SYNOPSIS OF ANDRENA CEUANDRENA) 0F JAPAN (HYMENoPTERA,ANDRENIDAE)

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SYNOPSIS OF *ANDRENA (EUANDRENA)* OF JAPAN (HYMENOPTERA, ANDRENIDAE)*

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Abstract

The subgenus *Euandrena* Hedicke of Japan is revised. Six species are recognized, including a new species *Andrena (Euandrena) togashii.*

Hirashima (1964) reported four species of *Euandrena* from Japan and stated that the Japanese *Euandrena* includes at least five species. Although he recognized the fifth species based on a paired specimens at that time, Hirashima left it unnamed because it is a very difficult species. Based on a few more specimens, it was described as *Andrena (Euandrena) tateyamana* Tamasawa and Hirashima. Another new species, *Andrena (Euandrena) togashii*, is described in this paper. Thus, the Japanese *Euandrena* is known by six species at present.

Subgenus Euandrena Hedicke, 1933

The subgeneric characters are discussed by Hirashima(l964). *Euandrena* is still heterogeneous, and it is very probable that *Andrena takachihoi* Hirashima and *Andrena togashii,* new species, may be transferred into another subgenus.

KEY TO THE FEMALES OF JAPANESE *Euandrena*

1. Tibia1 scopa fuscous ; facial fovea narrow, deep, especially so on lower portion ; process of labrum more or less small, rather trapezoid, not distinctly transverse ; genal area well developed 2
— Tibia1 scopa silvery white or only slightly yellowish; facial fovea rather broad, not deeply impressed ; process of labrum transverse ; genal area receding 3
2. Head more or less long as seen in front ; process of labrum not specially narrowed at apex ; clypeus coarsely punctate but median and lower portions shining ; apical transverse groove of pronotum entire ; pronotum without a median longitudinal line ; propodeal enclosure often not wrinkled at base; metasomal terga more or less smooth,

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shining; head with dense fuscous hairs but with whitish hairs in the middle ..... ***takachihoi*** Hirashima

— Head short, distinctly transverse as seen in front ; process of labrum narrow at apex ; clypeus coarsely sculptured (reticulate) with irregular punctures, not smooth even in the middle ; apical transverse groove of pronotum notched (or broadened) in the middle ; pronotum with a weak, longitudinal, median line which is connected with the notch stated above ; propodeal enclosure narrowly wrinkled basally ; metasomal terga very weakly sculptured, rather smooth, shining ..... ***togashii***, new species

3. Tibiae and basitarsi of hind legs ferruginous ; tarsi of mid legs reddish brown ; hairs on head and thorax variable, dull white to yellowish, usually with fuscous hairs on sides of face; malar space not very narrow, more or less well noticeable; process of labrum transverse, rather short, apex entire ; apical transverse groove of pronotum entire (not notched) ; propodeal enclosure granular, basal portion only wrinkled ; metasomal terga very weakly reticulate, rather smooth, rather shining, without distinct fringe of (white) hairs ..... ***ruficrus rabicrus*** Hirashima

— Legs not ferruginous, uniformly dark 4

4. Rather large species, 9.5–10.5 mm ; head more or less short as seen in front ; clypeus dull or shining, with weak punctures ; transverse apical groove of pronotum entire ; basal half of propodeal enclosure wrinkled ; metasomal terga rather smooth, shining ; tibial scopa silvery with slight to distinct yellowish tint ..... ***tateyamana*** Tamasawa and Hirashima

— Smaller, about or less than 9.5 mm ; head long as seen in front ; clypeus smooth or nearly so, shining, with distinct punctures; tibial scopa silvery 5

5. Head with rather dense fuscous hairs ; thorax, especially mesoscutum, scutellum and metanotum, with rich yellowish brown hairs ; clypeus well convex, broadly smooth, very shining, with somewhat strong punctures ; transverse apical groove of pronotum slightly notched in the middle ; propodeal enclosure roughened or weakly wrinkled basally ; metasomal terga densely reticulate, nearly dull . . . . ***hebes*** Pérez

