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NEW OR LITTLE KNOWN BEES OF JAPAN (HYMENOPTERA, APOIDEA)
I. SUPPLEMENTARY NOTE ON TWO ANDRENA SPECIES*

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Abstract

The males of *Andrena* ***(Gymnandrena) okabei sapporensis*** Hirashima and *Andrena* ***(Euandrena)*** *ruficrus rabicrus* Hirashima are described; the former subspecies is recorded from Honshu and Kyushu for the first time.

Andrena (Gymnandrena) okabei sapporensis Hirashima

Andrena ***(Gymnandrena) okabei*** Hirashima, 1957, Mushi, 30 (10) : 64, female. Linkou, Manchuria (Northern district of China).

Andrena ***(Gymnandrena) okabei sapporensis*** Hirashima, 1957, Mushi, 30 (10) : 65, female. Johzan-kei, near Sapporo, Hokkaido; Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13 (1): 63.

Andrena (Gymnandrena) okabei Hirashima is known from Japan by a subspecies *sapporensis*. So far as we know, the latter subspecies is one of the rarest *Andrena* in Japan. Since the description of *sapporensis* in 1957, the type female of which was taken in 1916, we were able to examine only 10 specimens (8 females and 2 males). Interestingly, 9 out of the 10 specimens were taken on the border mountains between Yamanashi and Nagano Prefectures, which are located in central Honshu, separately by 3 collectors. The rest one was taken on Mt. Aso, Kyushu. Thus, so far as known, the distribution of this species in Japan is very local.

The description of the female of this subspecies is given by Hirashima (1957, 1964). The female specimens from Honshu are well accord with the

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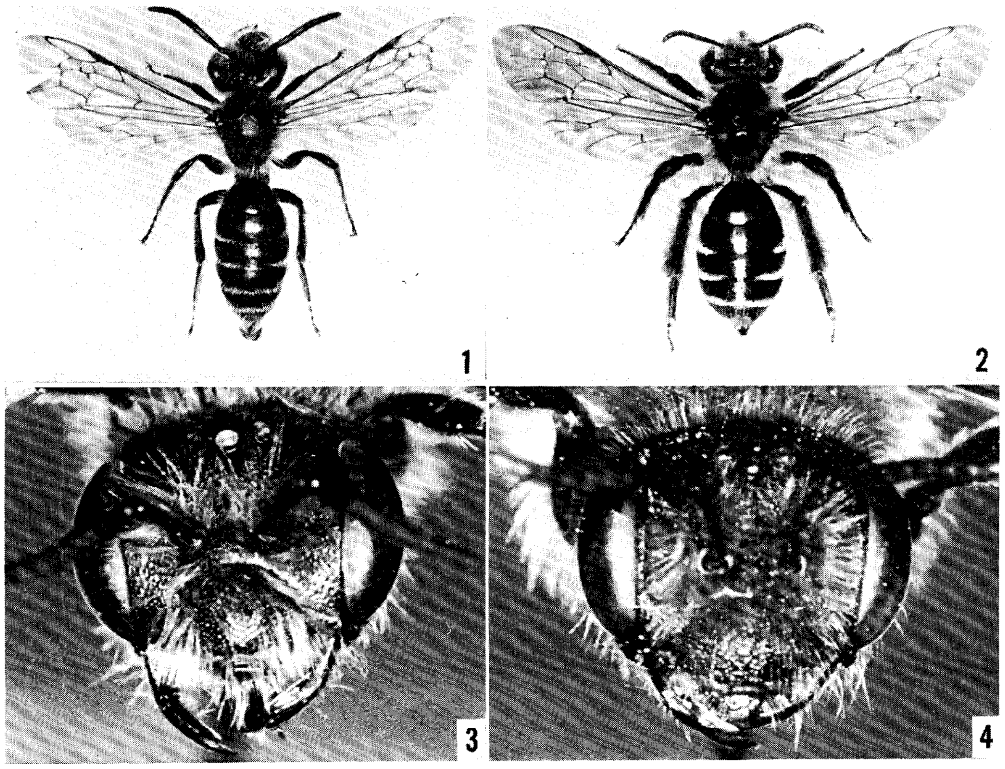


