubescence : Hairs on head not long, not dense, dull whitish, mixed with fuscous hairs ; those on paraocular area, frons, and genal area and vertex fuscous ; hairs on thorax dull whitish to pale yellowish, not mixed with fuscous hairs above ; hairs on legs pale to yellowish; those on metasomal terga 1-2 long, dull whitish, on 3-5 terga short, brownish, on tergum 6 whitish; metasomal sterna 2-5 without long, curled fringes apically.

Structure : Mandible long, curved, falciform, with sharp apex ; basal projection of mandible not long ; malar space long, about 1/3 times as long as base of mandible ; process of labrum transverse, well convex, smooth and shiny; clypeus longitudinally convex, narrowly tessellate on basal portion, smooth and shiny with moderate-sized,



Figs. 81-85. Genital capsule and associated structures of *Andrena* (*Andrena*) *lapponica shirozui* Hirashima, 81: dorsal view of genital capsule, 82 : lateral view of the same, 83 : ventral view of the same, 84 : 7th sternum, 85 : 8th sternum.

sparse punctures on the rest of clypeus; clypeus with a narrow, impunctate, median space ; genal area not distinctly angled behind ; flagellum 1 about 1.5 times as long as wide, slightly shorter than 2 or 3 ; mesoscutum densely tessellate, punctate, dull ; propodeum roughened ; enclosure ill defined, narrowly rugose basally, tessellate apically; mesepisternum nearly roughened with a little roughened punctures ; metasomal terga tessellate, becoming smoother toward apical terga ; posterior depressions of terga broad, not well indicated ; genitalia and associated structures as illustrated (Figs. 81-85).

Distribution: Japan (Hokkaido and northern Honshu). (Fig. 80)

Floral records : Hirashima (1962) recorded 2 plants in northern Honshu. We newly record 2 plants as follows : Compositae : *Taraxacum officinale* Weber (1 ♂). Rosaceae : *Gerum pentapetalum* Makino (1 ♀).

Flight records : Female : early July (northern Honshu) ; mid June to late July (Hokkaido). Male: mid June to early July (Hokkaido).

Specimens ***examined*** : HOKKAIDO : 1 ♂, Mt. Rausu, Shiretoko, 23. vi. 1967 (T. Saigusa), 7 ♂, Mt. Taisetsu, 7. vii. 1964 (T. Matsumura) ; 1 ♂, Mikuni Pass, Mt. Taisetsu, 11. vi. 1974 (H. Fukuda) ; 1 ♂, Sugatami, Mt. Taisetsu, 10. vii. 1967 (T. Matsumura) ; 1 ♂, same locality and collector as above, 23. vi. 1967 ; 1 ♀, Mt. Yotei,

19. vi. 1958 (M. Shiokawa).

Other localities : Ashoro, Nukabira (*type locality),* Aizankei, Yukomanbetsu (Hokkaido) ; Mt. Hakkoda (Aomori Pref.) ; Mt. Zao (Miyagi Pref.).

13b. *Andrena (Andrena) lapponica sumizome* Tadauchi, Hirashima et Matsumura, new subspecies

(Figs. 80, 94)

Andrena (Andrena) sp. (aff. *shirozui*) Yamauchi et al., 1982, A list of Insects in Gifu Pref., 422.

This new subspecies is found in the alpine regions in central Honshu, such as the North and South Japan Alps and Mt. Haku. The female of the new subspecies is characteristic in having the vertex and the antenna1 region with much fuscous hairs and not mixed with whitish ones, the mesepisternum mixed with much fuscous hairs, the metasomal terga 2-4 hairy and each with an obscure fringe of suberect to erect, sooty white hairs, and the wing darker.

Distribution : Japan (alpine region, central Honshu). (Fig.80)

Floral record : Not available.

Flight records : Female : late June to mid August.