— Head with whitish hairs, without dense fuscous ones; thorax with hairs dull white, at most slightly yellowish ; clypeus slightly shorter than in *hebes*, microscopically reticulate, with an indication of broad, longitudinal, median, impunctate space ; transverse apical groove of pronotum entire or nearly so; propodeal enclosure more sculptured on basal half than apical half; metasomal terga slightly smoother than in *hebes* ..... ***stellaria*** Hirashima

KEY TO THE MALES OF JAPANESE *Euandrena*

1. Flagellum with 2nd segment broader than long, 1st twice as long as broad ; mandibles long, slender, falciform ; genal area unusually broad with posterior corner angulate ; pronotum with humeral angles distinct 2

— Flagellum with 2nd segment longer than broad, 1st less than twice as long as broad ; genal area receding ; pronotum with humeral angles weak as usual 3

2. Head distinctly broader than long as seen in front ; face hardly convex ; clypeus flat above, only slightly convex medially or medio-apically, densely punctate ; clypeus usually not distinctly shagreened, shining; head and thorax usually with whitish hairs ..... ***takachihoi*** Hirashima

— Very similar to the preceding, but head and thorax usually with rich fulvous hairs; clypeus often flat, densely shagreened-punctate, duller ..... ***togashii***, new species

3. Malar space linear ; head and thorax with dull white hairs except for fuscous hairs on sides of face; apical fringes of white hairs on 2nd to 5th sterna well developed ..... ***stellaria*** Hirashima

— Malar space very narrow but noticeable 4

4. Face with rather dense, black hairs; metasomal terga densely reticulate, especially on

basal terga ..... ***hebes*** Pérez

— Face without black hairs, at least on clypeus except sides of face 5

5. Propodeal enclosure small, weakly wrinkled basally ; tarsi and apices of tibiae of hind legs reddened ..... ***ruficrus rabicrus*** Hirashima

— Propodeal enclosure large, wrinkled on basal half or more ; tarsi and tibiae of hind legs darker ..... ***tateyamana*** Tamasawa and Hirashima

(1) Andrena (Euandrena) takachihoi Hirashima

Andrena (Euandrena) ***takachihoi*** Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13 : 53, female; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14 : 109.

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

Male : Length 7-8 mm.

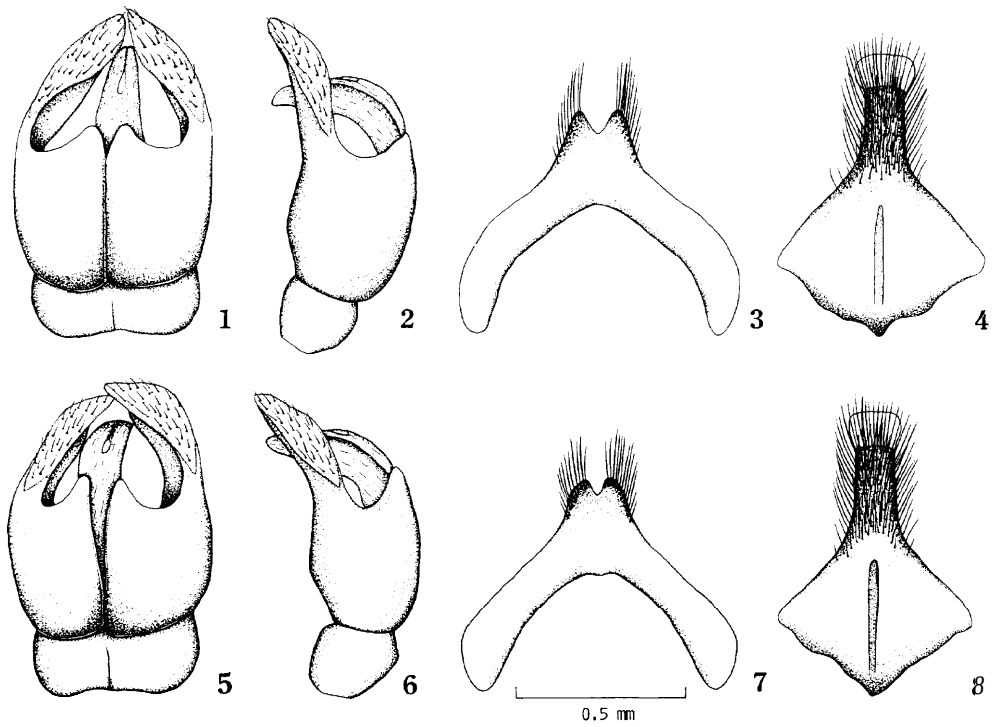
Integumental color : As in female except for metasomal terga and sterna broadly subhyaline apically.

