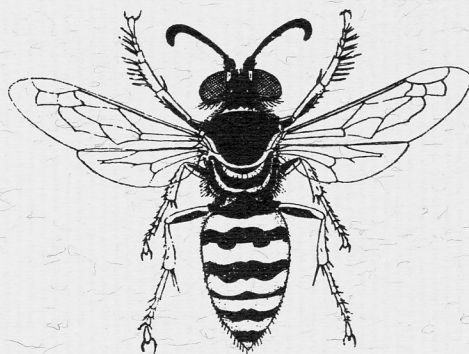


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M I S H I M A

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SPHECIDAE AND SCOLIIDAE COLLECTED BY DR. K. BABA
IN THE SOUTHERN RYUKYUS
(HYMENOPTERA)

By K. TSUNEKI

Recently Dr. K. Baba, Dr. of Medicine, the Director of the Kurokawa Hospital of Niigata Prefecture, and on the other hand a famous coleopterist and an intimate friend of mine, made thrice the insect collecting journeys to the Southern Ryukyus, namely, Islands of Okinawa, Miyako, Ishigaki and Iriomote, and brought back rich collections of insects from these not well investigated islands. He kindly sent me for study the solitary wasps of his collections that are within the range of my investigation. In the following the result of my study on these wasp will be presented. It includes descriptions of one new species of the genus Gorytes and the unrecorded male of Scolia yayeyamensis Matsumura et Uchida, 1926 and some new records of species distribution.

I express here my cordial thanks to Dr. Baba for his kindness.

I. S P H E C I D A E

As to the references to each species they are, as a rule, omitted, except some particular ones, since they are given in detail, as far as relating to the Ryukyus, in the paper that follows in the present Publication.

1. Sphex (Sphex) sericeus lineolus Lepelletier, 1845

Specimens examined: 3 ♀ 1 ♂, Okinawa: Ibu, 3. VIII. 1980; 1 ♂, Okinawa: Kunigami son, 3-4. VIII. 1980.

2. Sphex (Sphex) argentatus argentatus Fabricius, 1787

Specimens: 3 ♂, Okinawa: Ibu, 3. VIII. 1980.

3. Isodontia nigella (Smith, 1856)

Specimen: 1 ♂, Okinawa: Ibu, 3. VIII. 1980.

4. Sceliphron (Sceliphron) madraspatanum kohli Sickmann, 1894

Specimens: 1 ♀ 1 ♂, Okinawa: Ibu, 3. VIII. 1980; 1 ♀, Ishigaki: Mt. Omoto, 18. IV. 1981.

5. Tachytes sinensis yaeyamanus Tsuneki, 1972

Tachytes sinensis yaeyamanus Tsuneki, Etizenia (Fukui), 59: 18, 1972 (1 ♂, Iriomote).

Specimens: 6 ♂, Ishigaki: Yonehara, 16, 18. IV. 1981.

Remarks. This species is new to the fauna of Is. Ishigaki. The present subspecies differs from the closely allied form, T. sinensis fundatus Rohwer, 1911, occurring in Formosa in that IOD at vertex is slightly narrower (slightly less than half as long as A3, in fundatus slightly more than so), hairs are more saturated golden, tarsi of legs are blackish ferruginous.

6. Tachysphex nigricolor nigricolor Dalla Torre, 1897

Larrada nigricans Smith, 1873.

Tachysphex nigricolor Dalla Torre, 1897.

Tachysphex japonicus Iwata, 1933.

Tachysphex bengalensis japonicus: Tsuneki, 1967.

Tachysphex nigricolor: Pulawski, 1975.

Specimens: 5 ♂, Okinawa: Ibu, 3. III. 1980.

Remarks. Length of the specimens 7.0-7.5 mm. Apical margin of clypeus as in Fig. 168 of my 1967 paper (Etizenia 20, p. 50). Punctures above the bevelled and excavated

area of clypeus are also mostly as in this figure, but sometimes sparser. In one of the specimens measurements were made:

HW:IODv=100:26. IODv, IODc, A2, 3, 4, 5=10, 23, 3, 4, 5, 5. A3=AW×1.3, A4=AW×1.7 (both in widest view). The specimens are very similar in general characters to the Formosan representatives.

