



Title	Supplementary notes on the family Anthomyiidae of Japan (Diptera), VII
Author(s)	Suwa, Masaaki; Suwa, Masaaki
Citation	Insecta matsumurana. New series : journal of the Faculty of Agriculture Hokkaido University, series entomology, 67, 75-98
Issue Date	2011-10
Doc URL	<a href="http://hdl.handle.net/2115/47455">http://hdl.handle.net/2115/47455</a>
Type	bulletin (article)
File Information	06 Suwa.pdf



[Instructions for use](#)

**SUPPLEMENTARY NOTES ON THE FAMILY ANTHOMYIIDAE OF JAPAN  
(DIPTERA), VII**

By MASAOKI SUWA

*Abstract*

SUWA, M., 2011. Supplementary notes on the family Anthomyiidae of Japan (Diptera), VII. *Ins. matsum. n. s.* 67: 75–98, 79 figs.

Seven Japanese species of Anthomyiidae are dealt with. Four species are recorded as new to Japan: *Adia alatavensis* (Hennig, 1967), *Chirosia strigilliformis* (Deng et Li, 1986), *Leucophora hangzhouensis* Fan, 1988, and *Pegomya hamata* Wei, 1998. *Pegomya prisca* Michelsen, 2006, and *Pegoplata fukushii* Suwa, 1990, are synonymized with *P. hamata* and *Pegoplata plicatura* (Hsue, 1981) respectively. *Adia cinerella* (Fallén, 1825) is shown to have a slight but stable difference in the male terminalia between the European and Asian forms. *Chirosia albitarsis* (Zetterstedt, 1845) is newly recorded from Hokkaido.

*Author's address.* Hokkaido University Museum, Kita-10 Nishi-8, Kita-ku, Sapporo, 060-0810 Japan.

## INTRODUCTION

Up to the present more than 70 species of Anthomyiidae have been described from Japan as new to science, and about half of them are now known to occur also in China or elsewhere. Japan has a history of land connection with Eurasia during most period of the Pleistocene. It is not strange to estimate high activity in the past on faunal exchange between Japan and the continent. The percentage of species endemic to Japan will decrease with the progress of faunal investigation in continental Asia.

In this paper seven species of anthomyiids are dealt with. Four of the species are recorded as new to Japan: *Adia alatavensis* (Hennig, 1967), *Chirosia strigilliformis* (Deng et Li, 1986), *Leucophora hangzhouensis* Fan, 1988, and *Pegomya hamata* Wei, 1998, all originally described from Central Asia or China. *P. hamata* is regarded as conspecific with *Pegomya prisca* Michelsen, 2006, described from Europe. Another species, *Pegoplata fukushii* Suwa, 1990, described from Honshu, Japan, is suppressed as a junior synonym of *Pegoplata plicatura* (Hsue, 1981) described from Liaoning, China. *Adia cinerella* (Fallén, 1825), a widely distributed species in the Holarctic and Oriental regions, is shown to have a slight but stable difference in the male terminalia between the European and Asian forms. On this occasion *Chirosia albitarsis* (Zetterstedt, 1845) is recorded from Hokkaido for the first time.

As a result of the present study the Japanese Anthomyiidae are now represented by 227 species.

The specimens used here are preserved in the collection of the Hokkaido University Museum unless otherwise stated.

## DESCRIPTIONS

### 1. *Adia alatavensis* (Hennig, 1967) (Figs. 1–13)

*Paregle alatavensis* Hennig, 1967: 158.

*Adia alatavensis*: Fan et al., 1988: 102; Wei et al., 1998: 669.

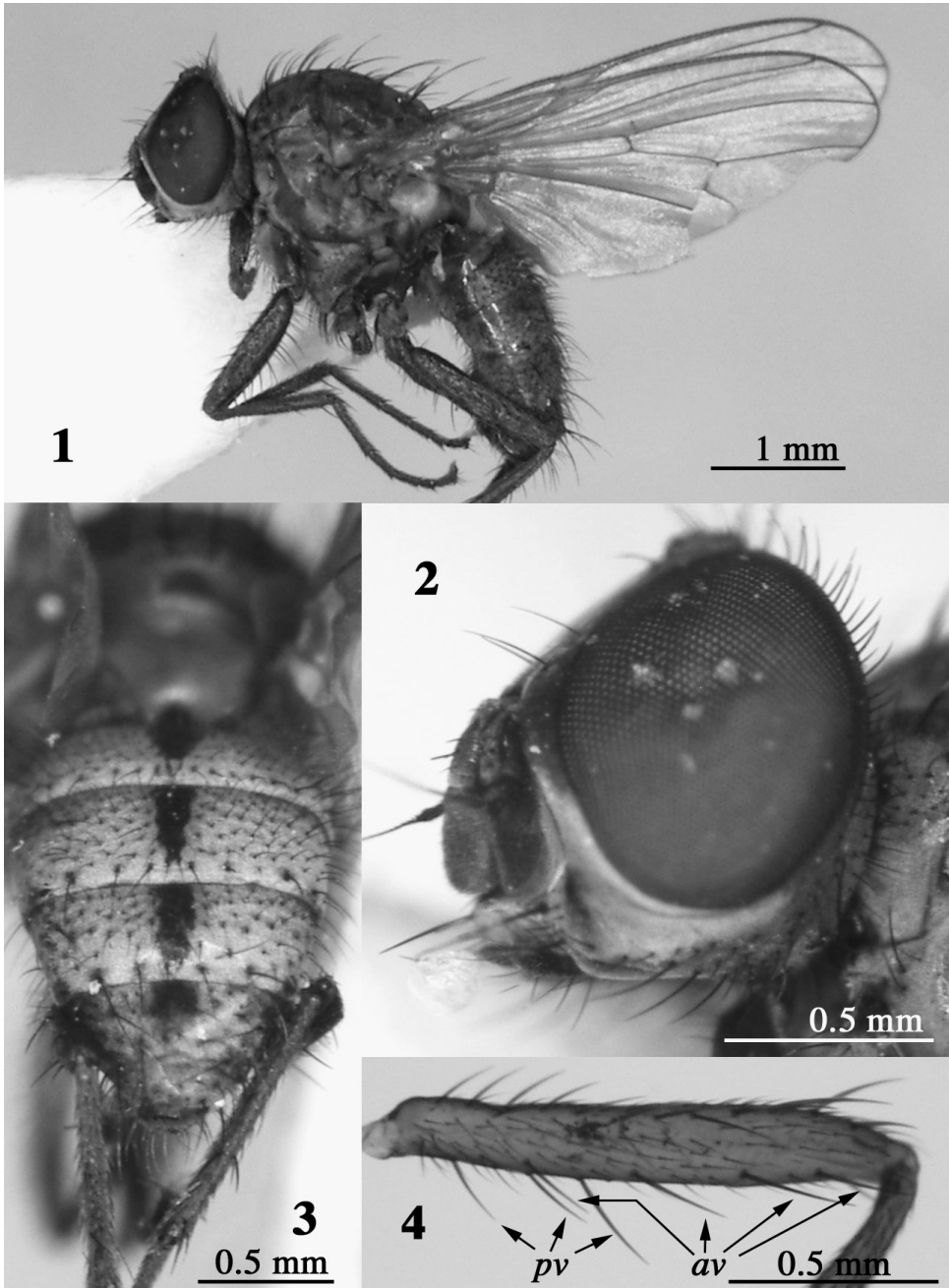
Material examined. Kyushu. Kumamoto-ken: Kusasenri, alt. ca. 1100 m, Mt. Aso-san, 1 ♂, 18.vi.1970, K. Kanmiya leg.

Distribution. Japan (Kyushu); China (Xinjiang; Qinghai; Gansu); Central Asia (Kyrgyzstan; Tajikistan). New to Japan.

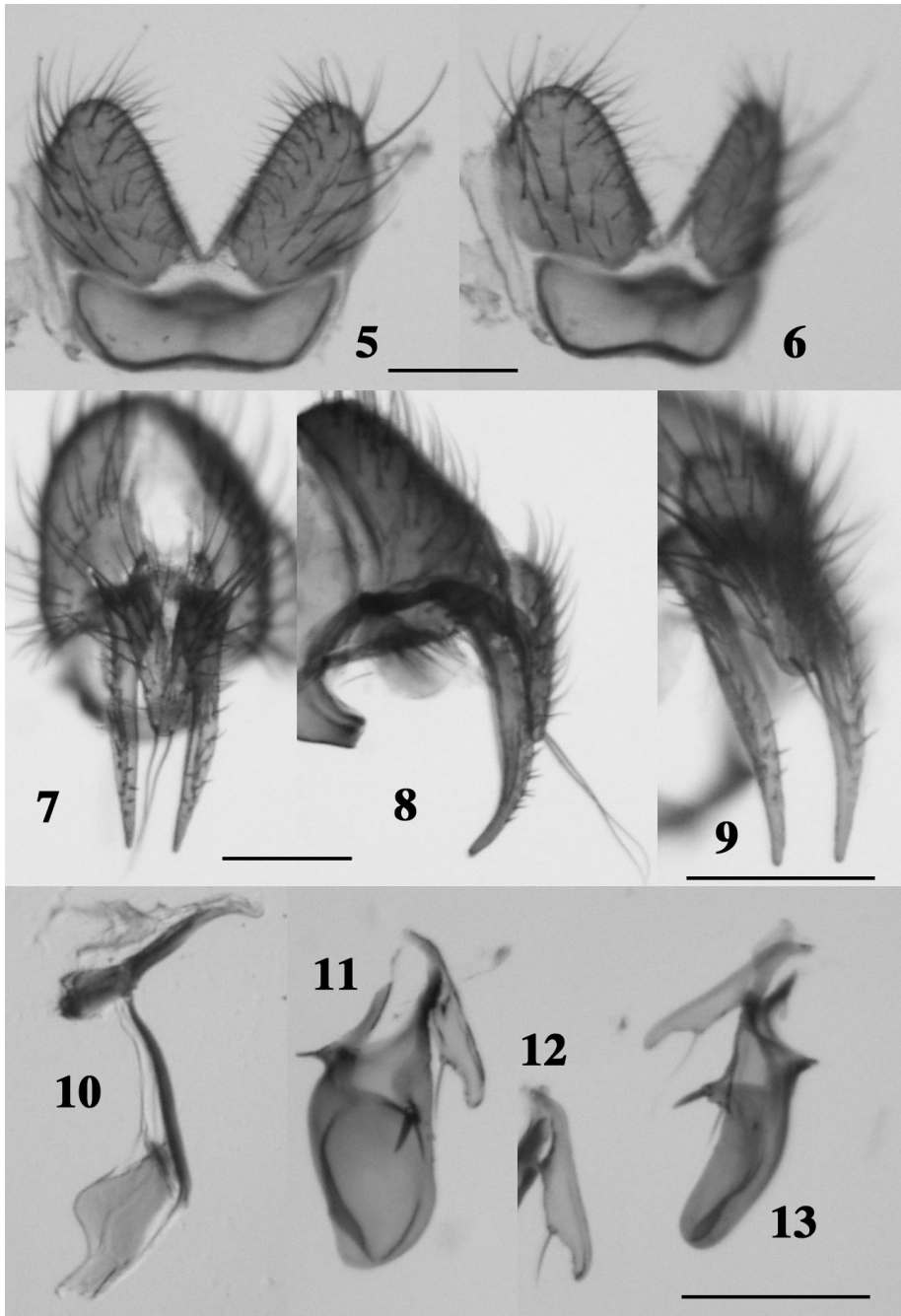
A redescription based on the present specimen is given as follows.