Type material: Holotype female (Type No. 2574, Kyushu Univ.), Gonoike, Mt. Ontake, 23. vi. 1976 (K. Yamauchi). Paratypes : same locality and collector as holotype: 1 ♀, 23. vi. 1976; 2 ♀, 18. vii. 1974 ; 1 ♀, 1. viii. 1976; 2 ♀, 16. vii. 1978 ; 2 ♀, Komagatake, Yamanashi Pref., 18. vii. 1956 (H. Kamiya) ; 1 ♀, Mt. Komagatake, Yamanashi Pref., 25. vii. 1936 (H. Masuda) ; 1 ♀, Mt. Senjo-Kitadake, Yamanashi Pref., 28-29. vii. 1959 (Y. Miyatake) ; 1 ♀, Mt. Haku, 2000 m, Ishikawa Pref., 11. viii. 1959 (I. Togashi) ; 2 ♀, Mt. Haku, Ishikawa Pref., 22. vii. 1962 (I. Togashi) ; 1 ♀, Midagahara, Mt. Haku, 29. vii. 1956 (S. Nakamura).

Type depository : The type is preserved in the collection of the Entomological Laboratory, Faculty of Agriculture, Kyushu University.

14. Andrena (Andrena) aburana Hirashima

(Figs. 13, 28, 43, 86, 94, Table 4)

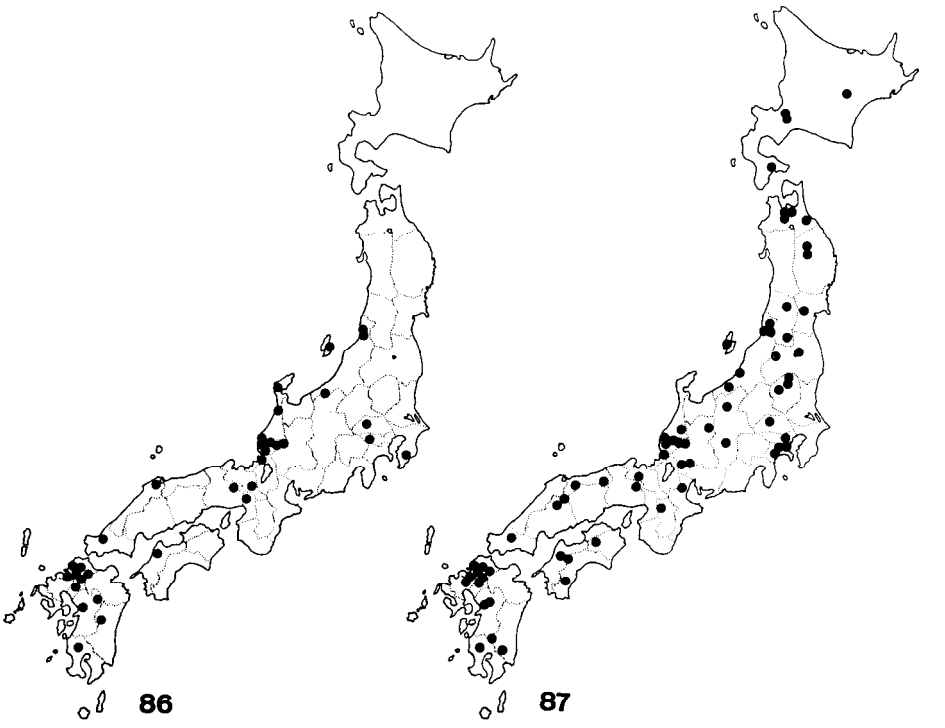
Andrena (Andrena) ***aburana*** Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12 : 146, female & male ; Hirashima, 1966, ibid., 14 : 103 and 116.

Distribution : Japan (Honshu, Sado Is., Shikoku, and Kyushu). (Fig. 86)

Floral records : Cruciferae : *Brassica Napus* L. *(4* ♀). Rosaceae : *Prunus Mume* Sieb. et Zucc. (1 6). Salicaceae: *Salix* sp. (1 ♀).

Flight records : Female : late March to early May (Kyushu) ; late March to late May (Honshu). Male : early to mid March (Kyushu) ; early to late March (Shikoku) ; late March to late April (Honshu).