6b. Tachysphex nigricolor yaeyamanus Tsuneki, 1971

Tachysphex bengalensis yaeyamanus Tsuneki, Etizenia, 55: 20, 1971 (9 ♀ 6 ♂, Ishigaki and Iriomote); Bohart and Menke, World Sphecid., p. 272, 1976 (listed).

Specimen: 1 ♂, Ishigaki: Yonehara, 18. IV. 1981.

Remarks. In the specimen the clypeus with medio-anterior bevelled area not well outlined above, without acute edge, the area irregularly scattered with irregular-shaped coarse punctures. Median carina of frons somewhat weakly intermittent, but distinct as a whole. In the specimens of other island-groups of the Ryukyus as well as in those of the Formosan and the Japanese populations the frons is not medianly carinate, but is finely impressed or furrowed. Measurements of the specimen:

HW:IODv=100:28. IODv, IODc, A2, 3, 4, 5=10, 22, 2.7, 3.2, 4.2, 4.2. A3=AW×1.3. A4=AW×1.5. But the punctures on frons and mesoscutum are similar in size and pattern.

7. Larra carbonaria (Smith, 1858)

Larra carbonaria: Tsuneki, Etizenia, 20: 20, 1967.

Specimen: 1 ♂, Okinawa: Nago, 2-5. VIII. 1980.

Remarks. On some characters of the specimen: Length 7.7 mm. Mandible except base reddish brown, knees, fore tibia and tarsus somewhat dark ferruginous. Punctures on vertex with PID 0.5-1 times PD, medianly sparser. Fore femur broadly excavated on inner ventral aspect. HW:IODv=100:27. IODv, IODc, A2, 3, 4=10, 20, 3.5, 5, 5. Propodeum medianly narrowly furrowed, the furrow anteriorly indistinct and instead longitudinally shortly carinated. Epipygium acutely edged on outer margins, apex truncate.

8. Liris (Leptolarra) subtessellatus (Smith, 1856)

Specimens: 1 ♀, Miyako: Karimata, 27. III. 1978; 1 ♂, Ishigaki: Yonehara, 16. IV. 1981; 1 ♀, Iriomote: Toyohara, 1-3. IV. 1978.

Remarks. In the specimens from the Ryukyus the hind femur is always reddish and the identification of the species is easily possible.

9. Liris (Leptolarra) rohweri formosanus Tsuneki, 1973

Liris (Dociliris) rohweri: Tsuneki, Etizenia, 20: 31, 1967.

Liris (Dociliris) formosana Tsuneki, Life Study, 17 (3-4): 113, 1973

Liris (Leptolarra) rohweri formosana: Tsuneki, SPJHA, 23: 27, 1982.

Specimen: 1 ♂, Ishigaki: Takeda, 20. IV. 1981.

Remarks. See p. 27. Measurements of the present specimen: HW:IODv=100:18. IODv, IODc, A2, 3, 4=10, 19, 5, 8, 8. Abscissae of radial vein of fore wing with following increasing order: 2, 5, 3, 1, 4. Lateral carinae of propodeum are very strong and marked from spiracle till apex, fore femur is modified as in the Formosan specimens.

10. Liris (Leptolarra) festinans festinans (Smith, 1859)

Liris (Niglliris) japonica: Tsuneki, Etizenia, 20: 34, 1967.

Specimens: 1 ♀, Okinawa: Ibu, 3. VIII. 1980; 1 ♀, Ishigaki: Mt. Omoto, 29. III. 1978.

Remarks. Length of the specimens 8.3 and 8.7 mm. Propodeum with lateral carinae. GT1 smooth and highly polished in the Ishigaki specimen (? delicate pile rubbed down). Rhinaria in both specimens on A6-13 and on 6 small.

11. Trypoxylon ryukyuense Tsuneki, 1966

Trypoxylon ryukyuense: Tsuneki, SPJHA, 17: 80, 1981 (list of refs.)

Specimen: 1 ♀, Okinawa: Ibu, 3. VIII. 1980.

Remarks. This species has been known from Is. of Amami-Oshima only. The discovery of this species from Is. Okinawa is interesting in view of its distribution.