Pubescence : Hairs on head long, dull white, mixed with brownish ones on paraocular area, antenna1 region, supra-antenna1 area, vertex and genal area ; hairs on mesoscutum and legs white ; 1st metasomal tergum with long, sparse, nearly erect, white hairs ; 2nd to 5th terga with short brownish hairs predominant ; tergal white hair fringes obscure.

Structure : Head transverse as seen in front ; process of labrum narrow, shiny, with apical margin slightly emarginate ; clypeus scarcely convex, densely reticulate-punctate ; malar space linear ; mandible long, falciform ; genal area well developed with distinct posterior angle ; flagellum with 1st segment elongate, a little shorter than 2nd and 3rd together ; 2nd segment broader than long ; 3rd slightly longer than broad. Pronotum with postero-lateral angle well developed ; mesoscutum, scutellum, metanotum and sides of thorax roughened, more or less coarsely sculptured ; propodeum more coarsely sculptured ; propodeal enclosure wrinkled basally. Metasomal terga rather smooth, shining, with weak punctures.

Genitalia and associated structures as illustrated.

SPECIMENS EXAMINED : HOKKAIDO : 3 females, Akagawa, Hakodate, 2. ix. 1960 (M. Munakata) ; 2 females, same locality and collector as above, 9. ix. 1960 ; 1 female, Akanuma, near Hakodate, 23. ix. 1953 (A. Munakata) ; 3 females, Fukushima, 9. ix. 1965 (M. Munakata) ; 2 females, same locality and collector as above, 23. ix. 1965 ; 1 male, Oshima-Fukushima, 21. ix. 1978 (H. Tanabe) ; 1 male, Shirikishinai, 5. ix. 1974 (A. Taguchi) ; 1 female, Sapporo (Matsumura) ; HONSHU : 4 females, Mt. Himekami, Iwate Pref., 10. ix. 1979 (Y. Maeta) ; 3 females, same locality and collector as above, 16. ix. 1979 ; 2 females and 1 male, Kumabuse, Yorii, Saitama Pref., 8. x. 1967 (T. Nanbu) ; 3 males, Kamikochi, Nagano Pref., 9. viii. 1957 (R. Ishikawa) ; 3 females, same locality and collector as above, 4. viii. 1957 ; 2 females and 1 male, Sugadaira (1300-1500 **m),** Nagano Pref., 30. viii. 1968 (Y. Hirashima) ; 1 female, Karuizawa, Nagano Pref., 28. viii. 1949 (R. Ishikawa) ; same locality and collector as above : 1 female, 9. ix. 1949 ; 1 female, 7. x. 1949 ; 10 females 16-26, viii. 1950 ; 1 female, l-5, ix. 1950 ; 1 female, 25. viii. 1951 (R. Ishikawa & K. Maruyama) ; 2 males, Kazawa, Gunma



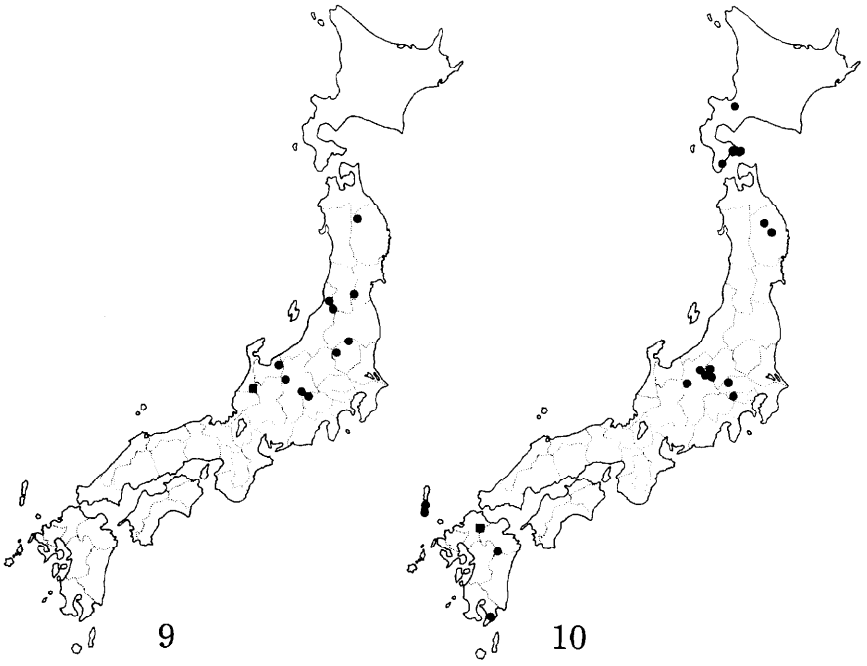
Figs. 1-8. Genital capsules and associated structures of *Andrena (Euandrena) togashii,* new species (1-4), and *Andrena (Euandrena)* ***takachihoi*** Hirashima (5-8), 1 and 5 : dorsal views of genital capsules, 2 and 6 : lateral views of the same, 3 and 7 : 7th sterna, 4 and 8 : 8th sterna.