Specimens examined : *We* have examined 38 females and 22 males. Some of them are cited as follows : HONSHU : 1 ♂, Kurokawa, Niigata Pref., 10. iv. 1985 (K. Baba) ; 1 ♀ 2 ♂, Mt. Utatsu, Kanazawa, Ishikawa Pref., 10. iv. 1974 (Y. Yoneda) ; 1 ♀, Fukami, Monzen, Ishikawa Pref., 19. iv. 1972 (I. Togashi) ; 1 ♀, Imajo, Fukui Pref., 18. iv. 1981 (Y. Haneda). SADO IS. : 3 ♀, Suizu, 10. v. 1980 (K. Baba). KYUSHU: 1 ♀,



Figs. 86-87. Maps showing the distributions of *Andrena* ***(Andrena)*** *aburana* Hirashima (86) amd ***A. (A.) benejica*** Hirashima (87). A square indicates the type locality.

Kuroubaru, Chikuho, Fukuoka Pref., 7. iv. 1975 (0. Tadauchi) ; 1 ♀, Mt. Koshozan, Fukuoka Pref., 21. iii. 1962 (S. Ide) ; 2 ♀, Mt. Korasan, Kurume, Fukuoka Pref., 14. iv. 1963 (S. Ide) ; 1 ♀, Kurume, Fukuoka Pref., 3. iv. 1963 (S. Ide) ; 1 ♀, Mt. Hikosan, Fukuoka Pref., 4. v. 1976 (K. Ôhara); 1 ♀, Marutani, Miyakonojo, Miyazaki Pref., 7. iv. 1976 (0. Tadauchi) ; 1 ♀, Tabuse, Murasho, Miyazaki Pref., 5. iv. 1976 (0. Tadauchi).

Other ***localities (*new records)*** : *Yorii (Saitama Pref.) ; *Kiyosumi (Chiba Pref.) ; Mt. Mitake (Tokyo) ; Iwagasaki, Sasagamine (Niigata Pref.) ; *Shirayama (Ishikawa Pref.) ; Fukui, Eiheiji, Kamishihi, Katsuyama, Ohno, Ikeda, Mihama, Natasho (Fukui Pref.) ; "Kyoto (Kyoto Pref.) ; Mt. Minoo (Osaka Pref.) ; *Sasayama (Hyogo Pref.) ; *Matsue (Shimane Pref.) ; Hagi (Yamaguchi Pref.); Matsuyama (Ehime Pref.) ; Kashii, *Inunaki, Mt. Homan (*type* ***locality),*** *Dazaifu, Mt. Narutake (Fukuoka Pref.) ; Kumamoto (Kumamoto Pref.).

15. **Andrena (Andrena) benefica** Hirashima

(Figs. 14, 29, 44, 87, 94, Table 4)

Andrena ***(Andrena) benejica*** Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12 : 151, female & male ;

Hirashima, 1966, ibid., 14: 104 and 115; Kim and Kim, 1983, Kor. J. Ent., 13: 5.

Distribution : Japan (Hokkaido, Honshu, Sado Is., Shikoku, and Kyushu) and Korea. This is the first record of this species from Shikoku. (Fig. 87)

Floral records : Hirashima (1962) recorded 6 plants. We examined 439 females and 103 males collected on 17 plants as follows : Cruciferae : *Brassica Napus* L. (404 ♀ 33 ♂); *B. pekinensis* Pupr. (1 ♀); *Capsella Bursa-pastoris* Medic. (1 ♂); *Raphanus sativus* var. *hortensis* Backer (2 ♀). Aceraceae: *Acer ginnala* Maxim. (1 ♀); *A.* sp. (11 ♀ 1 ♂). Compositae : *Taraxacum officinale* Weber (3 ♀); *Lapsana apogonoides* Maxim. (1 ♀). Salicaceae : *Salix gracilistyla* Miq. (2 ♀); *S.* sp. (1 ♀ 67 6). Rosaceae : *Potentilla kleiniana* subsp. *anemonefolia* Murata (2 ♀); *Crataegus cuneata* Sieb. et Zucc. (1 ♀); *Pyrus pyrifolia* var. *culta* Nakai (1 ♀); *Malus pumila* Mill. (1 ♀); *Pourthiaea villosa* var. *laevis* Stapf (4 ♀). Ericaceae : *Pieris japonica* D. Don (1 ♀). Liliaceae : *Gagea lutea* Ker-Gawl. (1 ♀).

