Etizenia

Occasional Publication of the Biological Laboratory
Fukui University, Japan

No. 18.

A NOTE ON *LIRIS* (*NOTOGONIDEA*) *DEPLANATA* (KOHL, 1883), WITH A DESCRIPTION OF THE MALE

(Hymenoptera, Sphecidae)

BY K. TSUNEKI

MARCH 25, 1967.

A NOTE ON *LIRIS* (*NOTOGONIDEA*) *DEPLANATA* (KOHL, 1883), WITH A DESCRIPTION OF THE MALE

(Hymenoptera, Sphecidae)*

By Katsuji TSUNEKI
(Biological Laboratory, Fukui University)

Liris* (*Notogonidea*) *deplanata binghami subsp. nov.

References to the typical form :

Notogonia deplanata Kohl, Verh. zool.-bot. Ges. Wien. 33 : 358–359, 1883.
Notogonia deplanata : Cameron, Mem. Manch. Lit. Phil. Soc., 4 (2) : 130, 1889.
Liris haemorrhoidalis Bingham (nec Fabricius, 1804), Proc. Zool. Soc. Lond., p. 443, 1896.
Notogonia deplanata : Bingham, Faun. Brit. Ind., Hym., I : 203. 1897.
Tachytes fulvo-pilosa Cameron, Ann. Mag. Nat. Hist., Ser. 7, 13 : 207–298, 1904 (**syn. nov.**).

References to the new form :

Notogonia deplanata, var., Bingham, Faun. Brit. Ind., Hym. I : 203, 1897.
Motes sp. Tsuneki, Life Study (Fukui), 6 (1) : 5, 1962.
Liris (*Notogonidea*) *deplanata* : Tsuneki, Kontyu, 32 : 219, 1964.
Liris (*Notogonidea*) *deplanata* : Tsuneki, Life Study, 8 (4) : 62, 1964.

In the year, 1961, I visited Amami-Ohshima, one of the Ryukyu Islands and could capture a female and a male of the Larrine wasps which were considered a closely allied form of the species above listed. It is a beautiful species, having the head and thorax adorned with rich golden pubescence. The first abdominal segment is also wholly covered with golden pile and the pile bands on the two succeeding segments are much broader than usual. The male that had remained unknown is less gorgeous in vestiture, its wings are much darker and apparently it belongs to another species.

Early in spring of 1964, two of the students of my Laboratory, T. Okumura and T. Iida, collected a number of the female specimens of this species on the same Island.

The specimens of Amami-Ohshima differ from the original description in that all the legs are black instead of ferruginous red, though densely covered with golden pile and hardly visible. It corresponds to the variety described by Bingham (1897).

During July - August, 1966, I went to Formosa and could collect a fairly abundant material of this species.

With the sufficient specimens thus collected I attempted a taxonomic study of this interesting species.

In the original description basing on a female specimen from Ceylon, Kohl dealt with the red-legged form. In his description he remarked "merkwürdig ist auch die geringe Abstutzung der Radialzelle, sowie die nach Art gewisser *Tachytes*-Arten zungenförmig ausgezogene dritte Cubitalzelle". The tongue-shaped cubital cell 3 is, however, rather common in the Asiatic species of *Liris* s. lat. But, apart from this, the dense golden pilosity on the head, thorax and even on the basal half of the abdomen makes this species appear quite *Tachytes*-like. Hence, Cameron, although he dealt with the species correctly in his 1889 paper, was misled in 1904 to take it as a member of the genus *Tachytes* and named it *fulvo-pilosa*. His description of this *Techytes*-species** completely agrees with the characters of *L. deplanata* (♀) occurring in eastern Asia,

* *Contribution No. 97 from the Biological laboratory, Fukui University, Japan.*

** He showed himself that the species did not belong to the genus *Tachytes* by describing *"the lateral fold on the inner orbits are prominent"* (!).

excepting the three points in structure :

(1) Mesosternal furrow narrow and shallow.

With our specimens, on the median line of the mesosternum there is no *furrow*, but is a fine carina. In certain light, however, it may appear to be the furrow, especially under simple lupe.

(2) The first cubital cellule at the top is hardly one third of the length of the second.

This may probably a mistake of the second and third cellule respectively. Even so, the difference is too great as compared with our specimens in which the second section of the radial vein is as long as, at most half so, the 3rd section.

(3) Interocular distance at the vertex is as long as 4th antennal joint.