♂. Wing length 3.9 mm. Body mainly blackish in ground colour, more or less brownish on abdomen. Antennae with 2nd segment more or less brownish on distal margin; palpi dark brown; haustellar mentum dark brown, rather thinly pollinose. Mesonotum brownish grey pollinose, paler peripherally and between rows of *dc* and *acr* before suture. Abdomen pale grey pollinose, slightly tinged with brown; median vitta (Fig. 3) sharp and wedge-shaped on each tergite. Legs dark brownish. Wings a little tinged with brown; calyptrae pale, tinged with brownish yellow; halteres pale yellow apically.

Head (Fig. 2) 1.3 times as high as long; frons narrower than anterior ocellus; interfrontalia with *if* indiscernible; parafrontals almost contiguous to each other at narrowest point of frons, with 2 distinct and 1 minute *ori* and 1 short *ors*;  $A_3$  1.8 times as



Figs. 1–4. *Adia alatavensis* (Hennig, 1967), ♂. 1, general features, left wing damaged around medial cell; 2, head, lateral and slightly oblique view; 3, abdomen, dorsocaudal view; 4, left hind femur, anterior view, *av*: anteroventral setae, *pv*: posteroventral setae. Mt. Aso-san, Kumamoto-ken.



Figs. 5–13. *Adia alatavensis* (Hennig, 1967), ♂. 5, 5th sternite, ventral view; 6, ditto, ventrolateral view; 7, hypopygium, dorsal view; 8, ditto, lateral view; 9, ditto, part, dorsolateral view; 10, basiphallus and distiphallus; 11, right pregonite and postgonite, inside view; 12, left postgonite; 13, left pregonite and postgonite, inside and ventrolateral view. Mt. Aso-san, Kumamoto-ken. Scales 0.2 mm.

long as wide; arista minutely pubescent; orbits at parafrontal angle about two-thirds as wide as  $A_3$ ; genae about as high as  $A_3$ -width, beyond peristomal setae with 3 upwardly-curved genal setae in a row; epistoma projecting forward beyond tip of parafrontal angle; occiput bare on postocular plains.

Mesonotum with ground setulae short and sparse; 3 pairs of *pre-acr*, the rows separated from each other by a distance shorter than that to adjacent *dc*-row at the 2nd pair and as long as that at the 3rd; 2nd *ph* differentiated from ground setulae, much weaker than the 1st; *pra* shorter than posterior *ntpl*; notopleuron with no accessory setulae; mesopleuron with 2 weak anterior *mpl* discernible; 1 strong and 1 weaker *pstg*, associated with 0–1 fine setula; *stpl* 2:3, lower anterior and lowest posterior much weaker than the upper; scutellum with only a few ground setulae dorsally.

Abdomen a little depressed dorsoventrally and ovoid in dorsal view, 1.6 times as long as wide; 6th tergite bare; 5th sternite (Figs. 5–6) with processes broad and rounded apically; surstylus (Figs. 7–9) without a notch apically; pregonite (Figs. 11, 13) broad, with a stout seta at inner tubercle apically and a weaker seta below the stout seta.

Mid legs missing in the present specimen;  $f_3$  (Fig. 4) with 4 strong *av* on distal three-fourths, and apart from 1 distinct preapical *pv* with 3 strong (on left leg) or 2 strong and 2 weak (on right) *pv* in basal half;  $t_1$  with 1 *ad* and 1 *pv*, in addition left  $t_1$  with 1 short *pv* discernible;  $t_3$  with 1 *av*, 2 *ad* and 2 *pd*. Wings with costa bare ventrally; costal thorns small though stronger than costal spinules and longer than costal width; *dm-cu* oblique and slightly sinuate; lower calyptra smaller than the upper.

♀. Unknown to me. Distinguishable from that of *A. cinerella* by the chaetotaxy of hind femur as in the male (Hennig, 1967).

Remarks. In general appearance this species much resembles *A. cinerella*, from which it is, however, easily distinguished by the following aspects in the male:– Hind femur with a few distinct *pv* on basal half; 5th sternite without a bundle of setae at inner apex of each process; distiphallus with narrower acrophallus; pregonite broader. The surstyli figured in Hennig (1967) and Fan et al. (1988) have a small but apparent notch at apex differently from the present Japanese specimen. This difference is here regarded as a geographical variation as in the case of *A. cinerella* mentioned later.

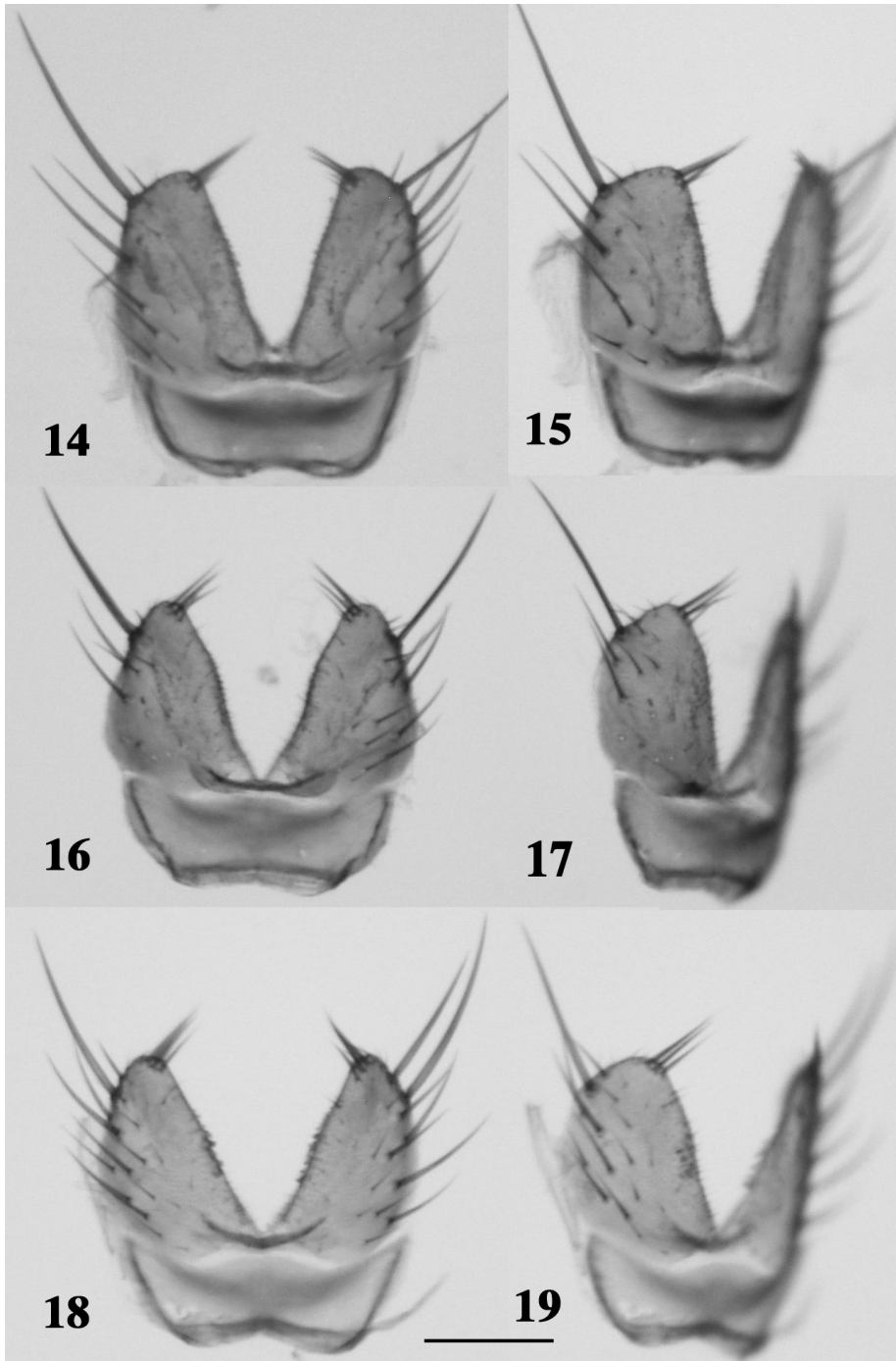
## 2. *Adia cinerella* (Fallén, 1825) (Figs. 14–26)

*Paregle cinerella*: Suwa, 1974: 95.

*Adia cinerella*: Suwa, 1999: 205.

Material examined. Japan. Hokkaido: Sapporo, 38 ♂, 19 ♀; Jozankei, 1 ♀; Toyotomi, 4 ♂; Hamatombetsu 1 ♂; Notoro-ko, 2 ♀; Kunneppu, 1 ♀; Otofuke, 2 ♂, 2 ♀; Nakatsunai, 2 ♀. Honshu: Iwate-ken (Mt. Hayachine, 1 ♂; unknown locality, 1 ♂); Tochigi-ken (Nikko, 2 ♂, 3 ♀); Saitama-ken (Karisaka-toge, 6 ♂, 4 ♀; Okegawa, 4 ♂; Mitsumine, 1 ♂; Mt. Kumotori, 1 ♀; Nagatoro, 1 ♂; Honjo, 4 ♂; Kumagaya, 1 ♀; Konan, 1 ♀; Kamikawa, 1 ♀); Yamanashi-ken (Daibosatsu, 9 ♂, 8 ♀); Shizuoka-ken (Gotemba, 1 ♂); Nagano-ken (Mt. Kimpu, 1 ♂; Mt. Yatsugatake, 3 ♂; Shiga-kogen, 1 ♂); Nara-ken (Katsuragi-yama, 1 ♂). Kyushu: Nagasaki-ken (Tsushima, 1 ♂); Kagoshima-ken (Amami-Oshima, 1 ♂).