Figs. 1–4. *Andrena (Gymnandrena) okabei sapporensis* Hirashima. 1: male, 2: female, 3: frontal view of the head of male, 4: that of female.

given descriptions. However, the female specimen taken on Mt. Aso, Kyushu, deviates from the females taken in Honshu as follows:

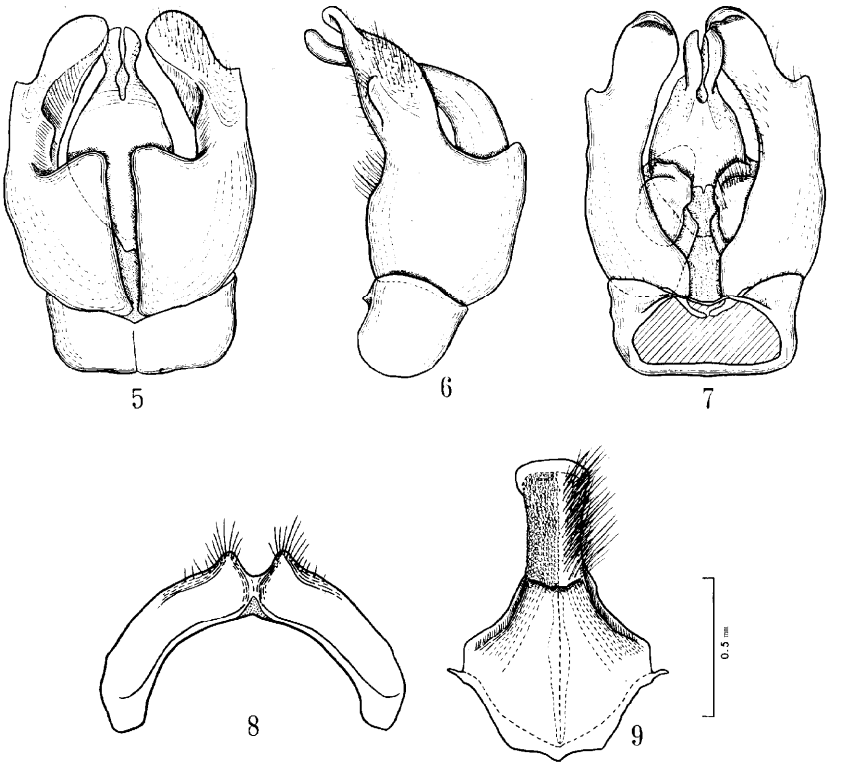
Tergal hair bands much reduced, with sparse white hairs, band on 3rd tergum broadly interrupted, band on 4th obscure in middle; punctures on metasomal terga weaker and sparser; posterior portion of mesoscutum and scutellum slightly smoother and slightly less punctate; hairs on thorax paler, pale fulvous dorsally.

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

Male : Length about 11 mm.

Integumental color : Black except as follows; mandibles reddened apically; 2nd–11th flagellar segments broadly brownish below; wings slightly brownish subhyaline with distal margins a little darkened; veins and stigma dark brown; medio- and distitarsi deep reddish brown ; tibial spurs yellowish; tarsal claws with basal halves yellowish, apical halves red; metasoma with posterior margins of terga and sterna narrowly brownish subtransparent.

Pubescence : Hairs on clypeus, antennal region and vertex more or less



Figs. 5-9. Genital capsule and associated structures of *Andrena* (*Gymnandrena*) ***okabea sapporensis*** Hirashima. 5: dorsal view of genital capsule, 6: lateral view of the same, 7: ventral view of the same, 8: 7th sternum, 9: 8th sternum.

short, not dense, white, those on the rest of head sparser; head without admixture of brown or blackish hairs; hairs on mesoscutum not long, sparse, white; hairs on scutellum, metanotum and propodeum longer; thorax without admixture of brown or blackish hairs.

Legs with whitish hairs except for inner surfaces of tarsi with hairs brownish.

Metasoma scanty of hairs ; 1st tergum with short, fine, white, erect hairs; 2nd and 3rd terga also with white short hairs; 4th and 5th terga with short, brownish, suberect hairs; posterior margins of 2nd–4th terga with white fringes of short, not specially dense hairs, that of 2nd broadly, that of 3rd narrowly interrupted medially; hairs on 6th tergum yellowish ; lst-5th sterna with short, erect, white hairs medially; posterior margins of 2nd–5th sterna with obscure fringes of moderately long, sparse, white hairs.