In our specimens the interocular distance is less than as long as antennal joint 4 (ratio at least 3 : 4). But the eye measurement is likely to commit an error.

Description of the female

♀. Length 15.5-21.0 mm. Black, with front tibial spurs and spines of legs ferruginous, wings flavo-hyaline, spically fairly markedly clouded. Head and thorax-complex densely covered with golden (in some light cupreously glittering) appressed hairs, on the bordering area of upper and lower frons and on both sides of the medial furrow of frons the hairs curled into a whirl, on mesonotum in fresh specimens the hairs transversely recumbent in both directions along the three equidistant longitudinal lines, forming with the curved up apices four longitudinal lines of hair flow, most distinct on the anterior half, on its posterior margin hairs arcuately curved from the median line toward the sides; hairs on propodeum erected except on the sides. On abdominal tergites 1-3, besides the golden pile bands, whole the rest of the area on 1 and anterior half on 2 and 3 covered with very short appressed cupreous golden pile, but pile on 4 and 5 black, mixing a few cupreous hairs, pygidial area covered with dark brown stiff hairs, on peripheral regions somewhat cupreously glittering.

Interocular distance on vertex as long as antennal joint 8, just as described by Kohl (measurement relatively 25 : 25), ratio to joint-3 35:25 - 33:27, joint 3 approximately as long as joint 4; rhinaria in a elliptic impression, usually on joints 6 (or 7) - 11, on 6 very small, but apically larger. Frontal furrow in front of anterior ocellus narrow but deep, its anterior 2/3 runs on lower frons, clypeus : Fig. 1, disc medianly at base bluntly carinate; dorsal aspect of propodeum medianly weakly carinate, the carina usually runs from base near to spex, the surface transversely, rather coarsely but not strongly, somewhat arcuately rugoso-striate, the rugae laterally stronger and high, interspaces irregularly sectioned by longitudinal weaker rugulae into a form of irregular reticulation, posterior aspect medianly from about middle apically deeply and narrowly grooved, its upper area triangularly flattened and partly polished, the surface transversely coarsely rugoso-striate, the rugae laterally stronger, intervals especially the medial region finely irregularly reticulate, the border between dorsal and posterior aspects marked with strongly elevated carina, usually consisting of medial arcuate ridge and lateral oblique ridges, posterior aspect with lateral carinae always incomplete, sometimes intermittent, sometimes partly lacking, sides of the segment on upper portion alone finely closely and faintly striate. Pygidial area : Fig. 2. Length relation between sections of radial vein of fore wing : $4 > 1 > 3 \geqq 2 > 5$.

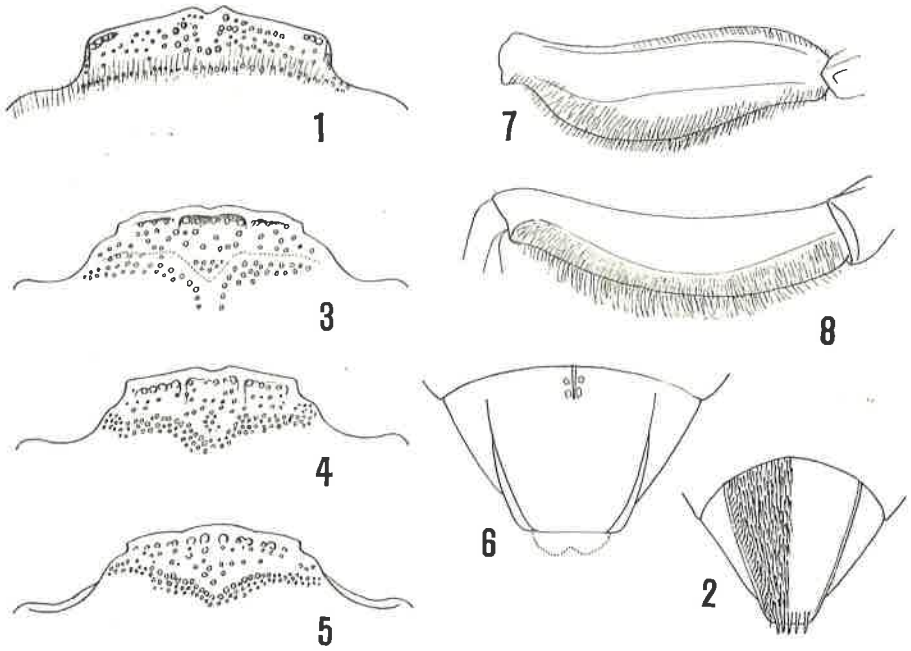
Punctures on clypeal bevel fine, uniform and fairly close, extening near apical margin, on other portions of head and on mesonotum completely invisible owing to the close vestiture. With worn out specimens punctures on mesonotum very minute and close, but distinctly separated and deep; mesopleuron weakly minutely coriaceous, only on lower portion mixed with

sparse fine punctures.