Korea. Kangwon (Seolag-san, 1 ♀; Odae-san, 1 ♀); Chungnam (Manlipo, 2 ♀); Kyeongbuk (Jangsa, 7 ♂, 6 ♀); Kyeongnam (Jiri-san, 1 ♂); Cheju-do (Mt. Hanna, 1 ♂).



Figs. 14–19. Fifth sternite of *Adia cinerella* (Fallén, 1825), ♂. 14, 16 and 18, ventral view; 15, 17 and 19, ventrolateral view. Sapporo (14–15), Greece (16–17) and Spain (18–19). Scale 0.2 mm.



Figs. 20–26. *Adia cinerella* (Fallén, 1825), ♂. 20, hypopygium, dorsal view; 21, ditto, lateral view; 22–23, ditto, part, dorsolateral view; 24, basiphallus and distiphallus; 25, left pregonite and postgonite; 26, right pregonite, inside view. Sapporo (20–22, 24–26) and Spain (23). Scales 0.2 mm.

India. Himachal Pradesh (Solan, 1 ♂, 3 ♀; Kufri, 1 ♂, 1 ♀); Uttar Pradesh (Bhata Reservoir, near Dehra Dun, 1 ♂, 2 ♀); Delhi (Okhla Lake, 1 ♂).

Greece. Evritania, 1 ♂; Viotia, 2 ♀; Crete, 1 ♂.

Italy. Sicily, 5 ♂.

Spain. Santander, 1 ♂, 1 ♀; Monegros, 55 ♂, 35 ♀.

Distribution. Holarctic and Oriental regions.

Remarks. This species is widely distributed in the Holarctic (Hennig, 1967: 161; Griffiths, 2001: 2153) and Oriental (Ackland & Pont, 1977: 444) regions, and common in China (Wei et al., 1998: 669), Korea (Suh & Kwon, 1985: 189) and Japan (Suwa,



1999: 205). Having dissected some specimens from Europe (Greece, Italy and Spain) and Asia (India, Korea and Japan) I have found a slight but distinct variation in the male terminalia:– The surstyli are clearly notched apically in the European form (Fig. 23), but barely so in the Asian (Fig. 22). Moreover, the angle of inner apical corner of each process of the male 5th sternite is slightly variable in the European form (Figs. 16–19), and often narrower than that in the Asian form (Figs. 14–15). According to the figures given in Griffiths (2001), the North American form of *A. cinerella* agrees with the European one.

### 3. *Chirosia albitarsis* (Zetterstedt, 1845)

*Chirosia albitarsis*: Suwa, 1983: 1; Fukushi, 1990: 52; Suwa, 1999: 213.

Material examined. In addition to the records given in Suwa (1983) the following specimens have been examined. Hokkaido. Kozawa, Kyowa-cho, Iwanai-gun, 49 ♂, 23 ♀, 3.vi.1999, M. Suwa leg. Honshu. Aomori-ken: Bonju-san, 2 ♂, 11.vi.1983, S. Fukushi leg. Tochigi-ken: Mt. Keicho-san, alt. 1300–1760 m, 7 ♂, 6.vi.1992, M. Suwa leg.; Nishi-nasuno, alt. 300 m, 1 ♂, 1 ♀, 28.v.1992, M. Suwa leg. Ishikwa-ken: Mt. Iozen, 1 ♀, 17.v.1970, H. Kurahashi leg.

Distribution. Palaearctic region; Burma (Ackland & Pont, 1977: 440).

Remarks. This species is here newly recorded from Hokkaido. As the larva is known as a rachis borer of *Pteridium aquilinum* (L.) Kuhn (Brown & McGavin, 1982 through Ellis, 2011), it may widely be distributed in Japan.

### 4. *Chirosia strigilliformis* (Deng et Li, 1986) comb. nov. (Figs. 27–43)

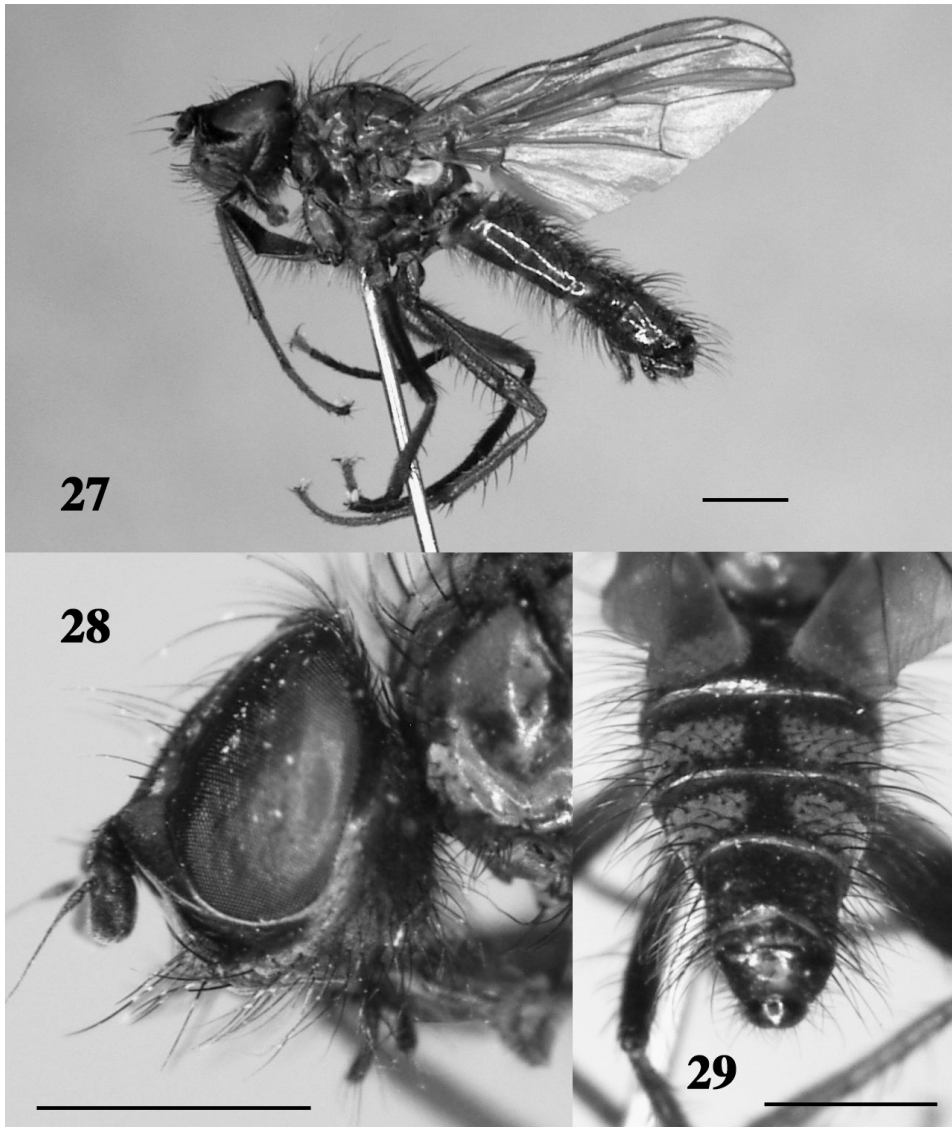
*Meliniella strigilliformis* Deng et Li, 1986: 105; Wei et al., 1998: 666.

Material examined. Hokkaido. Mt. Soranuma, alt. 300–500 m, 1 ♂, 23.v.1985, M. Suwa leg.

Distribution. Japan (Hokkaido); China (Sichuan). New to Japan.

♂. Wing length 4.8 mm. Body including appendages blackish in ground colour and rather thinly grey pollinose. Interfrontalia dark brownish grey pollinose; orbits silver grey pollinose; face, facial ridges and genae around vibrissal angles distinctly tinged with brown in pollinosity; haustellar mentum pollinose. Mesonotum brownish grey pollinose, paler peripherally; in frontal angle of view almost wholly pollinose, with black markings on lateral declivities and around bases of last pairs of *dc* and *acr*; in caudal angle of view almost blackish, with pollinosity discernible along transverse suture except medially, along rows of *post-dc* and along posterior margin. Abdomen pale bluish grey in pollinosity, shining in some lights; median vitta (Fig. 29) sharp and broad, much wider than tibial diameter; fore-marginal bands sharp and rather broad though narrower than median vitta; 5th tergite and terminalia thinly pollinose, shining black in caudal angle of view; pregenital sclerite polished along anterior margin. Wings distinctly tinged with dark brown, darker basally; calyptrae whitish, with pale yellowish margins; halteres reddish brown basally and yellow apically.

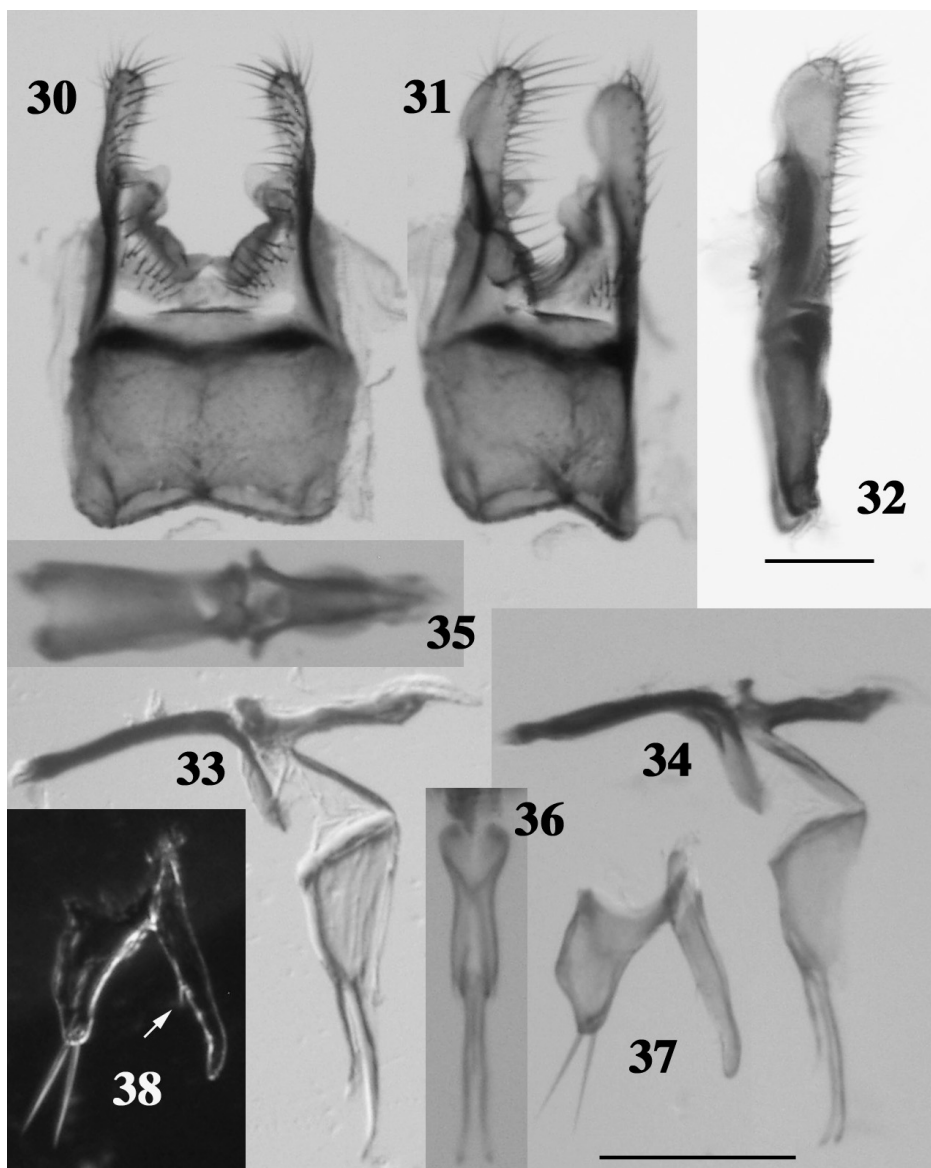
Head (Fig. 28) a little higher than long, 1.17 times as high as long; frons about as wide as anterior ocellus; parafrontals contiguous to each other, with 8–9 strong and 3–4 mingled minute *ori* and no *ors*; *if* absent;  $A_3$  1.5 times as long as wide; arista thickened