Flight records : Female : mid March to late May (Kyushu) ; mid April to early May (Shikoku); early April to early June (Honshu); late April to early July (Hokkaido). Male : mid March to late April (Kyushu) ; mid April (Shikoku) ; early April to late May (Honshu) ; late April to early May (Hokkaido).

Specimens *examined* : We have examined 520 females and 153 males. Some of them are cited as follows. HOKKAIDO : 1 ♀, Kyushu Univ. Forests, Ashoro, 11. vi. 1984 (0. Tadauchi) ; 2 ♀, Hokkaido Univ. Campus, Sapporo, 13. v. 1984 (0. Tadauchi). HONSHU : 15 ♀, Nishihiranai, Aomori Pref., 30. v. 1976 (0. Tadauchi) ; 1 ♂, Shichiri, Nikko, Tochigi Pref., 11. v. 1976 (0. Tadauchi) ; 1 ♂, Arai, Niigata Pref., 24. v. 1976 (0. Tadauchi) ; 3 ♀ 17 ♂, Hatahoko, Mt. Norikura, Gifu Pref., 8. v. 1976 (0. Tadauchi) ; 2 ♀, Kabuto, Seki, Mie Pref., 13. v. 1975 (0. Tadauchi) ; 68 ♀, Masumizu, Mt. Daisen, Tottori Pref., 26. iv. 1975 (0. Tadauchi). SADO IS. : 1 ♂, Mt. Myoken, 12. v. 1985 (K. Baba). SHIKOKU : 4 ♀, Hashikura, Ikeda, Tokushima Pref., 1. v. 1975 (0. Tadauchi) ; 11 ♀ 21 ♂, Ochiai, Kuma, Ehime Pref., 15. iv. 1976 (0. Tadauchi) ; 1 ♀, Taisho, Kochi Pref., 16. iv. 1976 (0. Tadauchi). KYUSHU : 16 ♀, Kuroubaru, Chikuho, Fukuoka Pref., 9. iv. 1975 (0. Tadauchi) ; 4 ♀, Seta, Ozu, Kumamoto Pref., 9. iv. 1976 (0. Tadauchi) ; 3 ♀, Yoshimatsu, Kagoshima Pref., 4. iv. 1976 (0. Tadauchi).

*Other localities (*new records)* : Hakodate (Hokkaido) ; *Moya, *Kogawara (Aomori Pref.) ; *Shibutami, *Kuriyagawa (Iwate Pref.) ; *Mt. Izumigatake (Miyagi Pref.) ; *Okitama, *Murayama (Yamagata Pref.) ; *Nakayama, *Nozawa (Fukushima Pref.) ; *Kuroiso, *Nasu (Tochigi Pref.) ; *Yorii, *Ochigawa (Saitama Pref.) ; *Nakano, Yoyogi, Egota (Tokyo) ; *Nakai, Kawasaki, Atsugi (Kanagawa Pref.) ; Koshoku, Ina (Nagano Pref.) ; Asahi, Kanamaru-Sekigawa, Kurokawa, Senami, Yamato, Kashiwazaki (Niigata Pref.) ; Gifu, *Sekigahara (Gifu Pref.) ; *Mt. Haku (Ishikawa Pref.) ; Mikuni, Fukui, Eiheiji, Katsuyama, Ohno, Izumi, Ikeda, Tsuruga (Fukui Pref.) ; *Ikaruga (Nara Pref.) ; *Fukuchiyama (Kyoto Pref.) ; *Sasayama (Hyogo Pref.) ; *Nagi (Tottori Pref.) ; *Mt. Dogo, *Hiba (Hiroshima Pref.) ; *Ato (Yamaguchi Pref.) ; Tachibanayama *(type locality)*, Fukuoka, Futsukaichi, *Kurume, *Tanushimaru, Mt. Hikosan (Fukuoka Pref.) ; *Hokuzan-Dam (Saga Pref.) ; Kumamoto (Kumamoto Pref.) ; *Miyakonojo (Miyazaki Pref.) ; *Miyanojo (Kagoshima Pref.).

16. Andrena (Andrena) babai Tadauchi et Hirashima, new species

(Figs. 15, 30, 45, 88-94, Table 4)

Andrena (*Andrena*) sp. 1, Haneda, 1985, A list of Insects in Fukui Pref., ***310*** ; Tadauchi & Hirashima, 1986, Trans. Essa Ent. Soc., (63) : 18.