Description of the male

Bingham, in his Hymenoptera I in the Fauna of British India (1897) described that the male (of this species) similar (to the female) but smaller. This is, however, probably based on his presumation, as he frequently did with errors in this book. Because the male is, as above suggested, considerably different from the female and in reality has been remained undescribed. Before dealing with the male the taxonomic position of the specimens in East Asia will briefly be discussed.

The Ryukyu and Formosan specimens, both female and male, differ from the original description in possessing wholly black legs and agree with that variety described by Bingham



Figs. 1–8. 1: Clypeus, ♀. 2: Pygidial area, ♀. 3, 4 and 5: Clypeus, ♂. 6: Pygidial area, ♂. 7: Front femur, ♂, seen from above. 8: Ditto seen from behind.

(1896), excepting the slight difference in the apical cloudness of the wings. The last mentioned character is, however, widely varied among specimens and seems taxonomically less important.

Now, the black legged form lives apparently in northern regions of high ultitude in India, forming a distinct geographical race. In Formosa and the Ryukyus this form occurs decidedly in the montane regions in sharp contrast to the low-land dwellers of *Liris* (*Liris*) *aurulenta* (Fabricius) and there is no specimens collected as to the red-legged form. The fact gives evidence that the two forms do not represent mere fructuative variations within a population. Basing upon such data the subspecific name, ***binghami***, was given to this geographic race.

♂. Length 9.5–13.0 mm. In pilosity, colour of wings and in the structure of antennae and legs fairly markedly differs from ♀.

Pilosity : Vertex and upper frons without dense golden pile, but with sparse long erect brassy hairs, lower frons, clypeus, base externally of mandibles, temples on lower portion covered with appressed golden pubescence, but the hairs finer, somewhat longer, less dense and glittering

only in oblique light; vestiture on posterior margin of pronotum, humeral angles, mesonotum on lateral and posterior margins and medio-anterior region, subalar epimeral area, mesopleuron below and ventral side of thorax, lateral areas of scutellum and of postscutellum brassy, fine, rather sparse, comparativly long (except on posterior margin of pronotum) and erected, visible in oblique light only; pubescence on propodeum also fine and erected, fulvous but on dorsal aspect somewnat greyish, also visible in obliqus light; pile on the rest of mesonotum grey, fairly blackish; abdominal tergites 1–3 each with a comparatively broad apical pile band, in colour brassy, in some specimens silvery on each posterior portion, but the pile bands much less conspicuous and likely to be overlooked, the same is true with hairs on thorax. The insect therefore apparently lacking the glittering pile except on anterior aspect of the head. Pygidial area with dark brown hairs, in oblique light appearing ferruginous. Front femur beneath from posterior to under side covered with long soft erect pubescence, somewhat yellowish in colour.