Figs. 27–29. *Chirosia strigilliformis* (Deng et Li, 1986), ♂. 27, general features; 28, head, lateral view; 29, abdomen, dorsocaudal view. Mt. Soranuma, Hokkaido. Scales 1 mm.

on basal fourth, with hairs minute; orbits at parafrontal angle a little wider than  $A_3$ ; genae as high as orbital width at parafrontal angle, with genal setae in about 3 rows; epistoma situated behind tip of parafrontal angle; haustellar mentum not enlarged; occiput setulose on postocular plains.

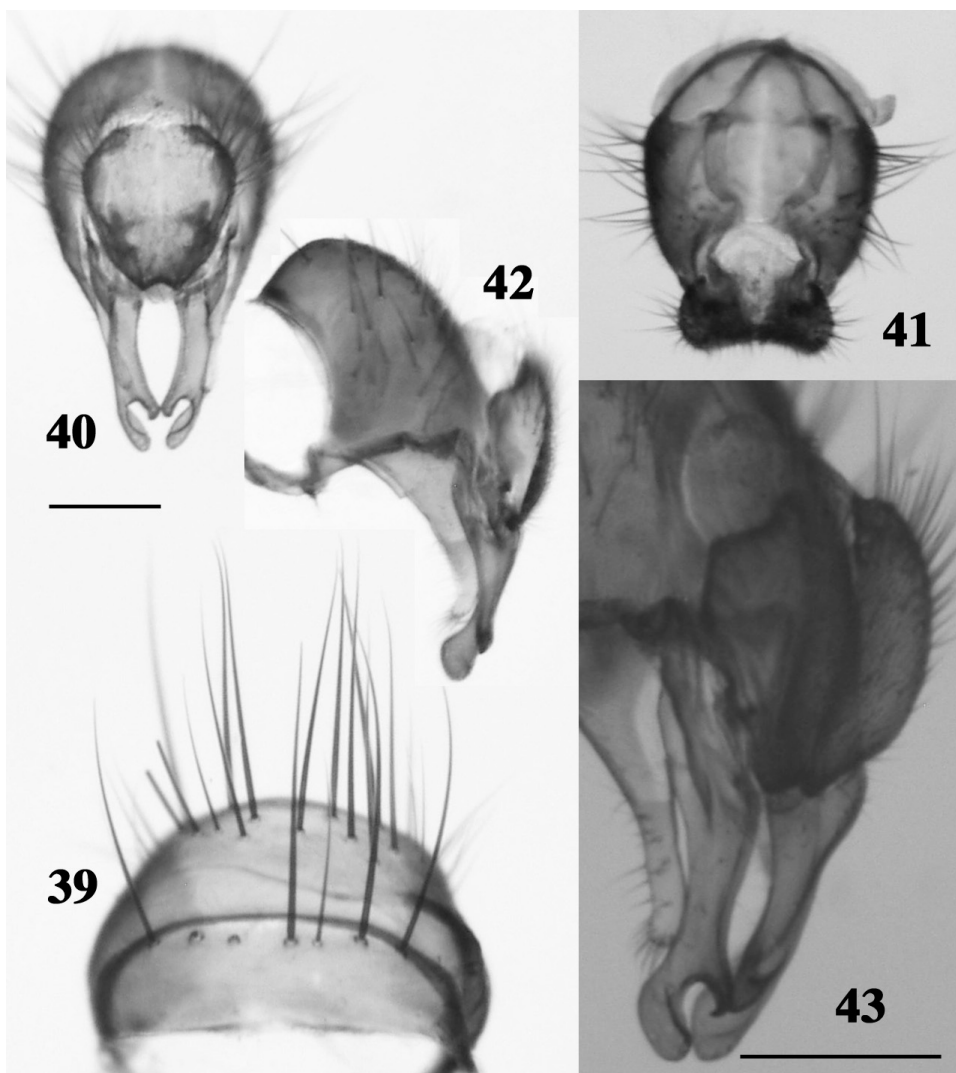
Mesonotum with 3 (on left row) or 4 (on right) *pre-acr* in very closely approximated rows; 2nd *ph* well developed, as strong as the 1st; *pra* longer than anterior *ntpl*; notopleuron with no accessory setulae; mesopleuron with no differentiated anterior *mpl*;



Figs. 30–38. *Chirosia strigilliformis* (Deng et Li, 1986), ♂. 30, 5th sternite, ventral view; 31, ditto, ventrolateral view; 32, ditto, lateral view; 33, aedeagus; 34, ditto, slightly ventral view; 35, aedeagal apodeme and basiphallus, dorsal view; 36, distiphallus, dorsal view; 37, pregonite and postgonite; 38, ditto, slightly different view, arrow indicating basalmost setula on postgonite. Mt. Soranuma, Hokkaido. Scales 0.2 mm.

1 strong and 4 finer *pstg*; *stpl* 1:2, a weakly differentiated setula discernible below the anterior and also below the posteriors; scutellum haired ventrally, and not setulose on dorsal center.

Abdomen 2.3 times as long as wide, half-depressed on anterior segments, much



Figs. 39–43. *Chirosia strigilliformis* (Deng et Li, 1986), ♂. 39, 6th tergite (lower) and pregenital sclerite; 40, hypopygium, dorsal view; 41, ditto, anterior view; 42, ditto, lateral view; 43, ditto, part, dorsolateral view. Mt. Soranuma, Hokkaido. Scales 0.2 mm. Magnification same for Figs. 39–42.

narrowed and rather cylindrical on 5th segment and terminalia; 6th tergite (Fig. 39) with some (7 in the present specimen) distinct setae along hind margin, not fused with pregenital sclerite; 5th sternite (Figs. 30–32) with short setae along inner margin of each process from base to apex and no setae on outer margin except around apex, and with a lobe well developed on inner margin medially; hypopygium as in Figs. 40–43; epandrium with posterolateral corners much prolonged and downcurved apically, the prolongation being setose ventrally, rather densely so around apex; cercal plate discoid, emarginated apically and rather densely tomentose on whole surface, sparsely with short

and fine setulae on main area, and more densely with longer setulae on anterolateral areas; surstylus deeply emarginated near apex inside, and in profile distinctly constricted before the emargination; aedeagus as in Figs. 33–38; distiphallus connected with basiphallus by long petiole, and tapering distally to paired slender prolongations, with acrophallus basally fused with side walls of distiphallus; pregonite with 2 rather strong setae; postgonite narrow, with some minute setulae on distal half of ventral margin, the basalmost setula being easily discernible (Fig. 38, arrow).

Mid femur with no distinct *av*, at most some subbasal ones being weakly differentiated, on basal third with some (6–7) distinct *pv*, the longest about as long as height of the femur, and near apex with a few *pv* more or less developed though shorter than the femur height;  $f_3$  with a row of about 10 strong and some mingled finer *av*, the longest distinctly longer than height of the femur, on basal half with a row of rather weak *pv*, near apex with a few rather strong *pv*, and on basal half with a few irregular rows of about 10 strong *a* and with a row of 5–6 slender *p*;  $t_1$  with 1 short but distinct and 0–1 smaller *ad*, 1 *p* and 1 *pv*;  $t_2$  with 1 *pd* and 4 *p/pv*, and with no *ad* discernible;  $t_3$  with 4 (on left leg) or 7 (on right) *av*, 5 *ad*, 4–5 *pd* and 6–7 *pv*, and with apical *pv* strong. Wings with costal thorns minute; costa setulose on ventral surface rather anteriorly; *dm-cu* hardly oblique and only a little concave.

♀ . Unknown.

Remarks. This species was described from a single male specimen collected at Mt. Emei, Sichuan, China, and no record has been added. According to the figures of male terminalia given in the original description, the posterolateral prolongations of epandrium are broader and apically not downcurved, and the distiphallus has shorter distal prolongations. Further comparison between the Chinese and Japanese forms of the species might be needed for precise identification.

In having a small proboscis and apically notched surstyli *C. strigilliformis* belongs to the *Chirosia megacephala* section in the sense of Griffiths (2004: 2551). The 5th sternite with inner patches of setulae and with median lobes on inner margins may indicate a close relationship with *Chirosia griseifrons* (Séguy, 1923). The prolongation of posterolateral corners of epandrium is shared with *Chirosia sikisima* (Suwa, 1974) and *Chirosia miyazakii* (Suwa, 1974). The present species is, however, quite different from these species in many aspects.