Structure: Head slightly broader than thorax seen from above ; process of labrum moderately large, more than twice as broad as long, transverse, convex, broadly and deeply notched apically ; clypeus weakly convex medially, tessellate and rather roughened basally, densely and coarsely rugoso-punctate

apically, without median longitudinal impunctate line; apex of clypeus slightly exceeding line running bases of eyes; lower paraocular area weakly shiny with moderately large, somewhat roughened punctures ; genal area nearly as broad as eye seen in profile, portion near eye nearly smooth with very small and somewhat roughened punctures ; upper paraocular area with fine longitudinal rugulae, with an indication of shallow, rather broad facial fovea which is covered with short brown hairs ; frontal line not strong; vertex rounded in frontal view; malar space linear; mandibles somewhat short for the size of head; maxillary palpi long, ratio of segments as 0.5 : 0.7 : 0.6 : 0.6: 0.5 : 0.6; ratio of labial palpal segments as 0. 7 : 0. 5 : 0.5 : 0.5; scape slightly shorter than lst-3rd flagellar segments together; 1st flagellar segment longer than broad, longer than 2nd segment which is about as long as broad, a little shorter than 3rd segment; eyes with inner margins subparallel; frontocellar width to postocellar distance to ocelloccipital distance to ocellocular distance to front-postocellar distance as 0.5 : 0. 9 : 0.8 : 1.2 : 0. 3.

Pronotum weakly tessellate with weak, moderately dense punctures above, sparser punctures below; pronotal suture indicated, short, without humeral angle; anterior margin of pronotum not emarginate medially; pronotal line not indicated ; mesoscutum nearly roughened anteriorly and laterally, narrowly nearly smooth and shiny with moderate-sized, not dense punctures posteriorly ; scutellum nearly as in mesoscutum ; metanotum strongly roughened ; mesepisternum tessellate with roughened punctures, nearly dull ;metepisternum tessellate, impunctate ; propodeal enclosure well indicated, small, rugose nearly all over except for extreme apex which is tessellate ; dorsal face of propodeum strongly and coarsely sculptured ; lateral face of propodeum weakly roughened with weak punctures.

Wings with 2nd submarginal cell receiving 1st recurrent vein at middle of cell; basal vein interstitial with nervulus.

Legs slender, as usual.

Metasomal terga smooth, shiny, with very small and dense punctures; basal terga slightly smoother and more shining with slightly larger punctures; 4th tergum weakly tessellate basally, with fine, indistinct punctures; posterior depressions of terga weakly indicated, narrow; 7th sternum (Fig, 8) with apex broadly and deeply emarginate, U-shaped, apical lobes not distinctly produced, rounded, with sparse long hairs, basal apodemes weakly angled on outer-posterior margins; 8th sternum (Fig. 9) with neck region much shorter than basal region, apex not widened; neck region with abundant long hairs, elevated as seen from side; genital capsule (Figs. 5-7) with dorsal lobes of gonocoxites rather short, gonocoxite with lateral arm strongly angled laterally on median portion, gonostylus with short sparse hairs; pennis valves widened near base.

DISTRIBUTION : Japan (Hokkaido, Honshu and Kyushu).
The nominate subspecies is known from the northern area of the Chinese Continent.

FLORAL RECORD: One female was taken on Aster *Yomena* Makino on Mt. Aso in Kyushu.

FLIGHT RECORDS: Collecting records indicate that the female ranges from August 14 to 30 in Honshu, September 10 in Hokkaido (the type of this subspecies) and October 17 in Kyushu. Males have been collected from August 14 to 22 in Honshu.

SPECIMENS EXAMINED : *Honshu* : 1♂, Azusayama, Kawakami, Minamisaku, Nagano Pref., 22. viii. 1978 (Y., T. & H. Suda) ; la 1♀, Mt. Utsukushinomori, Oizumi, Yamanashi Pref., 14-15. viii. 1956 (T. Saigusa) ; 3 ♀♀, Kanayama, Masutomi, Sudama, Yamanashi Pref., 30. viii. 1977 (Y., T. & H. Suda) ; 1 ♀, same locality as above, 19. viii. 1975 (J. Emoto) ; 1♀, same locality and collector as above, 21. viii. 1975; 1♀, Mt. Tennyozan, Kitakoma-gun, Yamanashi Pref., 23. viii. 1978 (H. Suda). Kyushu : 1♀, Daikanbo (1000 m alt.), Mt. Aso, Kumamoto Pref., 17. x. 1976 (Y. Hirashima).