12. Trypoxylon petioloides isigakiense Tsuneki, 1973

Trypoxylon petioloides isigakiense: Tsuneki, SPJHA, 15: 42, 1981 (1 ♀ 1 ♂, Is. Ishigaki and Iriomote).

Specimen: 1 ♂, Is. Ishigaki: Mt. Omoto, 4. IV. 1978.

Remarks. The account given previously to the male specimen from Is. Iriomote was reconfirmed with the present specimen. Al3=Al0-12 (strictly slightly longer). Genitalia are practically identical with those of the typical form from Formosa.

13. Ectemnius (Hypocrabro) schlettereri sakaguchii
Matsumura et Uchida, 1926

Specimen: 1 ♀, Okinawa: Ibu, 3. VIII. 1980.

Remarks. This is a typical specimen of the subspecies. Yellow colour of the body and appendages is not orange yellow, but rather whitish yellow. The orange colour of the type of this subspecies may be due to postmortem change. A band on pronotum is well developed, only narrowly interrupted in middle. GT2 (large), 3 (small), 4 (narrow) are each adorned with lateral marks and GT5 carries a medianly constricted transverse mark in middle. Punctures on GT1 are fine and sparse. HW:HL=100:64. IODv:IODc=20:4.5. A3, 4,5=10,8,6. A3=AW 2. Length 8.5 mm.

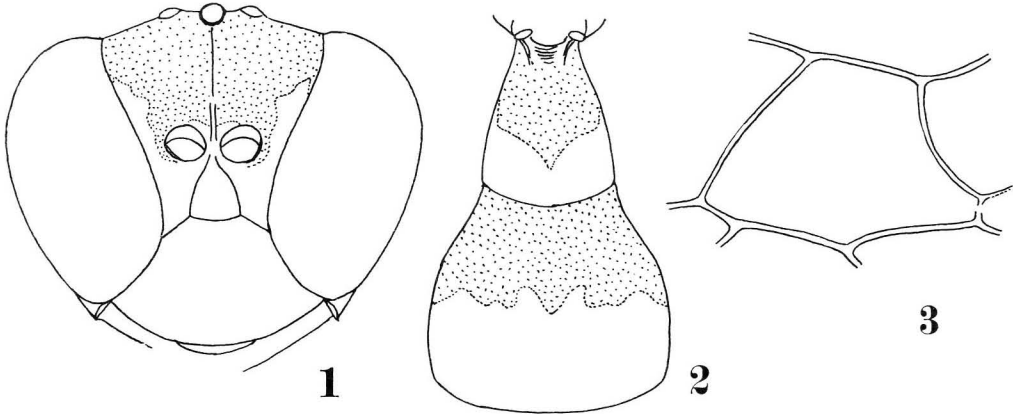
14. Gorytes ishigakiensis sp. nov.

♂. Characteristic in the broadly orange-yellow maculated body and appendages and can easily be separated from other known species. It is also characterized by the form of clypeus, tyloidea carrying antennal flagellum, very well developed stigmal furrow of propodeum, subedunculate G1 and punctuation and sculpture of body.

Length about 8.5 mm. (the specimen strongly curved). Black; orange yellow are clypeus (apical margin narrowly translucent), labrum (translucent), areas below antennae completely, extending upwards along inner orbits till above middle of frons (Fig. 1), mandible except apex, pronotum on collar broadly, tubercle, anterior marginal area of nape till fore-coxal base, lateral marginal areas of mesoscutum broadly, scutellum and postscutellum except marginal furrows, subalar area and two large marks on mesopleuron (upper one on epimeral area), intercoxal areas of mesosternum and of metasternum, large lateral marks of propodeum, medianly incised broad band at apical margin of GT1 (Fig. 2 the band at the sides extended till near base), apical half of GT2 (do.), GT3 and GT4 wholly, both except a transversely rounded obscurely outlined medio-basal black mark, GT5-6 completely, GS1 at apex, GS2 except transverse median area, GS3 nearly completely, a pair of large marks at base of GS4, antenna except All-13 (All orange above), fore except a black mark on outer side of coxa, on trochanter above and on femur at base above, and arolium, mid and hind legs except similar but larger or longer marks on basal segments (in hind leg marks are broader and longer than in mid leg and on femur inner side nearly wholly) and arolia and basal plates of wings. Tegula of wing translucent pale brown, hind tibia on inner side (narrowed upwards), spurs and inner side of T1 brown. Wings strongly yellowish and somewhat darkened, veins with very fine marginal lines only brown. Long but not dense hairs on clypeus yellow, in some light golden, short velvety pile covering body is also in some light shining golden and black areas appearing yellowish.