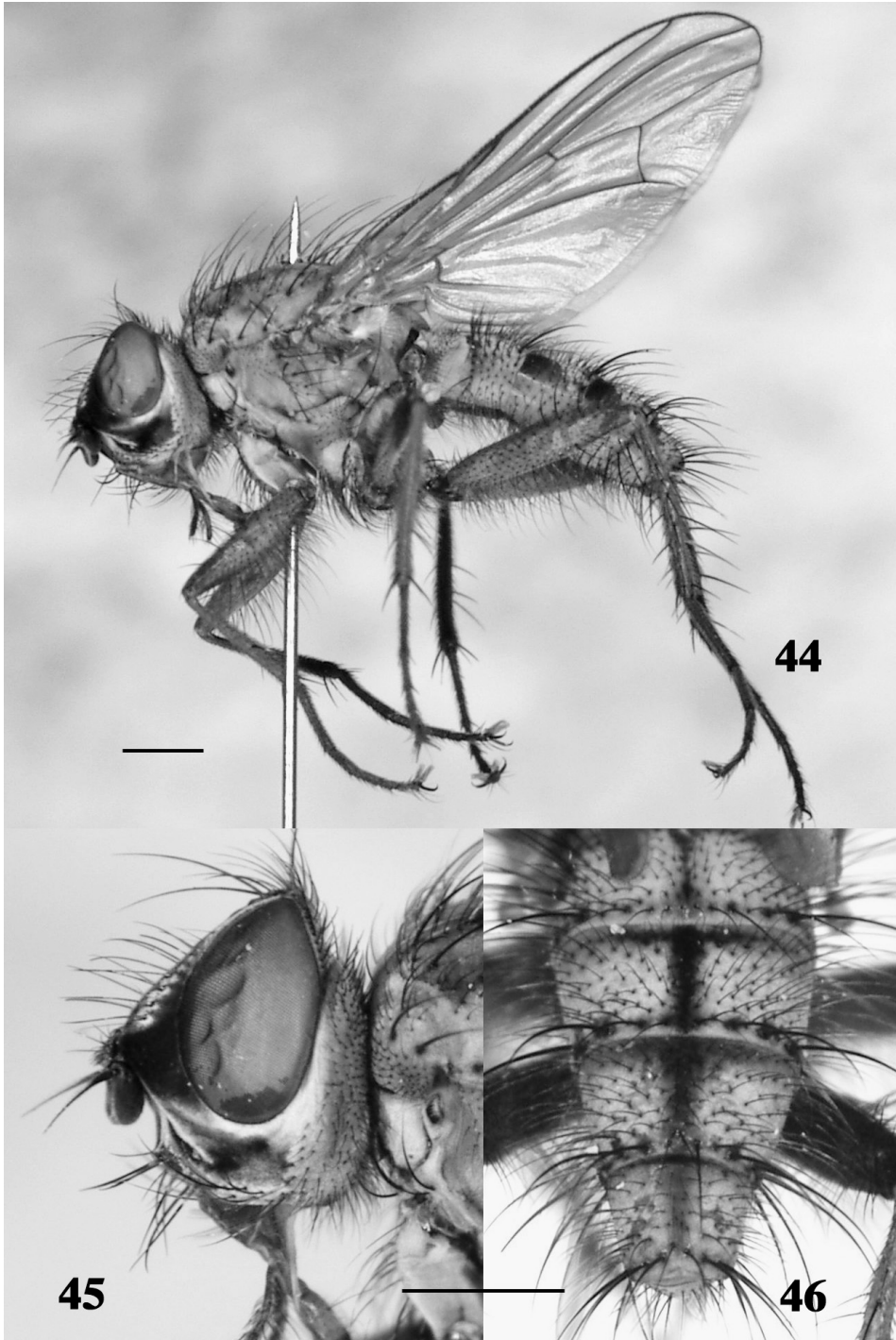
##### 5. *Leucophora hangzhouensis* Fan, 1988 (Figs. 44–58)

*Leucophora hangzhouensis* Fan in Fan et al., 1988: 202; Wei et al., 1998: 728.

Material examined. Honshu. Wakayama-ken: Mt. Ootoh, north slope, alt. 800–1120 m, Hongu-cho, 7 ♂, 2.v.2009, K. Harusawa leg. (Harusawa Collection); Hirai, alt. 150–400 m, Kozagawa-cho, 8 ♂, 27–28.iii.1997, M. Suwa leg.

Distribution. Japan (Honshu); China (Zhejiang). New to Japan.

♂ . Wing length 4.9–6.9 mm. Body including appendages mainly blackish in ground colour and pale bluish grey (specimens from Hongu) or pale grey and faintly brownish (those from Kozagawa) in pollinosity. Interfrontalia and genae sometimes dark brownish in ground colour; vibrissal angles brownish yellow or orange brown; antennae slightly brownish on basal two segments; palpi slightly brownish basally;



Figs. 44–46. *Leucophora hangzhouensis* Fan, 1988, ♂. 44, general features; 45, head, lateral view; 46, abdomen, dorsocaudal view. Kozagawa, Wakayama-ken. Scales 1 mm.



Figs. 47–49. *Leucophora hangzhouensis* Fan, 1988, ♂ . 47, 3rd and 4th sternites, ventral view; 48, 5th sternite, ventral view; 49, ditto, ventrolateral view. Kozagawa, Wakayama-ken. Scale 0.2 mm.

haustellar mentum blackish or dark brown in ground colour, and rather densely pollinose. Mesonotum partly to largely brownish pollinose except on pale peripheral region; scutellum more or less brownish pollinose. Abdomen (Fig. 46) with median vitta a little narrower to a little wider than  $t_3$ -diameter on 3rd to 5th tergites, linear and sometimes vanishing anteriorly on 2nd; fore-marginal bands rather broad on 3rd to 5th tergites and very narrow on 2nd; these markings brownish pollinose and shifting to black in some lights. Coxae more or less brownish in part; trochanters largely brownish to dark brown;

femora narrowly brownish at tips. Wings with a brownish tinge; calyptres whitish, more or less tinged with yellow marginally; halteres brownish basally and yellow apically.

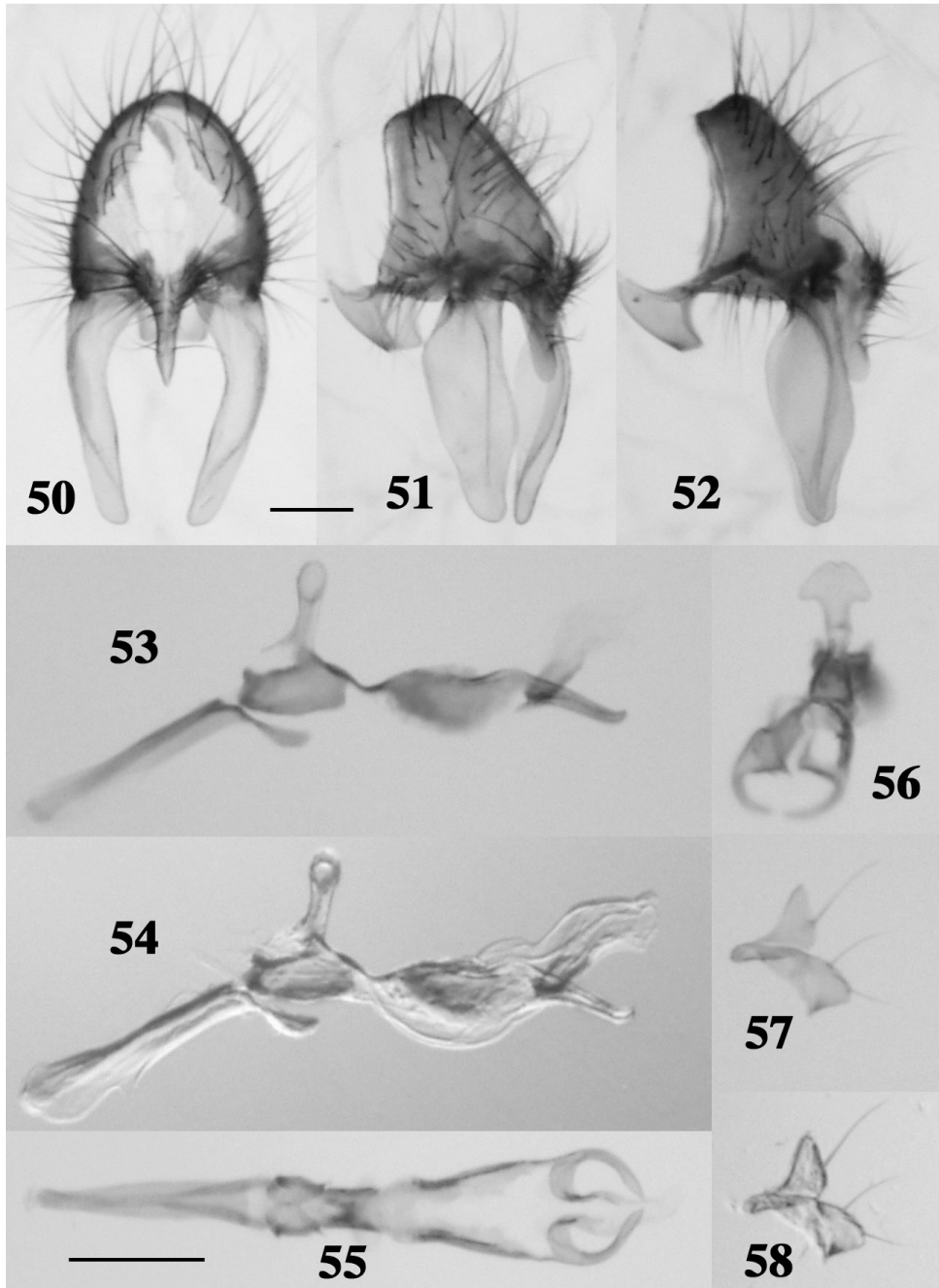
Frons about as wide as distance between posterior ocelli inclusive; interfrontalia 0.5–0.6 times as wide as frons, sometimes with a single or irregularly paired minute *if*; parafrontals with 7–10 *ori*, usually with 1 minute or rather well developed *ors* near middle or upper third between uppermost *ori* and anterior ocellus, and occasionally with 1 minute setula discernible a little distant from uppermost *ori*;  $A_3$  1.6–2.0 times as long as wide; arista with longest hairs about as long as basal diameter of arista; orbits at parafrontal angle 1.3–2.0 times as wide as  $A_3$ , relatively wider in larger specimens; genae 1.8–2.5 times as high as  $A_3$ -width, with genal setae arranged in 2–3 rows, or in a single row in smaller specimens; epistoma situated distinctly behind tip of parafrontal angle.