Pref., 17. viii. 1972 (0. Tadauchi) ; 1 male, Tsumagoi-mura, Gunma Pref., 30. viii. 1949 (R. Ishikawa) ; 1 female, Mt. Mitake, Okutama, Tokyo, 16. ix. 1951 (T. Shida & R. Ishikawa) ; KYUSHU : 2 females and 1 male, Ichinotorii-Tozanguchi (1000-1200 m), Mt. Sobo, Oita Pref., 20. ix. 1979 (0. Tadauchi) ; 1 male, same locality and collector as above, 21. ix, 1979 ; 1 female, Tashiro-cho, Kagoshhima Pref., 6. xi. 1977 (M. Nagase) ; TSUSHIMA: 3 females, Mokkoku-yama, Izuhara-cho, 4. x. 1979 (0. Tadauchi) ; 1 female, Mt. Ariake, 10. x. 1959 (Y. Maeta).

Distribution : Japan (Hokkaido, Honshu, Kyushu, Tsushima Is.). (Fig. 10)

Floral records : A total of 19 females and 2 males have been taken on the following flowers : *Cirsium nipponicum* (Maxim.) Makino ; *Erigeron annuus* (L.) Pers. ; *Anaphalis margaritacea* subsp. ***yedoensis*** (Fr. et Sav.) Kitam. ; *Picris hieracioides* L. subsp. *japonica* (Thumb.) Krylv. ; *Aster trinervius* Don subsp. *ovatus* (Fr. et Sav.) Kitam. ; *Aster glehni* Fr. Schm. var. *hondoensis* Kitam. and var. *glehni* Kitam. ; *Salvia japonica* Thumb. ; *Youngia denticulata* (Houtt.) Kitam. ; ***Geranium*** *thunbergii* Sieb. et Zucc. ; *Oxalis corniculata* L.

Flight records : Females have been taken from early August to early November, and males from early August to early October.



Figs. 9-10. Maps showing the distribution of *Andrena* ***(Euandrena) togashii,*** new species (9), and *Andrena (Euandrena)* ***takachihoi*** Hirashima (10) based on the present study. A square indicates the type locality.

(2) *Andrena (Euandrena) togashii,* new species

This new species is a close relative of *Andrena takachihoi* Hirashima and may be easily mixed up with the latter unless the following characters are carefully examined.

Female : Head transverse, slightly shorter than ***takachihoi*** ; hairs on face nearly all fuscous (white hairs in the middle of face in ***takachihoi)*** ; process of labrum narrower than in *takachihoi* at apex ; apical transverse groove of pronotum notched in the middle ; pronotum with an indication of weak longitudinal median line which is originated from the notch stated above ; propodeal enclosure wrinkled or nearly so basally (often only granular in ***takachihoi)*** ; hairs on thorax above sometimes more yellowish ; metasomal terga slightly smoother and slightly more shining.