Head seen from above transverse, HW:HL:IODv=100:42:58 (IODv: across middle of hind ocelli). OOD,Od,POD,OCd=7,3,8,10. Head seen in front: Fig. 1. IODv:IODc=46:20. IODc=A3. Al,2,3,4,5=18,4,20,20,20. Relative width of Al and A3 = 10:9. A5-12 gradually, very slightly shorter apically, Al3 appr. as long as Al (19:18) and attenuate apically, with apex minutely rounded. Remarkable is that A4-7 provided with tyloidea, acutely carinated on posterior margin (when stretched sideways) in full length of each joint, except A7 where not reaching apex. Pronotum between nape area and collar transversely, deeply furrowed, with shining bottom line, collar bluntly carinated across middle, carina very obtuse laterally. Mesoscutum with notauli finely impressed, slightly divergent posteriorly, not reaching middle of the scutum, admedian lines slightly raised, also divergent, slightly shorter than notauli, each ended in a weak tubercle, the four

lines at base equidistantly separated. Transverse furrows before and behind scutellum deep, both distinctly foveolate, on mesopleuron omaulus acutely carinate, at its lower end roundly continued to the lower carina of hypernaulus, scrobal furrow complete and distinct, episternal furrow only on epimeral area defined, the pleuron posteriorly margined with a fine, curved, shining and acutely edged impressed line, metapleuron with dorsal area roundly elevated, posteriorly margined also with a similar shining im-



pressed line, parallel to that of mesopleuron, thence posteriorly side of propodeum roundly swollen. Mesosternum medianly finely carinate, at its anterior end crossed with acetabular carina, the carina medianly triangularly raised and at a short distance laterally again roundly raised and disappeared, not connected with omaulus or turned anteriorly, on each side of anterior end of median carina surface roundly and deeply hollowed, at posterior end of the carina surface also deeply, roundly hollowed out. Area dorsalis of propodeum triangularly, distinctly margined with 3 strongly foveolated straight furrows, wider than long and medianly finely furrowed, with disc except apical area longitudinally, closely striate, posterior aspect in middle finely furrowed, the furrow at its upper end strongly roundly excavated, in lateral view dorsal aspect and posterior aspect forming a round curve; side of propodeum with a deep spiracular furrow, subparallel with metapleural suture, intermediate area margined beneath with a carina. G1-2: Fig. 2, relative maximum width of head and G2 35:33. Fore tibia with some short brownish bristles on outer side, but, together with T1, without spine, T1 on basal half beneath strongly roundly excavated, relative length of T1-5 10,3,5,2,8,2,2,5,5 (on side) or 10,3,5,2,5, 1.0,7 (in middle of dorsal side), arolium seen from above a short clasper-like, connected with T5 with a short fine peduncle. In fore wing abscissae 1-4 of radial vein relatively 4,5,10,9, cubital cell 2: Fig. 3, in hind wing jugal lobe slightly larger than half the anal area, media diverging before cu-a and vein c about half the length of Al2 and subequal to r-m.

Ocellar area closely, ocellocular area near inner orbit and frons somewhat sparsely covered with medium-sized, well outlined punctures, PIS on frons 1-2 times as wide as PD and microcoriaceous. Mesoscutum more sparsely scattered with similar punctures, PIS irregular in width, at medio-anterior area very broad, almost without puncture, at medio-posterior area broader than at central area, punctures on scutellum finer and sparser than on scutum, mesopleuron almost without puncture, metapleuron on dorsal swollen area finely, very sparsely punctured, metapleural sulcus behind this swollen area strongly foveolate, posterior inclination and side of propodeum smooth. Gaster from G2 apically finely and sparsely punctured above and beneath.

♀, unknown.