Mesonotum with 3 pairs of *pre-acr* (2 setae on one side and 3 on the other in 2 smaller specimens from Kozagawa), in most specimens 1 or sometimes 2 associated setulae being discernible on either or both rows though often more or less shifted mesad; rows of *pre-acr* closely approximated, setae of the middle pair being separated from each other by a distance less than half as long as that to adjacent *dc*-row; posthumeral region, in addition to anterior *ph*, with 1 or a few setulae more or less developed and distinguishable from adjacent setulae; *pra* variable in length, a little shorter to rather distinctly longer than posterior *ntpl*; notopleuron occasionally with 1 or a few fine setulae posteriorly; mesopleuron with no distinct anterior *mpl*; 1 strong and 1 or sometimes 0 weaker *pstg*, occasionally with 1 associated setula; *stpl* 1:2, a more or less differentiated setula sometimes discernible below the posteriors; prosternum bare; scutellum with some setulae on dorsal surface laterally.

Abdomen 2.1–2.5 times as long as wide; 5th sternite (Figs. 48–49) rather densely setose, the longest setae a little to much longer than processes of the sternite, and with many short stiff setulae along distal half of inner margin of each process; hypopygium and aedeagus as in Figs. 50–58; cercal plate much prolonged apically to form a long beak, with 2–3 pairs of long setae basally; surstylus broad in lateral view, with some short and fine setulae discernible on apical third or fourth of ventral surface apart from scattered microtrichia; epiphallus dilated apically (Fig. 56); distiphallus with paraphalli a little upcurved apically in lateral view and convergent and almost touching each other in ventral view (Fig. 55); pregonite with 2 setae, the upper one longer; postgonite with 1 long seta.

Mid femur with a row of rather fine *av* becoming shorter toward apex of the femur and much shortened on apical fourth or third, the longest in basal two-thirds being as long as or slightly longer than height of the femur, and near base often with 1 strong *av* which is a little to much longer than the femur height, ground setulae on basal two-thirds of anterior to anteroventral surface being more or less lengthened;  $f_2$  with a row of some (5–7) long and strong *pv* and some finer mingled setulae on basal half or two-thirds, the longest being 1.6–1.8 times as long as the femur height, and on apical half or third with a row of some rather fine *pv*, ground setulae near *pv*-row being more or less lengthened;  $f_3$  with a row of about 10 rather distinct to strong *av* and some or more finer mingled setae or setulae, seta around apical fourth being the strongest and 1.4–2.0 times as long as height of the femur, ground setulae on basal two-thirds of anterior to anteroventral surface being more or less lengthened;  $f_3$  with a row of many (usually around 15) distinct *pv* and some or more finer mingled setulae, some of them being often rather strong and as long as or a little longer than the femur height, ground setulae on basal half of ventral





Figs. 50–58. *Leucophora hangzhouensis* Fan, 1988, ♂. 50, hypopygium, dorsal view; 51, ditto, dorsolateral view; 52, ditto, lateral view; 53, aedeagus; 54, ditto, different lighting; 55, ditto, ventral view; 56, ditto, caudal and oblique view; 57, pregonite and postgonite; 58, ditto, different lighting. Kozagawa, Wakayama-ken. Scales 0.2 mm.

surface and those on basal two-thirds of posterior to posteroventral surface being more or less lengthened;  $t_1$  with 1 small *ad* and 1 strong *pv*;  $t_2$  with 1 *av*, 1 *ad*, 1 or rarely 0 *pd*, 1 or rarely 2 *p* and 1 or sometimes 2 *pv*;  $t_3$  with 2–6 *av*, 3–5 strong and usually 1 or a few weak *ad*, 3–4 or rarely 5 *pd*, and 4–10 *pv*, and sometimes with 1 strong *p* near middle. Wings with costal thorns small; *dm-cu* slightly to rather distinctly sinuate; lower calyptera smaller than the upper.

♀ . Unknown.

Remarks. *L. hangzhouensis* was described from Zhejiang, China, on the basis of a single male specimen, and there have been no additional records. The Japanese specimens examined are referable to the present species in having terminalia agreeing well with those of the species figured in the original description. Judging from the cercal plate with a beak-like apex, surstyli with broad lateral view, distiphallus with apically upcurved paraphalli, and acrophallus protruded above paraphalli, *L. hangzhouensis* may closely be related to the Holarctic *L. unistriata* (Zetterstedt, 1838). The latter is, however, easily distinguishable from the former by the less hairy body and legs, much shorter and often undifferentiated *pra*,  $t_2$  without *av* but with *v*, and terminalia different in details.

#### 6. *Pegomya hamata* Wei, 1998 (Figs. 59–75)

*Pegomya hamata* Wei in Wei et al., 1998: 794.

*Pegomya prisca* Michelsen, 2006: 39. Syn. nov.

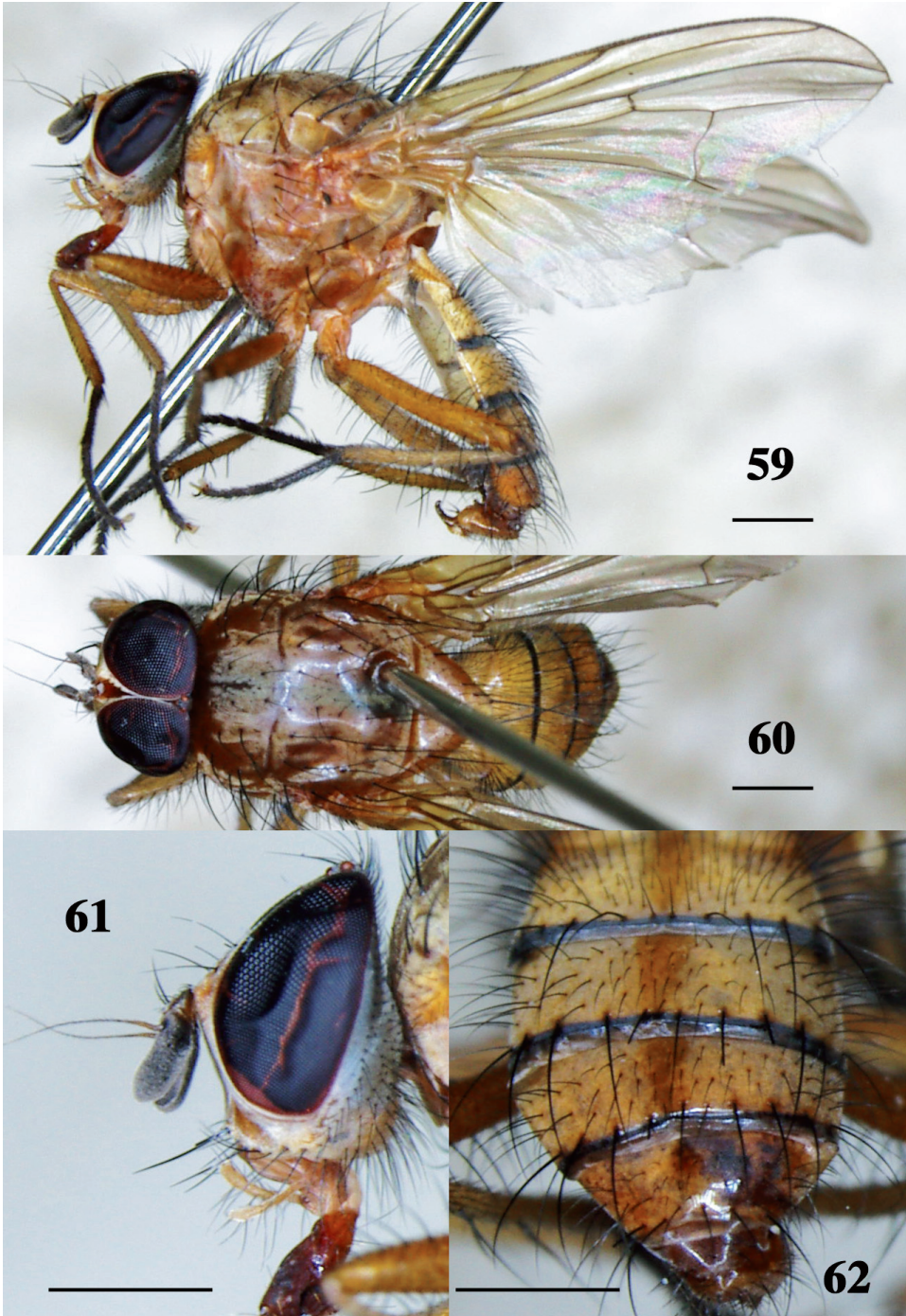
Material examined. Honshu. Nara-ken: Mt. Inamuragatake, alt. 1725 m, Tenkawa-mura, 1 ♂, 30.vii.2010, K. Harusawa leg. (Harusawa Collection).

Distribution. Japan (Honshu); China (Guizhou); Europe (Sweden; Czech; Slovakia). New to Japan.

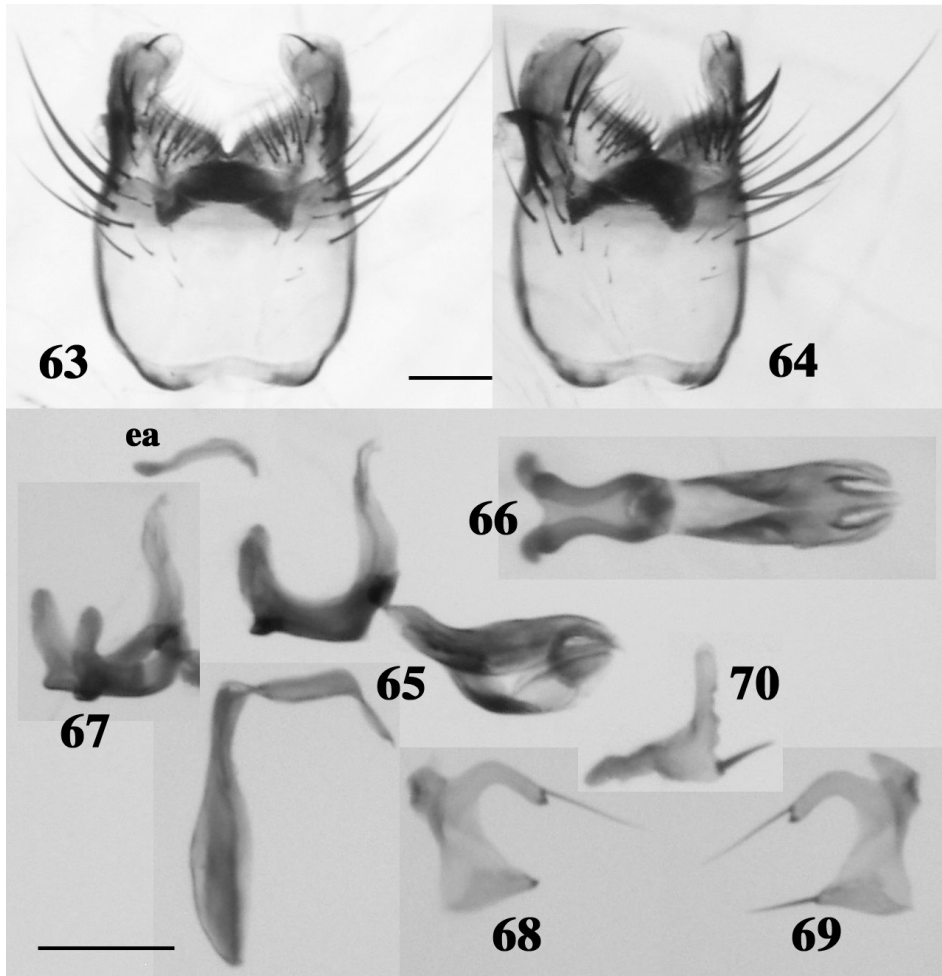
The present specimen has the following features.