REMARKS: The male of *Andrena okabei sapporensis* Hirashima closely resembles that of *Andrena watasei* Cockerell. It is, however, distinguished from the latter by the process of labrum widely and deeply emarginate, the head and the thorax without blackish hairs, the mesoscutum and the scutellum smooth with enamel-like luster, the gonocoxite with lateral arm strongly angled latero-medially. The last is specially characteristic to *sapporensis*.

Andrena (Euandrena) ruficrus rabicrus Hirashima

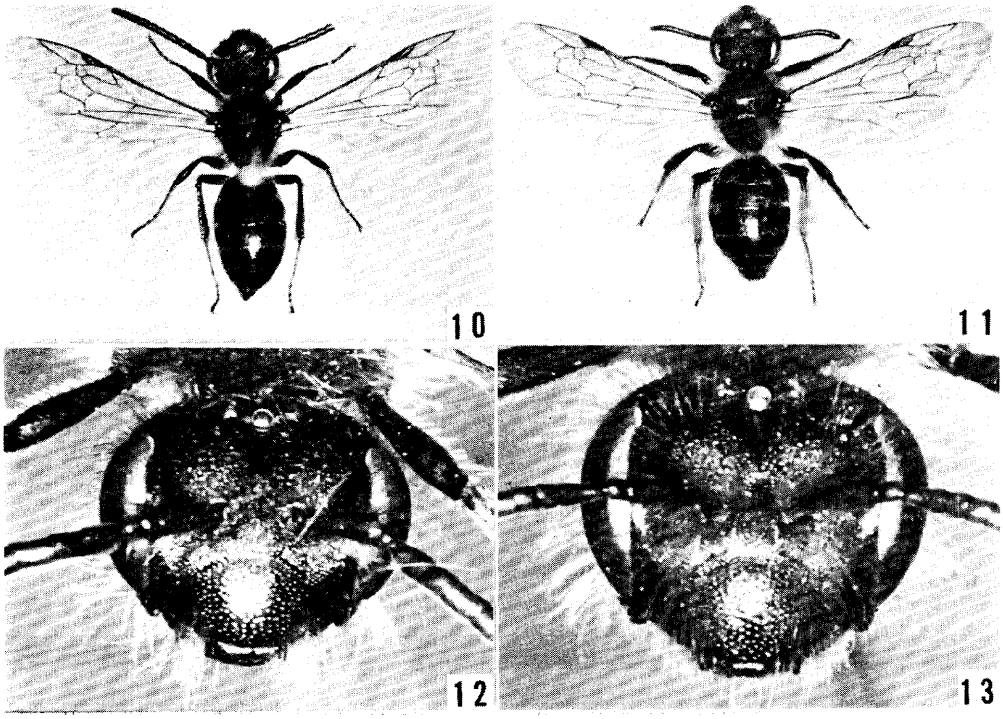
Andrena (Euandrena) ruficrus rabicrus Hirashima, 1957, Mushi, 30 (9) : 50, female. Prov. Rikuchu, northern Honshu: Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13 (1) : 51.

In Japan, *Andrena (Euandrena) ruficrus* Nylander, 1848 is represented by a subspecies *rabicrus*. The latter subspecies is also one of the uncommon species there, being collected from Hokkaido and central and northern Honshu only. Recently we were able to collect several more specimens of this subspecies from Erimo-misaki, Hokkaido and Utsukushigahara, central Honshu, including a male from the latter locality. So far as we know, this is the only male specimen ever taken in Japan. Suda, one of the authors, was fortunate to pick up a paired specimens of this subspecies on a rock at Utsukushigahara, about 1900 m altitude, at about 11 : 15, on May 24, 1975. It was a cold and cloudy day, but they flew just in a moment the sun was seen for a while in the clouds.

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

Male: Length about 7 mm.