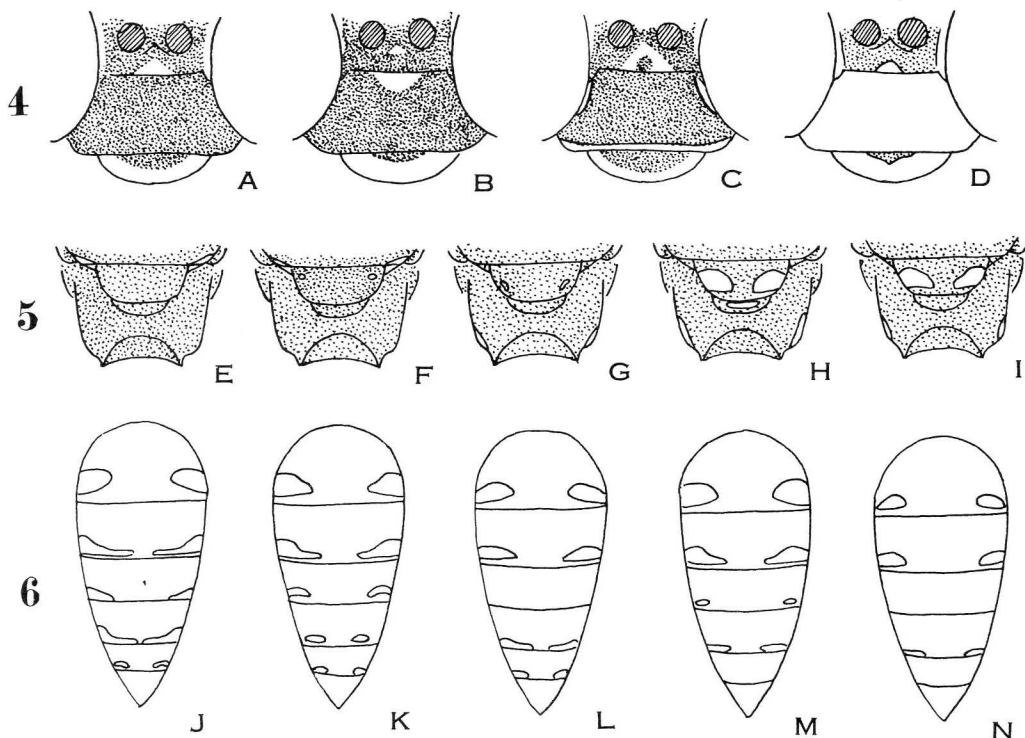
Holotype: ♂, Is. Ishigaki, 20. IV. 1981, K. Baba leg. (Coll. Tsuneki).

15. Bembecinus bimaculatus Matsumura et Uchida, 1926

Bembecinus bimaculatus: Tsuneki, Etizenia, 56: 8, 1970.

Specimens examined: 1 ♀ 4 ♂, Is. Iriomote: Urauchi, 22. IV. 1981; 4 ♀ 6 ♂, Is. Okinawa: Ibu, 3. VIII. 1980.

Remarks. In the paper above cited I synonymized various names given to this spe-



cies up to that time. It was done on the basis of the study of variation in characters of about a hundred specimens collected in the Yayeyama-Group of the Ryukyus including Is. of Miyako, Ishigaki and Iriomote.

The specimens above listed belong no doubt to this species, judging by the characters of antenna, clypeus, inner orbits, propodeum, fore leg, wing venation and the male genitalia.

Variation in maculation is also examined here. It seems interesting that they show frequently the combinations of the maculae that were not found among the so many specimens studied previously.

♀. Specimens are called by No. No. 1 from Is. Iriomote, Nos. 2-5 from Is. Okinawa.