♂ . Wing length 7.1 mm. Body (Fig. 59) mainly yellow to orange yellow in ground colour, and thinly whitish to whitish yellow pollinose. Head (Fig. 61) with orbits more or less tinged with yellow in pollinosity especially around parafrontal angles; occiput blackish in ground colour except on lower fourth and whitish grey in pollinosity, with setulae all blackish; antennae brownish yellow on basal two segments and blackish on the 3rd; arista yellowish on basal thickening; palpi entirely yellow; haustellar mentum brownish yellow and polished; labella with hairs yellow. Mesonotum (Fig. 60) brownish yellow with an entire median dark vitta between the rows of *acr* in ground colour, slightly tinged with yellow in pollinosity; scutellum paler than mesonotum in ground colour, with ventral hairs yellow; subalar sclerite black on lesser ampulla. Abdomen (Fig. 62) yellow anteriorly and orange yellow posteriorly in ground colour, narrowly blackish along hind margins on 2nd to 4th tergites, and thinly whitish pollinose, shining in some lights; median vitta discernible in caudal view as an “unpollinose” vitta (namely the pollinosity disappearing in this angle of view); pregenital sclerite orange brown; 5th sternite yellow on anterior two-thirds of basal plate and dark brownish on the rest. Legs yellow, with tarsi blackish or dark brown and mid and hind femora narrowly darkened at tips. Wings tinged with brownish yellow, strongly yellow basally; calypterae distinctly tinged with yellow; halteres orange yellow at bases and pale yellow at knobs.

Head (Fig. 61) about 1.4 times as high as long; parafrontals contiguous to each



Figs. 59–62. *Pegomya hamata* Wei, 1998, ♂ . 59, general features, lateral view; 60, ditto, dorsal view; 61, head, lateral view; 62, abdomen, dorsocaudal view. Tenkawa, Nara-ken. Scales 1 mm.



Figs. 63–70. *Pegomya hamata* Wei, 1998, ♂. 63, 5th sternite, ventral view; 64, ditto, ventrolateral view; 65, aedeagus, ea: ejaculatory apodeme; 66, basiphallus and distiphallus, dorsal view; 67, basiphallus, anterolateral view; 68, left pregonite, lower seta on dorsal process and seta on ventral process missing; 69, right pregonite, lower seta on dorsal process missing; 70, left postgonite. Tenkawa, Nara-ken. Scales 0.2 mm.

other, with 3 *ori* and no *ors*; frons much narrower than anterior ocellus;  $A_3$  about 2.4 times as long as wide (not so good in condition, depressed and somewhat warped peripherally); arista with hairs a little longer than basal diameter of arista; orbits at parafrontal angle about two-thirds as wide as  $A_3$ ; genae about as high as  $A_3$ -width, with only 2 upwardly-curved genal setae; epistoma situated behind tip of parafrontal angle; occiput with some setulae on postocular plains laterally.

Mesonotum with 3 pairs of distinct *pre-acr*, the rows widely separated from each other by a distance much longer than that to adjacent *dc*-row at the 1st pair, by a distance a little longer than that at the middle, and by a distance a little shorter than that at the

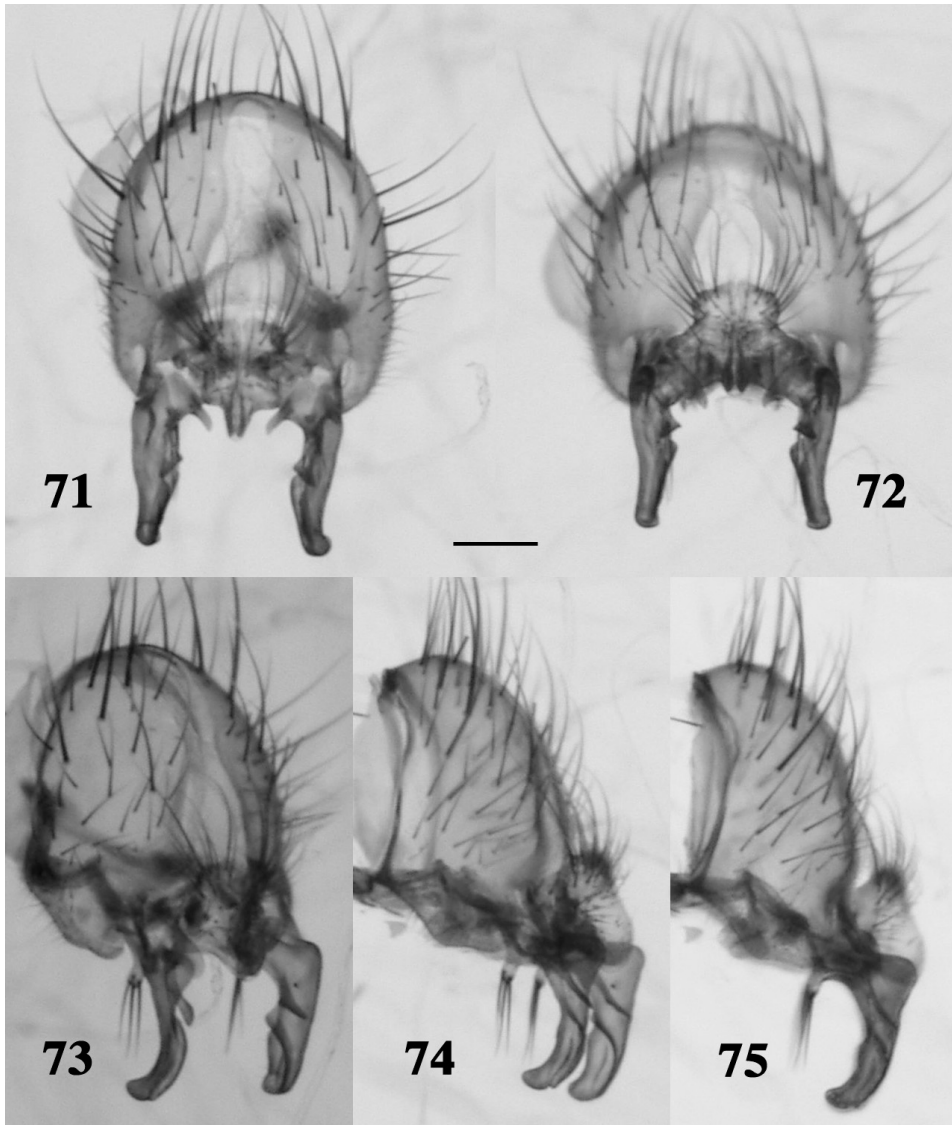
3rd, with more than 10 finer setulae discernible in between; the middle pair of *pre-acr* being the longest, a little longer than anterior *ntpl*; posterior *ph* well developed, as long as the anterior; posterior presutural intra-alar seta well developed and slightly longer than anterior *ntpl*; *pra* well developed, about 1.3 times as long as anterior *ntpl*; notopleuron with no accessory setulae; mesopleuron with 1–2 distinct anterior *mpl*; 1 strong and 1 weaker *pstg*, in the present specimen with 9 associated fine setulae discernible; *stpl* 1:2; scutellum rather densely setulose dorsally.

Abdomen depressed and ovoid, about 1.8 times as long as wide (more or less warped in condition); 6th tergite with no setae; 5th sternite (Figs. 63–64) rather densely setulose on processes inner-basally, with 1 strong seta near apex and 2 stout setae near middle of each process, and with a few setae before outer base of each process, the posteriormost being well developed and distinctly longer than the processes; each process with underside membrane developed to protrude a little beyond tip of its chitinized area; hypopygium as in Figs. 71–75; cercal plate with median keel becoming more prominent caudally; surstylus with inner-basal lobe rather well developed, inner process small and like spatula with plectrum-head, outer process with arc-ridge developed from middle of ventral margin to dorsal apex on inner surface and with a shorter ridge below the arc-ridge, and ventrobasal process with 3 distinct setae; aedeagus as in Figs. 65–70; basiphallus with a pair of prominent anterodorsal protrusions; distiphallus with median sclerite trifurcate apically; paraphalli on distal two-thirds rather broad and bent dorsally as receiving the median sclerite; pregonite with 2 setae on dorsal process (lower seta missing in the specimen examined) and 1 seta on ventral process (missing in left pregonite in the specimen); postgonite with a stout seta at mid-ventral corner, the seta being very slightly bifurcated apically and the bifurcation indiscernible unless carefully examined.

Mid femur with some *av* weakly developed on basal half, the longest about as long as height of the femur, and with a row of 8 distinct to strong *pv* on basal two-thirds, the longest a little shorter than twice the femur height;  $f_3$  with a row of 6–7 strong and a few mingled weaker *av* except near base, the longest nearly twice as long as height of the femur, with 1 weak *v* near base, and with a row of about 10 *pv* on apical two-thirds, of the *pv* some (5–6) on median third or more being well developed, the longest about 1.5 times as long as the femur height, and some on apical fourth less developed and weak;  $t_1$  with 1 small *ad* and 1 strong *pv*, and with apical *pd* not differentiated from adjacent setulae;  $t_2$  with 1 *ad*, 1 *pd*, 1 *p* and 1 *pv*;  $t_3$  with 1 *av*, 3 *ad* and 2 *pd*, and with apical *pd* weak and only a little stronger than adjacent setulae. Wings with costal thorns small, much shorter than crossvein *h* though stronger than costal spinules; *dm-cu* a little oblique and distinctly sinuate; lower calyptra larger than the upper.

♀ . Unknown to me. Diagnosis is given by Michelsen (2006, as *P. prisca*) by comparing with *Pegomya testacea* (De Geer, 1776).