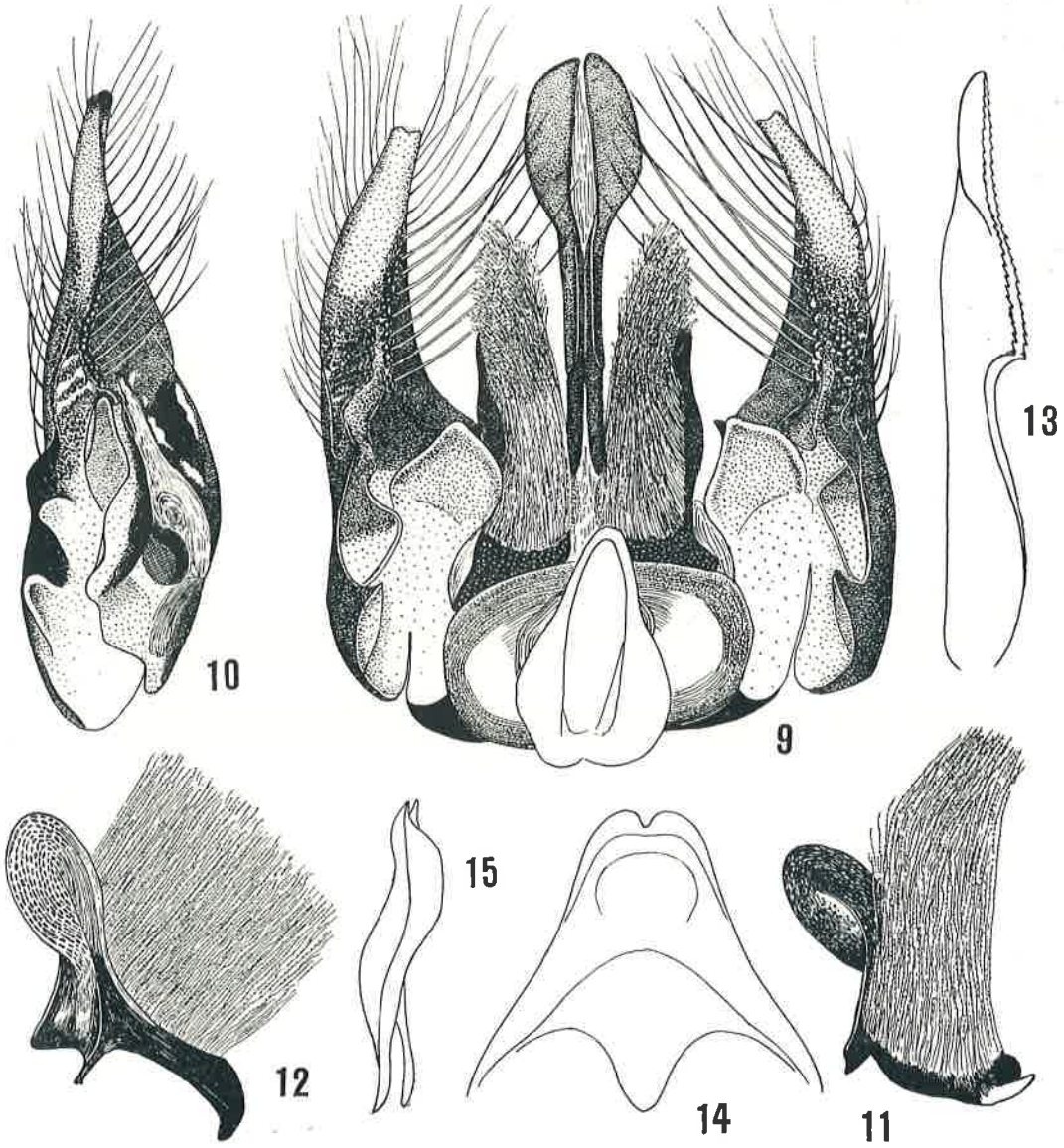
Coloration : Deep black, palpi dark brown, spines of legs brownish. Wings strongly fuscous, posteriorly and basally somewhat paler, much less yellowiah than in ♀.

Structure : Clypeus more or less varied in form : Figs. 3, 4 and 5; Fig. 3 the most usual. Interocular distance at vertex greater than as long as antennal ioint 3 (ratio approximately 5 : 4), joint 3 nearly twice as long as broad at apex and as long as any of joints 4–6, with rhinaria (impressed bare area at the posterior) from joint 4 to basal half of ultimate joint. Transverse furrow on nape of pronotum medianly shallowly interrupted, mesonotum medio-anteriorly fairly markedly impressed; propodeum with median and posterior carinae on dorsal aspect as in ♀, lateral margins of posterior aspect roundly convergent posteriorly, with bordering carinae only on posterior portion defined, sometimes in scattered dots on the lines. Pygidial area : Fig. 6, the lateral carinae gradually high posteriorly and roundly, somewhat suddenly end and apparently slightly produced at apex, apical margin without the carina, semitransparent yellowish, with extreme apex nearly truncate, the surface closely covered with hair-bearing aciculate punctures, with a short blunt longitudinal carina at base in middle, the hairs somewhat stiff, appressed and everywhere uniform. Front femur in dorsal and posterior view : Figs. 7 and 8. Abscissae of radial vein in fore wing : $4 > 1 > 3 > 2 \lesseqgtr 5$, difference, if any, between 2 and 5 not great, sometimes that between 1 and 3 also slight, though the former slways longer.