Male : Head and thorax with more fulvous or darker hairs than in ***takachihoi.***

TYPE MATERIAL : Holotype : female (Type No. 2469, Kyushu Univ.), Mt. Haku, Ishikawa Pref., 19. viii. 1976 (I. Togashi). Paratypes: same locality and collector as holotype :1 female, 6. viii. 1953 ; 2 males, 30. vii. 1959 ; 1 female, 31. vii. 1959 ;1 male, 1. viii. 1961 ;1 female and 2 males, 1. viii. 1973 ; 2 females, 9. viii. 1974 ; 1 female, 25. viii. 1974 ;1 female, 20. viii. 1975 ; 2 males, 8. viii. 1976 ; same locality as holotype :1 female, ***20-21.*** viii. 1959 (R. Ishikawa) ; 1 male, 29-31. viii. 1960 (T. Hidaka) ; 1 male,

6. viii. 1970 (K. Kanmiya) ; 8 females and 17 males, Nasu, Tochigi Pref., 28. vii-l. viii. 1966 (R. Ishikawa) ; 21 females, Mt. Zao, Miyagi Pref., 24. viii. 1979 (Y. Maeta).

SPECIMENS EXAMINED OTHER THAN THE TYPES : Fifteen females of this new species have been examined from Ashiro (Iwate Pref.), Nikko-Yumoto (Tochigi Pref.), Kurobe (Toyama Pref.), Masutomi (Yamanashi Pref.), Utsukushinomori (Yamanashi Pref.), Kamikochi (Nagano Pref.), Karuizawa (Nagano Pref.), and Kurokawa (Niigata Pref.) taken by Y. Maeta, Y. Haneda, R. Ishikawa, J. Emoto, T. Saigusa, and K. Baba.

DISTRIBUTION : Japan (northern and central Honshu). (Fig. 9)

FLORAL RECORDS : A total of 24 females have been taken on the following flowers by Dr. Y. Maeta in Tohoku Districts : *Aster glehni* Fr. Schm. var. ***hondoensis*** Kitam., *Melampyrum ciliare* Miq., and *Aralia cordata* Thumb.

FLIGHT RECORDS : Females have been taken from late July to early September, and males from late July to late August.

(3) **Andrena (Euandrena) ruficrus rabicrus** Hirashima

Andrena ***(Euandrena)*** *ruficrus rabicrus* Hirashima, 1957, Mushi, 30(9) : 50, female ; Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13(1) : 51 ; Hirashima, Tadauchi and Suda, 1979, Esakia, (14) : 139, male.

The male of this species was described by Hirashima, Tadauchi and Suda (1979). Superficially it is very similar to the male of *Andrena stellaria* Hirashima, but the metasomal terga smoother and more shining, tarsi and tibiae of hind legs paler (pale reddish brown), and basal process of gonocoxite narrow and acute. The head of *ruficrus rabicrus* is provided with somewhat dense blackish hairs.

DISTRIBUTION : Japan (Hokkaido and Honshu). The nominate subspecies is found in Europe.

(4) **Andrena (Euandrena) tateyamana** Tamasawa and Hirashima

Andrena ***(Euandrena) tateyamana*** Tamasawa and Hirashima, 1984, Esakia, (22) : 103, female and male.

SPECIMENS EXAMINED : 1 female, Karasawa (2300 m) near Kamikochi, Nagano Pref., l-2. viii. 1957 (R. Ishikawa) ; 1 male, Mt. Nishihotakadake (2400-2908 m), Nagano Pref., 3. viii. 1957 (R. Ishikawa).

The legs of the present specimens are paler than in the type series of ***tateyamana.***

DISTRIBUTION : Japan (central Honshu).

(5) Andrena (Euandrena) hebes Pérez

Andrena ***(Euandrena) hebes*** : Hirashima, 1964, J. Fac Agr., Kyushu Univ., 13(1) : 46.

In Kyushu, this species appears early in spring and visits flowers of *Prunus mume.* ***So*** far as we know, this species does not occur in Hokkaido.

DISTRIBUTION : Japan (Honshu, Shikoku, Kyushu).

(6) Andrena (Euandrena) stellaria Hirashima

Andrena (Euandrena) stellaria Hirashima, J. Fac. Agr., Kyushu Univ., 13(1) : 49, female and male.

This is one of the most common species of *Euandrena* in Japan. It also flies from early spring and visits flowers of *Prunus mume* and *Brassica napus*.

DISTRIBUTION: Japan (Hokkaido, Honshu, Shikoku, Kyushu).

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