This new species is similar to *Andrena* ***(A.) benejica*** Hirashima and the European *Andrena praecox* (Scopoli). But it is separable from *benefica* by the clypeus strongly convex with roughened, denser punctures, the hairs on the male clypeus silvery white, not intermixed with brownish or blackish ones, and the outer face of male propodeum with much fuscous hairs. It is also separable by *praecox* by the smaller size, the less tessellate clypeus with a shiny, smooth, impunctate, median space, the tibia1 scopa nearly whitish, the head and the thorax whitish, the hairs of the metasomal terga scanty, the male clypeus not flat, nearly smooth and shiny with larger, more distinct, sparser punctures, the male clypeus with whitish hairs not dense, the male metasomal sterna 2-5 each with a distinct, long, curled hair fringe.

So far as we know, the distribution of this species is restricted to Niigata, Ishikawa and Fukui Prefectures, central Honshu. It flies early in spring and visits the flowers of *Salix* sp.

Female : Length about 9.0 mm.

Integumental color : Flagellum brownish beneath ; posterior margins of metasomal terga reddish brown subhyaline.

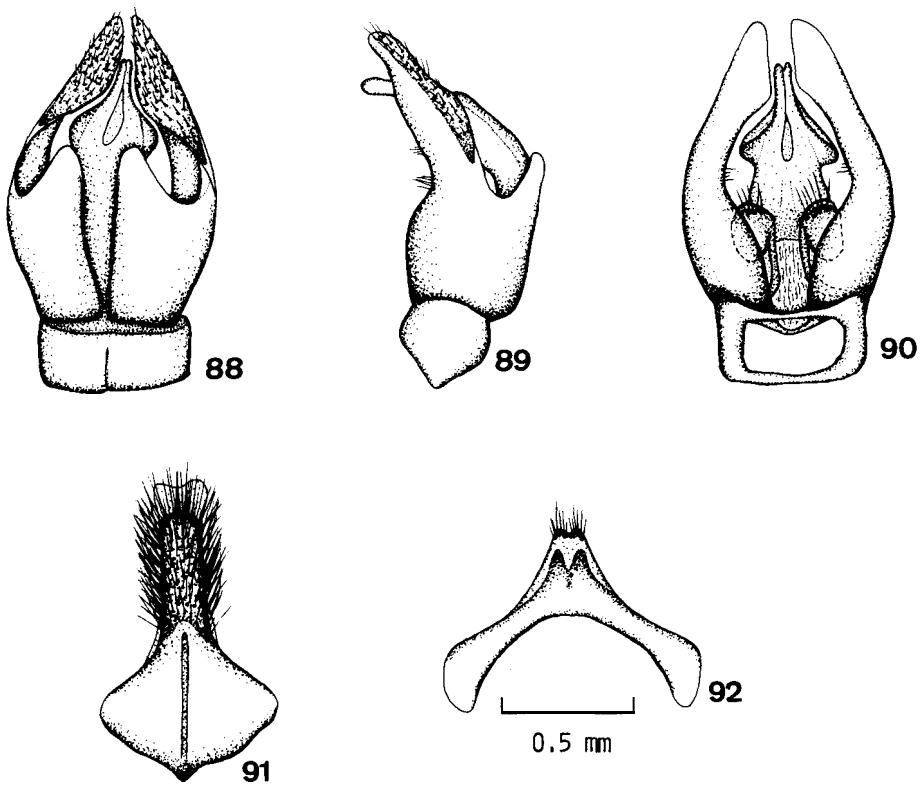
Pubescence : Hairs on head and thorax short, not dense, those on head whitish, with brownish ones on paraocular area, frons, and genal area near eye and vertex ; facial fovea brownish above, yellowish below ; facial fovea with upper end occupying 3/4 of space between eye and ocellus ; hairs on thorax dull whitish mixed with pale brownish ; trochanteral and femoral floccus white ; tibia1 scopa whitish, narrowly brownish above ; hairs on metasomal terga scanty, white, on tergum 1 long, on terga 2-5 short ; caudal fimbria pale brownish.