Integumental color: Black except as follows ; apices of mandibles broadly



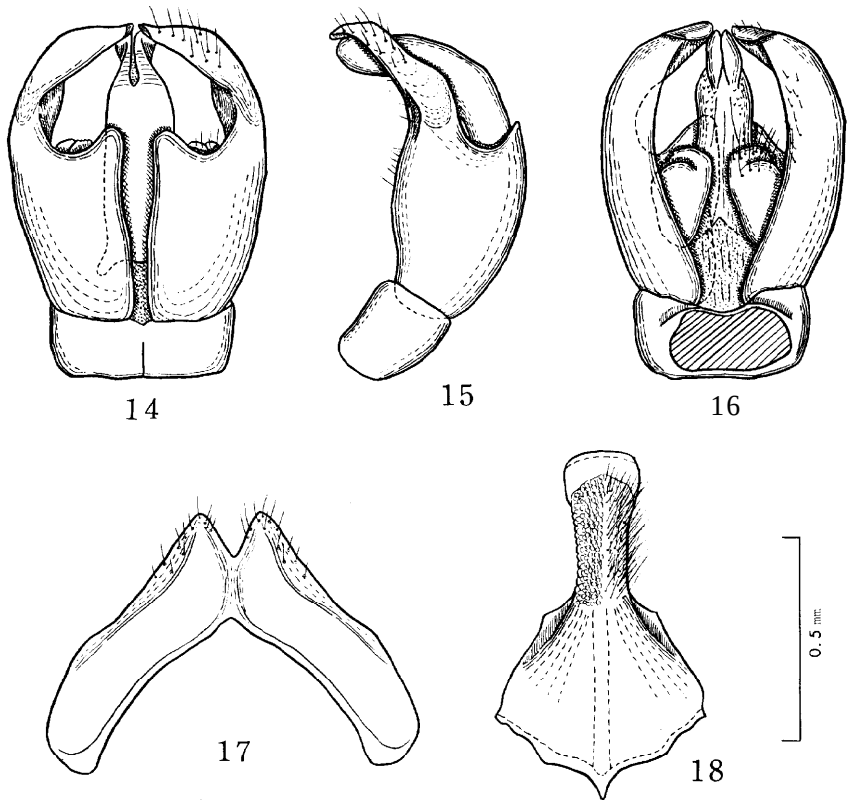
Figs. 10-13. *Andrena (Euandrena) ruficrus rabicrus* Hirashima. 10: male, 11: female, 12: frontal view of the head of male, 13: that of female.

reddened ; flagellar segments beneath dark brownish ; wings slightly brownish subhyaline with distal margins a little more darkened; veins and stigma brownish; hind tibiae and tarsi clear deep brown (ferruginous in female) ; tibia1 spurs yellow; tarsal claws yellowish basally, reddened apically ; posterior margins of metasomal terga and sterna broadly yellowish subhyaline.

Pubescence: Hairs on head and thorax in the nominate subspecies rather abundant, but those in the present male specimen seem to be worn out, especially those on clypeus ; head with more fuscous hairs than those in the nominate subspecies ; hairs on paraocular area, antenna1 region, vertex and genal area short to more or less long, fuscous; upper paraocular area with facial fovea narrowly and weakly indicated, covered with very short, dark brown, fine hairs along inner margin of eye; hairs on thorax including propodeum long, white, intermixed with fuscous ones, especially on propodeum (no fuscous hairs on propodeum in the nominate subspecies).

Legs with hairs whitish except for inner surfaces of tarsi with hairs slightly yellowish.

Metasomal terga with whitish, fine, sparse, suberect, short hairs; posterior margins of metasomal terga with sparse fringes of suberect to decumbent



Figs. 14-18. Genital capsule and associated structures of *Andrena* ***(Euandrena)*** *ruficrus rabicrus* Hirashima. **14:** dorsal view of genital capsule, **15:** lateral view of the same, 16: ventral view of the same, **17: 7th** sternum, 18: 8th sternum.

white hairs; posterior margins of 2nd-5th metasomal sterna with complete fringes of dense, suberect, moderately long, slightly yellowish hairs.