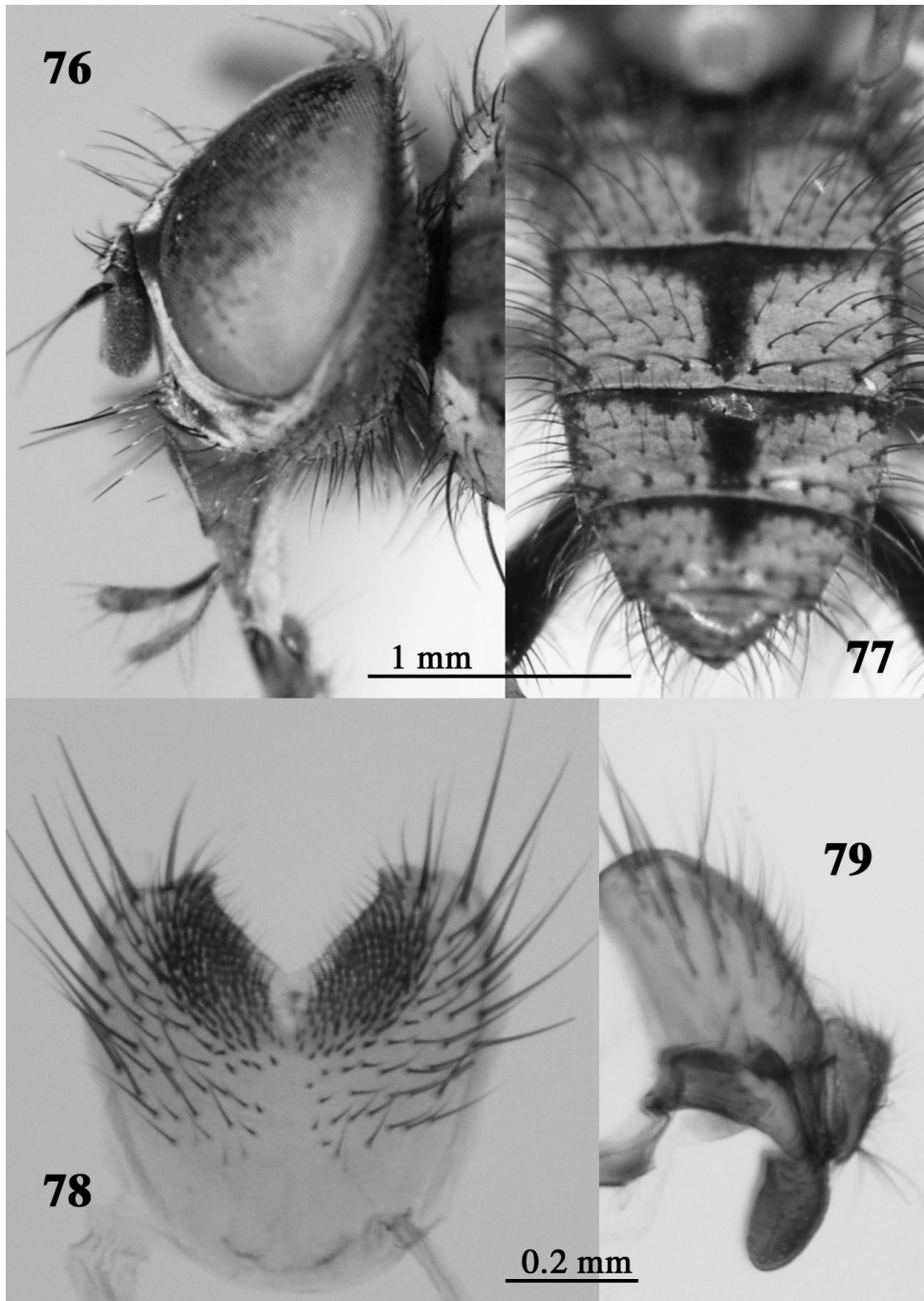
Remarks. According to the original description of *P. hamata* based on a male specimen from Guizhou, China, the thorax is largely black in ground colour, and the aedeagus has no protrusions on the basiphallus dorsobasally. Wei, the author of the species, has recently (March 8, 2011, e-mail) informed me that the basiphallus of *P. hamata* has a pair of well developed protrusions at the base dorsally, and the illustration of aedeagus without such protrusions in the original description is due to an unintentional artifact. It may, therefore, be appropriate to identify the present Japanese specimen with the species. The difference in colour between the Chinese and Japanese forms may be



Figs. 71–75. Hypopygium of *Pegomya hamata* Wei, 1998, ♂. 71, dorsal view; 72, dorsal and a little caudal view; 73–75, dorsolateral to lateral views. Tenkawa, Nara-ken. Scale 0.2 mm.

due to individual or local variation.

The Japanese specimen examined also agrees well with the description of *Pegomya prisca* Michelsen, 2006, described from Europe. The main reason for separation of *P. prisca* and *P. hamata* exists in disagreement on the aedeagal structures between the two forms. As mentioned above there is now little basis on the “disagreement”, *P. hamata* may be accepted as a species widely distributed in the Palearctic region.



Figs. 76–79. *Pegoplata plicatura* (Hsue, 1981), ♂. 76, head, lateral view; 77, abdomen, dorsocaudal view; 78, 5th sternite, ventral view; 79, hypopygium, lateral view. Kozagawa, Wakayama-ken (76–77, 79), and Renge-onsen–Tengunoniwa, Niigata-ken (78).

7. *Pegoplata plicatura* (Hsue, 1981)  
(Figs. 76–79)

*Nupedia plicatura* Hsue, 1981: 305; Wei et al., 1998: 767.

*Pegoplata* sp.: Fukushi, 1990: 55.

*Pegoplata fukushii* Suwa, 1990: 46; Suwa, 1999: 238. Syn. nov.

Material examined. Honshu. Akita-ken: Mt. Mitsumori-yama, Tashiro-cho, 1 ♂ (holotype of *Pegoplata fukushii*), 6.ix.1987, S. Fukushi leg. Niigata-ken: Renge-onsen–Tengunoniwa, alt. 1500–2000 m, Mt. Shirouma, 1 ♂, 19.vii.1989, M. Suwa leg. Wakayama-ken: Hirai, 150–400 m, Kozagawa-cho, 3 ♂, 27–28.iii.1997, M. Suwa leg. Nara-ken: Shirakura-dani, alt. 870 m, Tenkawa-mura, 1 ♂, 9.v.2009, K. Harusawa leg. (Harusawa Collection).

Distribution. Japan (Honshu); China (Liaoning).

Remarks. Without noticing the presence of *Pegoplata plicatura* (Hsue, 1981) I proposed a name, *Pegoplata fukushii*, for receiving a male specimen collected in Akita-ken, northern Honshu, Japan (Suwa, 1990). According to the figures of male terminalia given in the original description of *P. plicatura*, the 5th sternite has sparser inner patches of setulae and the syrstyli have acuter apices in lateral view than in the Japanese form. These differences are, however, slight and may be due to local variation or to different lighting or angle of view in making illustrations. The two forms are here treated as conspecific. On this occasion some records of collection are added as above. The species may widely be distributed in Honshu, Japan.

ACKNOWLEDGEMENTS

I wish to express my sincere thanks to K. Harusawa (Osakasayama, Osaka-fu), K. Kanmiya (Kurume, Fukuoka-ken) and the late S. Fukushi (Hirosaki, Aomori-ken) for giving me opportunities to examine valuable specimens collected by them. My cordial thanks are also due to L. Wei (Anshun Center for Disease Prevention and Control, Guizhou, China) for his help with literature and information on Chinese species.

REFERENCES

- Ackland, D.M. and Pont, A.C., 1977. Family Anthomyiidae. In Delfinado, M.D. and Hady, D.E. (eds.). A catalog of the Diptera of the Oriental region 3: 439–446.
- Brown, V.K. and McGavin, G.C., 1982. The biology of some mine and gall forming Diptera on bracken, *Pteridium aquilinum* (L.) Kuhn. *Journal of natural History* 16: 511–518.
- Deng, A. and Li, R., 1986. Description of three new species of the family Anthomyiidae from Sichuan, China (Diptera). *Journal of West China University of medical Sciences* 17: 105–108 (in Chinese, with an English summary).
- Ellis, W.N., 2011. Bladmineerders van Europa / Leafminers of Europe (<http://www.bladmineerders.nl/index.htm>).
- Fan, Z. et al., 1988. Diptera: Anthomyiidae. Economic insect fauna of China 37: 1–396, 10 plates (in Chinese, with an English summary). Science Press, Beijing.
- Fukushi, S., 1990. Notes on the family Anthomyiidae (Diptera) from Aomori and Akita Prefectures. *Journal of Aomori-ken biological Society* 27: 48–57 (in Japanese).
- Griffiths, G.C.D., 1982–2004. Anthomyiidae. In Griffiths, G.C.D. (ed.), *Flies of the*



- Nearctic region 8 (2): 1–2635.
- Hennig, W., 1966–1976. 63a. Anthomyiidae. In Lindner, E. (ed.), Die fliegen der palaearktischen Region 7 (1): lxxviii + 974 pp., 114 plates. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart.
- Hsue, W., 1981. A new species of flower-fly from Liaoning, China (Diptera: Anthomyiidae). *Acta entomologica sinica* 24: 305–306 (in Chinese, with an English summary).
- Michelsen, V., 2006. A new species of *Pegomya* Robineau-Desvoidy (Diptera: Anthomyiidae) near *P. testacea* (De Geer). *Zootaxa* 1260: 37–46.
- Suh, S.J. and Kwon, Y.J., 1985. Taxonomic revision of the family Anthomyiidae from Korea. *Insecta Koreana* 5: 143–221.
- Suwa, M., 1974. Anthomyiidae of Japan (Diptera). *Insecta matsumurana new series* 4: 1–247.
- Suwa, M., 1983. Supplementary notes on the family Anthomyiidae of Japan (Diptera), II. *Akitu new series* 52: 1–20.
- Suwa, M., 1990. A new species of *Pegoplata* from Japan (Diptera: Anthomyiidae). *Proceedings of the Japanese Society of systematic Zoology* 42: 46–50.
- Suwa, M., 1999. Japanese records of anthomyiid flies (Diptera: Anthomyiidae). *Insecta matsumurana new series* 55: 203–244.
- Wei, L., Xue, W. and Cui, C., 1998 (“1996”). Anthomyiidae. In Xue, W. and Chao, C. (eds.), *Flies of China* 1: 634–808 (in Chinese, with an English summary). Liaoning Science and Technology Press, Shenyang.