Structure : Process of labrum transverse, slightly emarginate ; malar space about 1/4 times as long as base of mandible ; clypeus strongly convex, tessellate on basal half, smooth and shiny to very weakly tessellate on apical half with distinct, moderate-sized punctures ; clypeus with a median, impunctate space ; mesoscutum densely tessellate with indistinct, sparse punctures ; mesoscutellum smooth and shiny to weakly tessellate anteriorly, tessellate posteriorly ; propodeum densely tessellate, enclosure with basal half rugose, apical half tessellate ; mesepisternum shagreened with weak, indistinct punctures ; metasomal terga weakly tessellate, nearly impunctate, feebly shiny ; posterior depressions of terga not well indicated.

Male : Length 7.5-8.5 mm.

Integumental color : Mandibles reddened apically ; flagellum brownish beneath ; posterior margins of metasomal terga yellowish brown subhyaline.

Pubescence : Hairs on head not specially dense, long, silvery white, with fuscous ones on vertex, paraocular area, frons, and genal area near eye ; those on thorax long, whitish; those on propodeum dull whitish, mixed with much fuscous ones; those on legs whitish except for tarsi, which are covered with pale yellowish hairs; those on metasomal terga l-2 long, whitish, on terga 3-5 short, pale, on tergum 6 whitish to pale



Figs. 88-92. Genital capsule and associated structures of *Andrena (Andrena) babai,* new species, 88: dorsal view of genital capsule, 89: lateral view of the same, 90: ventral view of the same, 91 : 7th sternum, 92 : 8th sternum.

yellowish ; metasomal sterna 2-5 each with a fringe of long, curled, white hairs.

Structure : Mandible long, curved, falciform, with sharp apex ; basal projection of mandible slender ; malar space short, about 1/5 times as long as base of mandible ; clypeus slightly convex, narrowly tessellate basally, smooth and shiny spically with sparse, distinct punctures ; clypeus without an impunctate, median space ; genal area not distinctly angled behind ; flagellum 1 about one and half times as long as wide, slightly longer than 2, and nearly as long as 3 ; mesoscutum densely tessellate, sparsely and shallowly punctate ; mesoscutellum nearly smooth to very weakly tessellate anteriorly, tessellate and punctate posteriorly ; propodeum roughened, enclosure ill defined, basal half rugose, apical half tessellate ; mesepisternum roughened with indistinct punctures ; metasomal terga weakly tessellate, becoming smoother toward apical terga ; posterior depressions of terga broad, indistinct ; genitalia and associated structures as illustrated (Figs. 88-92).

Distribution : Japan (central Honshu (Niigata, Ishikawa, and Fukui Prefs.) and Sado Is.). (Fig. 93)

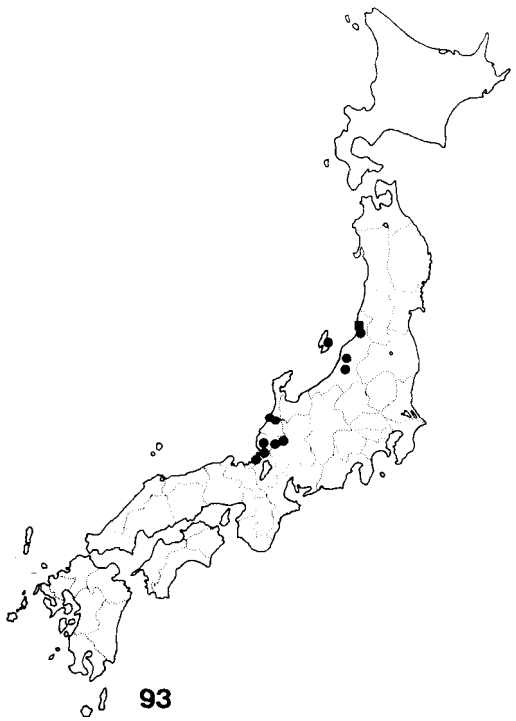


Fig. 93. A map showing the distribution of *Andrena* ***(Andrena) babai,*** new species. A square indicates the type locality.

Floral record : Salicaceae : *Salix* sp. (8 ♀).

Flight records : Female : early April to early May. Male : late March to late April.