Structure: Head nearly as broad as thorax seen from above; process of labrum moderate-sized, about twice as broad as long, convex, slightly notched apically;clypeus well convex, basal half tessellate with moderate-sized punctures, dull, apical half nearly smooth and weakly shiny with sparser punctures (clypeus entirely roughened, dull, with weaker punctures in the nominate subspecies) ; clypeus without an indication of median longitudinal impunctate line; apex of clypeus slightly exceeding line running bases of eyes as seen in front; lower paraocular area densely tessellate with roughened punctures; upper paraocular area and supra-antennnal area with fine longitudinal rugulae; frontal line not strong; vertex rounded in frontal view; genal area slightly broader than eye seen in profile ; genal area roughened, dull; malar space well indicated, about one-fourth time as long as base of mandible; mandibles moderately short; scape longer than 1st and 2nd flagellar segments together;

1st flagellar segment longer than broad, a little longer than 2nd segment; 3rd and following segments longer than broad; eyes with inner margins subparallel; frontocellar width to postocellar distance to ocelloccipital distance to ocellocular distance to front-postocellar distance is 0. 3 : 0. 7 : 0.5 : 1.1 : 0. 3.

Pronotum moderately tessellate, without an indication of punctures; pronotal suture weakly indicated, moderately long, without humeral angle; anterior margin of pronotum not emarginate medially; pronotal line not indicated ; mesoscutum shagreened with sparse, small, slightly roughened punctures, dull; scutellum nearly as in mesoscutum with punctures a little coarser (although weak); metanotum roughened ; mesepisternum densely tessellate with roughened punctures ; metepisternum tessellate, impunctate ; propodeal enclosure not well indicated, small, wrinkled basally, granulate apically ; dorsal face of propodeum coarsely sculptured ; lateral face of propodeum densely tessellate.

Wings with 2nd submarginal cell receiving 1st recurrent vein at middle of cell, basal vein distad of nervulus.

Legs slender, as usual.

Metasomal terga very weakly tessellate with sparse, small, weak punctures; basal terga slightly more tessellate with a little stronger punctures; posterior depressions of terga weakly indicated, more or less wide ; metasomal sterna as in terga; 7th sternum (Fig. 17) with apex distinctly emarginate, V-shaped, apical lobes short, more or less pointed, with sparse, short hairs; 8th sternum (Fig. 18) with neck region nearly as long as basal region; neck region with abundant long hairs with apex slightly widened; basal region broadened basally; genital capsule (Figs. 10-13) with dorsal lobes of gonocoxites moderately long ; gonostylus with short sparse hairs ; pennis valves not widened near base with moderate-sized laterobasal lamellae.

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

FLORAL RECORDS: Five females were taken on ***Taraxacum officinale*** Weber at Erimo in Hokkaido. Matsumura and Usui (1977) recorded *Petasites japonicus* Miq., *Salix* spp., *Potentilla* ***fragarioides*** L., *Potentilla* ***yokusaiana*** Makino, ***Brassica campestris*** L., *Gagea lutea* Ker-Gawl for this species in addition to the above flower.

FLIGHT RECORDS: Females have been collected from April 15 to May 24 in Honshu, and from May 31 to June 14 in Hokkaido. The only male was taken on May 24 in central Honshu.

SPECIMENS EXAMINED: ***Honshu***: 1♂1♀, Ogato, Utsukushigahara, Nagano Pref., 24. v. 1965 (H. Suda) ; 1♀, Hoppo (1500m alt.), Shigakogen, Nagano Pref., 5. v. 1975 (J. Emoto). ***Hokkaido:*** 5♀♀, Erimo, Erimo-machi, Hidaka Prov., 31. v. 1975 (0. Tadauchi).

REMARKS: The male of *Andrena ruficrus rabicrus* Hirashima differs from

that of the nominate subspecies by the clypeus broadly smooth apically, the dorsal face of propodeum much more roughened, the metasomal terga less tessellate and more shiny, the posterior depressions of metasomal terga weaker, and the head and the thorax with more fuscous hairs.

A few more papers on the Japanese *Andrena*, which include our new findings, are in preparation by Tadauchi, Hirashima and Tadauchi, and Hirashima and Matsumura. Accordingly, a comprehensive key to the Japanese species of *Andrena* will be published in a separate paper (Hirashima and Tadauchi, in preparation).

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