- (I) Maculae on clypeus and supraclipeal area: Figs. A, B, C, D.
 No. 1: C. Nos. 2 and 3: D. No. 4: A. No. 5: B.
- (II) Maculae on thorax-complex. They are called with numerals:
 (1) Maculae on postero-lateral corners of mesoscutum. (2) Maculae on axillae.
 (3) Maculae on scutellum. (4) Maculae on postscutellum. (5) Maculae on postero-lateral edges of propodeum.
 No. 1: Fig. G: A pair of small one of (3) and small one of (5).
 No. 2: Fig. F: A spot of (1) and (2) and a small one of (3).
 No. 3: Fig. E: A spot of (1) and (2) only.
 No. 4: Fig. H: A pair of large marks of (3), a transverse one of (4) and moderate sized ones of (5).
 No. 5: Fig. I: A pair of large marks of (3) and small ones of (5).
- (III) Gastral maculation: Figs. J-N, all not completely consistent with any of the figures given in my previous paper.
 No. 1: Fig. L (close to Fig. E of the previous paper). No. 2: Fig. K.
 No. 3: Fig. J. No. 4: Fig. M. No. 5: Fig. N.
- ♂. Of the ten specimens (Iriomote 4 and Okinawa 6) many show the maculation that were illustrated in my 1971 paper above cited. In the following, therefore, the types of maculation are shown with letters used in this paper.
- (I) Maculae on clypeus and supraclipeal area (Figs. A-H, p. 12).
 Fig. A, A, A, A (all Iriomote specimens), B, B, B, C, C, I, I (Okinawa speci-

- mens, I is similar to B, but with a baso-lateral spot on labrum)
- (II) Maculae on thorax-complex.
In 6 specimens (1 Iriomote and 5 Okinawa) completely black. In 2 (one each) a minute spot on axillae only. In 2 (both Iriomote) a spot of (2) and a short line of (5).
- (III) Gastral marks.
E, E, E, J (Iriomote specimens, J is similar to H, but GT4 has a spot on left side only). I, I, I, K, K, K (Okinawa specimens, K is similar to H, but with a pair of spot on GT4, not GT5).

In the present species cubital cell 2 is always rounded pentagonal, sometimes upper line (=abscissa 2 of radial vein) is very short.

As to the postero-lateral incision of propodeum I repeatedly pointed out in regard to some Asiatic species that the character was considerably variable within a species and except for the case of statistical stability this character could not be a reliable specific distinction. In the present species also it is variable, but as general tendency the incision is mostly moderate, though comparatively broad in range, and there is no instance of no incision nor deep acute incision.

II. SCOLIIDAE

1. Scolia (Discolia) yayeyamensis Matsumura et Uchida, 1926

Scolia yayeyamensis Matsumura et Uchida, Ins. Mats., 1 (1): 44 (2 ♀, Yayeyama).

Scolia (Discolia) yayeyamensis: Betrem et Bradley, Zool. Meded., 40 (11): 92, 1964.

Specimens: 1 ♂, Is. Ishigaki: Mt. Omoto, 4. IV. 1978; 1 ♀ 5 ♂, Is. Ishigaki: Shinkawa, 16-17. IV. 1981.

Remarks. In his book of 1936 Uchida gave as if he observed the male of this species. But this is quite doubtful, because he gave no comment as to this sex and in the list of the material treated by him up to that time there was no record of the male.

Possibly this is the first definite record of the male of yayeyamensis and, therefore, the description of the sex will be tried in the following in comparison with the female:

♂. Mostly 16-18 mm, but in one 23 mm (single female observed is 19 mm.). Completely black, usually the gaster shows iridescent bluish shine, but rarely without such. Hairs and bristles also black, wings strongly darkened, veins ferruginous.

Differences from ♀:

(1). Head and A1 and 2 are not so smooth and shining as in ♀, due to delicate, close microstriae (under 50 magnification the striae well visible, but under 30 magnification surface appears only bearing velvety lustre), rest of antenna also more finely and closely micro-rugoso-punctate (under 80) and completely mat.

(2) Flagellar joints of antenna longer, A3-12 equal in length, A3=AW 1.5, A8=MW 1.1, A12=MW 1.2, A13=A12 1.5, A13 gently attenuate apically with apex more minutely truncate than in ♀, with microsculpture weaker than on other areas of the joint and usually brown or ferruginous in colour (weaker sculpture and brownish colour are similar in ♀ also).

(3) Head seen from above less thick, with temples much less developed, not so swollen out, but smoothly, without constriction behind eyes, roundly convergent toward occipital margin which is roundly produced posteriorly (in ♀ gently roundly emarginate), IODv relatively shorter (see measurements), with punctures closer, especially on eye-incisions (in ♀ eye-incision almost without puncture, smooth and shining).