Type material : Holotype female (Type No. 2574, Kyushu Univ.), Senami, Niigata Pref., 9. iv. 1985 (K. Baba). Paratypes : same locality and collector as holotype : 3 ♂, 26. iv. 1984 ; 1 ♀, 9. iv. 1985 ; 1 ♀, 10. iv. 1985 ; 1 ♂, 13. iv. 1985 ; 1 ♀, Funado, Nakajo, Niigata Pref., 9. iv. 1985 (K. Baba) ; 5 ♀ 1 ♂, Hanami, Tsubame, Niigata Pref., 10. iv. 1985 (K. Baba) ; 7 ♀, Kusoozu, Nagaoka, Niigata Pref., 21. iv. 1985 (K. Baba) ; 1 ♀, Fukuoka, Kohchi-mura, Ishikawa Pref., 1. iv. 1982 (Y. Haneda) ; 1 ♂, Tatsunokuchi, Ishikawa, Pref., 2. iv. 1982 (Y. Haneda) ; Tomitsuka, Ohno, Fukui Pref. : 1 ♂, 13. iv. 1977 (Y. Haneda) ; 1 ♀, 16. iv. 1975 (Y. Haneda) ; Shingawara, Ohno, Fukui. Pref. : 1 ♀, 13. iv. 1972 (Y. Haneda) ; 1 ♀, 3. v. 1972 (Y. Haneda) ; Rokuroshi, Ohno, Fukui Pref. : 1 ♀, 3. v. 1976 (Y. Haneda); 1 ♂, 10. iv. 1977 (Y. Haneda) ; 1 ♀ 1 ♂, Fukui, Fukui Pref., 11. iv. 1981 (Y. Haneda); 1 ♂, Hokeiji, Ohno, Fukui Pref., 20. iv. 1975 (Y. Haneda) ; 2 ♂, Hiyoshi, Ohno, Fukui Pref., 30. iii. 1964 (T. Haneda). SADO IS. : Suizu, 10. v. 1980 (K. Baba).