Genitalia in the ventral view : Fig. 9. Basiparamere on inside with a pouch-like invagination, surrounded on inside with a subquadrate somewhat rolled lamellate process and on the outside with two small triangular processes, all not well chitinized, but the portion externally well chitinized, dark brown. Paramere with two rows of very long somewhat stiff hairs (Figs. 9 and 10), the bases of which coarsely granulate. Fig. 10, the left paramere (in Fig. 9 lying on the left), shows the presence of non-chitinized membraneous area having a comparatively large perforation behind the inside subquadrate process; paramere apically narrowed and yellowish, with extreme apex truncate and gently emarginate, apical portion again more strongly chitinized and more darkened. Volsella not yet differentiated into 3 parts, lamina and digitus not developed; cuspis (or volsella in general), strongly chitinized black organ (Figs. 9, and 12), with apex elliptic and concave from inside, ventral side densely covered with a tuft of long soft brownish sericeous pubescence, each pubescence feebly nodulous, (Fig. 11 from inside, Fig. 12 from outside), the elliptic area with delicate coriaceous sculpture. Laminal part lies between a side of penis valve and ventro-apical part of basal ring. Penis valve in the ventral view : Fig. 9, in lateral view : Fig. 13, inner margin of each lobe finely serrate.

8th sternite in the dorsal (from inside) view : Fig. 14 and in the lateral view : Fig. 15.

Remarks. The male of this species closely resembles *Liris* (*Notogonidea*) *shirozui* Tsuneki,



Figs. 9–15. 9: Male genitalia seen from benenth. 10: Left paramere seen from inside. 11: Volsella seen from inside. 12: Volsella seen from outside. 13: Penis valve, lateral view. 14: Eighth sternite, ♂, dorsal view. 15: Ditto, lateral view.

1966, but is separable therefrom by the slight differences in the pilosity of frons and clypeus, in the sculpture on the epimeral area of mesopleuron, in the surface state of rhinaria, etc., especially easily so by the structural difference of the volsella of the genitalia.

Holotype : ♀, Formosa (Chiayi Hsien : Fenchihu), 24. VII. 1966, K. Tsuneki leg. (Coll. Tsuneki).

Paratypes : 20 ♀♀ 20 ♂♂, Formosa, VII, VIII. 1966; 3 ♀♀ 1 ♂, Amami-Ohshima.

Other specimens : 24 ♀♀. Amami-Ohshima and 8 ♂♂, Formosa.

Data of specimens : 27 ♀♀ 1 ♂, Ryukyus : Amami-Ohshima (1 ♀ 1 ♂, Nishinakama,

25. 29. VI. 1961, K. Tsuneki leg; 20 ♀♀, Nishinakama, Konia, 17, 23. III. 1964, T. Okumura leg.; 6 ♀♀, Konia, Nishinakama, Suko, 12. 22. III. 1964, T. Iida leg.

20 ♀♀ 28 ♂♂, Formosa : 3 ♂♂, Taipei Hsien (2 ♂♂. Yangmingshan, 24. VIII, 1966; 1 ♂, Kueishanlu, 6. VII, T. Tano leg.); 1 ♀ 1 ♂, Ilan Hsien (Tsukeng, 21. VIII. 1266, T. Tano leg.); 5 ♀♀ 11 ♂♂, Nantou Hsien (Penpuchi, 12, 13. VII., 26-28. VIII. 1966, K. Tsuneki leg.); 14 ♀♀ 13 ♂♂, Chiayi Hsien (Fenchihu, 24-26. VII. 1266, K. Tsuneki et T. Tano leg.).

REFERENCES

Bingham, C. T. 1896. A contribution to the knowledge of the Hymenopterous fauna of Ceylon. (1. c.)

——— 1897. Fauna of British India, including Ceylon and Burma. London.

Cameron, P. 1904. On some new species of Hymenoptera from northern India. (1. c.)

Kohl, F. F. 1883. Neue Hymenopteren in den Sammlungen des k. k. zoolog. Hof-Cabinetes zu Wien (1. c.)

Tsuneki, K 1962. The Aculeate Hymenoptera collected on the Island of Amami-Ohshima, the Ryukyus. (1. c., in Japanese with English Summary.)

——— 1964a. Notes on the nomenclature of the Japanese species of Larrini (Hymenoptera, Sphecidae, Larrinae). (1. c., in Japanese with English Summary.)

——— 1964b. A guide to the study of the Japanese Hymenoptera (21). (9) Larrinae occurring in Japan and Korea. (1. c., in Japanese with English Summary.)

——— 1966. Contribution to the knowledge of the Larrinae fauna of Formosa and the Ryukyus. Etizenia, 17 : 1-15.