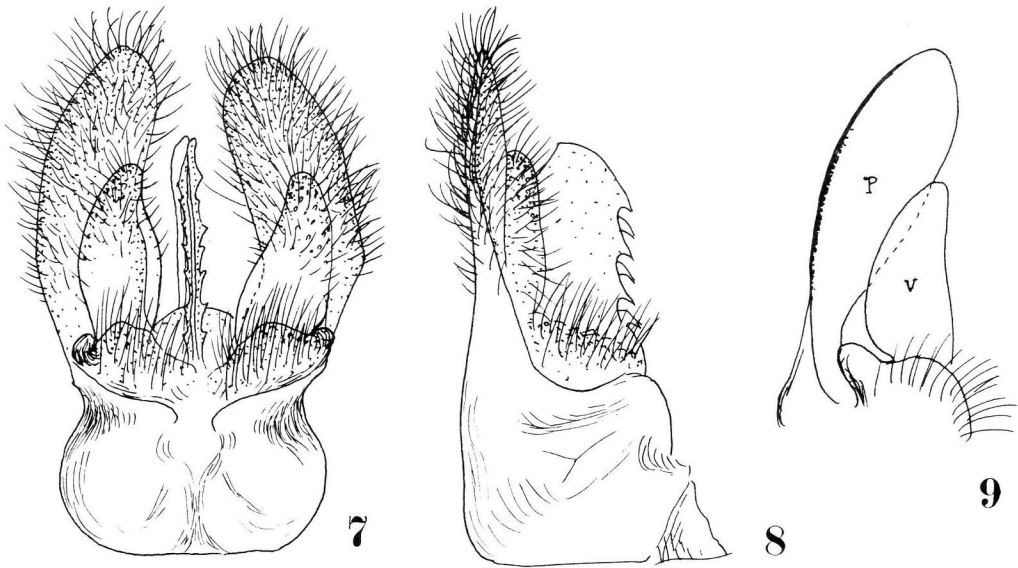
(4) Head in frontal view longer, more rounded, with antennal sockets located much higher, as a result frons shorter and clypeus much longer; AOD much smaller (see measurements), clypeus with apical flattened marginal area narrower and more distinct.

(5) Measurements (within parenthesis ♀):

Head seen from above HW:HL(in middle):HL(at inner orbit)=100:56:48 (100:62:51). HW:IODv:A3=100:44:18 (100:56:6). OOD,Od,POD,OCD=6,6,10,16 (17,5,11,35). Head seen in front HW:HL=100:93 (100:90), clypeus relatively 30 (24) in length, antenno-clypeal distance (ACD) relatively 6 (3). AOD:WAS:IAD=4:8:24 (14:6:24).

(6) Tibiae and tarsi of legs with much less spines, but densely covered with long hair or bristles.

Genitalia seen from beneath: Fig. 7, seen in profile: Fig. 8, basal structure of volsella in ventro-lateral view: Fig. 9, it is deeply incised from outer side.



Figs. 7-9. Male genitalia of Scolia yayeyamensis.

2. Campsomeris (Campsomeriella) quadrifasciata sauteri Betrem, 1928

Campsomeris (Campsomeris) sauteri Betrem, Treubia, 9, Suppl.: 122, 1928 (Formosa).

Campsomeris (Campsomeriella) quadrifasciata sauteri: Tsuneki, Etizenia, 62: 17, 1972 (Formosa, Lan-hsu, Is. Ishigaki, Is. Amami-Oshima).

Specimens: 2 ♀ 1 ♂, Is. Miyako: Kirimata, 27. III. 1978; 2 ♀ 1 ♂, Is. Miyako: Hirara-shi, 6. IV. 1978.

3. Campsomeris (Campsomeriella) annulata sakaguchii Uchida, 1934

Campsomeris sakaguchii Uchida, J. Fac. Agr. Hokkaido Imp. Univ., 32 (6): 260, 1934.

Campsomeris (Campsomeriella) annulata sakaguchii: Tsuneki, Etizenia, 62: 19, 1972 (Is. Amami-Oshima, Is. Ishigaki).

Specimens: 1 ♀, Is. Miyako: Karimata, 27. III. 1978; 2 ♀, Is. Ishigaki: Mt. O-moto, 4. IV. 1978; 1 ♀, Is. Iriomote: Toyohara, 1-3. IV. 1978; 2 ♂, Is. Okinawa: Ibu, 3. VIII. 1980, Izumi-son, 4. VIII. 1980.