Type depository : The type is preserved in the collection of the Entomological

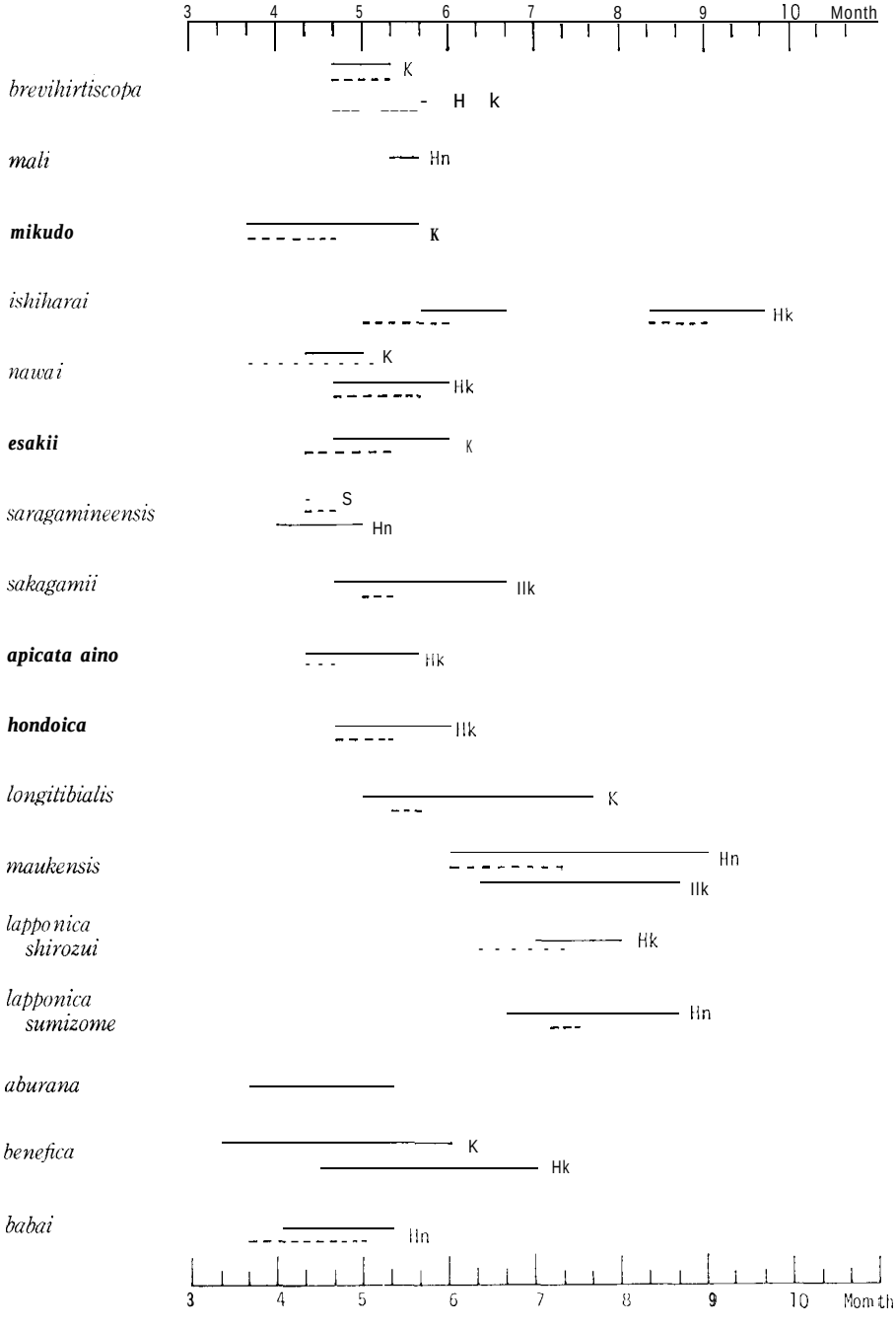


Fig. 94. Flight records for the 16 Japanese species of *Andrena* (*Andrena*). A straight line indicates female and a dashed one male, K : Kyushu, S : Shikoku, Hn : Honshu, Hk : Hokkaido.

Table 4. Summary of floral records for the Japanese species of *Andrena (Andrena).* The numbers show as follows : the former indicates the number of plant species in the family the latter above in parentheses indicates the female number of *Andrena* collected ; and the below the male number collected.

Plant	Records of *Andrena* **(Andrew)**															
Family	*brevihirtiscopa*	*mali*	*mikado*	*ishiharai*	*nawai*	*esakii*	*sakagamii*	*apicata aino*	*hondoica*	*longitibialis*	*maukensis*	*lapponica shirozui*	*aburana*	*benefica*	*babai*	
Compositae	1(0/2)		1(1/0)	4(4/13)	2(11/35)		2(66/0)		1(1/3)	1(2/0)	2(7/4)	1(0/1)		2(4/0)		
Salicaceae	1(1/0)		1(0/1)	3(31/1)	3(17/5)		1(5/0)	1(9/2)	5(17/3)	1(1/0)	1(0/1)		1(1/0)	2(3/67)	1(8/0)	
Rosaceae	3(4/0)	1(2/0)			4(17/0)		1(2/0)			1(0/1)	1(0/1)	1(1/0)	1(0/1)	5(9/0)		
Cruciferae	1(0/5)			1(0/2)	1(1/1)					2(2/2)			1(4/0)	4(407/34)		
Aceraceae	1(42/6)					1(2/4)								2(12/1)		
Ericaceae			5(51/7)				1(2/0)			6(17/32)				1(1/0)		
Liliaceae							1(9/0)							1(1/0)		
Caprifoliaceae				1(1/0)			1(1/0)									
Araliaceae				2(1/3)			1(1/0)									
Ranunculaceae				1(2/1)												
Umbelliferae				1(7/12)												
Polygonaceae				1(0/1)												
Saxifragaceae										1(1/0)						
Scrophulariaceae									1(1/0)							
Labiatae										2(2/1)						
Leguminosae											1(0/1)					
Aquifoliaceae											1(1/0)					
Staphyleaceae							1(1/0)									
Violaceae							1(1/0)									
Totals	7(74/13)	1(2/0)	7(52/8)	14(46/33)	10(46/41)	1(2/4)	10(88/0)	1(9/2)	7(19/6)	14(25/36)	6(8/7)	2(1/1)	3(5/1)	17(437/102)	1(8/0)	

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